Master Thesis

Person-centered care:
Needs and preferences of adult patients with chronic cardiovascular diseases
A Scoping Review

submitted by

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Graz, February 15th 2023

Declaration of Academic Integrity

I hereby confirm that the present master thesis is the result of my own independent scholarly work. I also confirm that in all cases where material from the work of others (in books, articles, essays, dissertations, and on the internet) is acknowledged, quotations and paraphrases are clearly indicated. No material other than that cited in the reference list has been used. I have read and understood the Medical University's regulations and procedures concerning plagiarism.

Graz, February 15th 2023 *Magdalena Walter m.p*

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the nursing scientist I am today.

Zusammenfassung

Hintergrund: Herz-Kreislauf-Erkrankungen zählen zu den chronischen Erkrankungen mit einer weltweit steigenden Anzahl an Todesfällen. Darüber hinaus steigt die Zahl der Wiedereinweisungen ins Krankenhaus stetig, was unter anderem eine immense Belastung für Patient*innen darstellt. Die personenzentrierte Pflege zielt darauf ab, die Individualität von Patient*innen zu berücksichtigen, um eine ganzheitliche Pflege gewährleisten zu können. Jedoch ist wenig über die Kernkomponenten von personenzentrierter Pflege bekannt. Ziel dieser Masterarbeit ist es daher, die Bedürfnisse und Präferenzen erwachsener Patient*innen mit chronischen Herz-Kreislauf-Erkrankungen während ihres Krankenhausaufenthaltes zu ermitteln.

Methode: Zur Beantwortung der Forschungsfrage wurde ein Scoping Review anhand eines Joanna Briggs Institute (JBI) Manuals durchgeführt. Dabei wurden Studien untersucht, die über die Bedürfnisse und Präferenzen erwachsener Patient*innen mit chronischen Herz-Kreislauf-Erkrankungen berichten. Zur Identifizierung dieser Studien wurde eine systematische Suche in vier medizinischen Datenbanken ausgeführt. Zusätzlich wurde Google Scholar für die Handsuche verwendet. Die Einschlusskriterien wurden anhand der Merkmale Population, Konzept und Kontext festgelegt. Insgesamt konnten 25 Studien eingeschlossen werden, welche einer kritischen Qualitätsbewertung anhand der JBI-Checklisten unterzogen wurden.

Ergebnisse: Diese Übersichtsarbeit zeigt, dass Patient*innen mit chronischen Herz-Kreislauf-Erkrankungen den Informations- und Lernbedarf als einen wichtigen Aspekt ihres Krankenhausaufenthalts ansehen. Die Bedürfnisse der Patient*innen bezogen sich vorwiegend auf Entlassungsinformationen und das Erlernen im Umgang mit ihrer Erkrankung. Präferenzen wie beispielsweise die Vorliebe für Ansprechpersonen oder die bevorzugte Rolle bei medizinischen Entscheidungen während des Krankenhausaufenthalts konnten identifiziert werden. Der Wunsch nach aktiver Beteiligung an der medizinischen Entscheidungsfindung nahm mit zunehmendem Alter ab. Ebenso wurden Unterschiede in Bezug auf Bildung und Geschlecht angegeben. Darüber hinaus zeigten Pflegepersonen häufig unterschiedliche Wahrnehmungen in Bezug auf die Bedürfnisse der Patient*innen während des

Krankenhausaufenthalts im Vergleich zu den von Patient*innen geäußerten Bedürfnissen.

Schlussfolgerung: Diese Arbeit konnte den Umfang der vorhandenen Literatur über die Bedürfnisse und Präferenzen von Patient*innen im Krankenhaus aufzeigen. Die Ergebnisse deuten darauf hin, dass Pflegepersonen und das Entlasssungsmanagement eine wesentliche Rolle in Bezug auf die Bedürfnisse und Präferenzen erwachsener Patient*innen mit chronischen Herz-Kreislauf-Erkrankungen spielen. Eine konzeptionelle Klärung von personenzentrierter Pflege und deren Untersuchung in der Pflegeforschung und -praxis ist daher erforderlich.

Abstract

Background: Cardiovascular diseases (CVDs) are classified as chronic diseases with an increasing number of death rates worldwide. Moreover, the number of re-hospitalizations of patients with CVDs is constantly increasing and represents an immense burden for the individual patient. Person-centered care (PCC) aims to consider individual patients in order to provide holistic care, but little is known about its core components in nursing care. The aim of this master thesis is therefore to identify the needs and preferences of adult patients with chronic CVDs during hospitalization.

Method: Guided by the Joanna Briggs Institute (JBI) manual, a scoping review was conducted. Studies reporting on the needs and preferences of adult patients with chronic CVDs were examined. A systematic search was performed across four medical databases. Additionally, Google Scholar was used. Inclusion criteria were based on population, concept, and context characteristics. A total of 25 studies were included and subjected to a critical quality assessment using the JBI checklists.

Results: The scoping review shows that patients with chronic CVDs regard information and learning needs as important aspects during their hospitalization. Patients' needs are related to discharge information and learning how to manage their condition. Preferences such as educator preferences or the patients' preferred role in medical decision-making during hospitalization were specified. Patients' desire for active participation in medical-decision making decreased with age, and differences in terms of education and gender were identified. Moreover, needs expressed by patients often differed from those perceived by nurses.

Conclusion: This thesis demonstrates the extent of the existing literature on patients' needs and preferences in the hospital setting. The results indicate that nurses and discharge management play an essential role in terms of needs and preferences of adult patients with chronic CVDs. A conceptual clarification of PCC as well as further investigation in nursing research and practice is therefore needed.

Content

List of abbreviations

AF	Atrial fibrillation
CAD	Coronary artery disease
CCU	Critical care unit
CDC	Centers for Disease Control and Prevention
CENTRAL	Cochrane Central Register of Controlled Trials
CHD	Coronary heart disease
CHF	Congestive heart failure
CHFPLNI	Congestive Heart Failure Patient Learning Need Inventory
CINAHL	Cumulative Index to Nursing and Allied Health Literature
CPLNI	Cardiac Patient Learning Need Inventory
CR	Cardiac rehabilitation
CVD	Cardiovascular disease
EU	European Union
ICD	International Statistical Classification of Diseases and Related Health Problems
JBI	Joanna Briggs Institute
PCI	Percutaneous coronary intervention
PCN	Person-centered nursing
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
PubMed	Public Medical Literature Online
UK	United Kingdom
US	United States
WHO	World Health Organization
WTW	Willis Towers Watson

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1. Introduction

According to the *World Health Organization* (WHO) *cardiovascular diseases* (CVDs) are one of the most common causes of deaths globally (WHO, 2021a). In 2019, CVDs caused 9.6 million deaths among men and 8.9 million deaths among women, which in total accounted for 32% of all deaths worldwide. In 2016, a total number of over 1.68 million deaths were measured in the *European Union* (EU), which is coequal to 37.1% of deaths (eurostat, 2022)., CVDs comprise *coronary heart diseases* (CHDs), cerebrovascular diseases, peripheral arterial diseases, rheumatic heart diseases, congenital heart diseases and deep vein thromboses as well as pulmonary embolisms. In general, most of these CVDs are classified as chronic diseases, also known as non-communicable diseases (WHO, 2021a). According to the *Centers for Disease Control and Prevention* (CDC) a chronic disease is defined as a disease which lasts one year or longer, requires constant medical treatment, and/or restricts the daily life of the patient (CDC, 2022). The duration is influenced by several combined factors which are related to genetics, physiology, environment, and behavior (WHO, 2021b). CVDs affect people of all age groups, regions, and countries. Thus, children, adults, and elderly people are considered vulnerable, whereby the highest death rate occurs between the age of 30 and 69 years (WHO, 2021b). Regarding gender, women are less likely to be diagnosed with CVD and treated than men because they experience fewer symptoms (WHO, 2021). The standardized deathrate in 2019 was higher for men than for women (eurostat, 2022).

1.1 CVDs and related impacts

CVDs comprise many diseases. The diseases discussed in this thesis refer to a recent report of the Austrian Ministry of Federal Government which examined frequent CVDs in the hospital setting. According to this report of the *Federal Ministry for Social Affairs, Health, Care and Consumer Protection of Austria*, the following chronic CVDs lead to hospitalization most frequently (Griebler, 2021):

Table 1: Most frequently chronic CVDs in Austria (adapted version of Griebler, 2021)

Chronic CVDs	**Example (diagnose code)**
Hypertension	primary hypertension (ICD-10 I10)

Chronic CVDs	Example (diagnose code)
Ischemic heart diseases	chronic ischemic heart disease (ICD-10 I25)
Pulmonary heart disease and diseases of the pulmonary circulation	Chronic cardiopulmonary disease (ICD-10 I27.9)
Inflammatory diseases of the heart	chronic endocarditis (ICD-10 I38)
Heart valve diseases (without inflammatory diseases)	Mitral valve insufficiency (ICD-10 I34.0)
Cardiomyopathies	cardiomyopathy (ICD-10 I42)
Heart rhythm disorders	Atrial fibrillation (ICD-10 I48)
Heart failure	Chronic Heart failure (ICD-10 I50)
Diseases of the arteries, arterioles, and capillaries	Atherosclerosis (ICD-10 I70)
Other heart diseases	Chronic pericarditis (ICD-10 I31)

In *Table 1*, CVD groups like *hypertension* and *ischemic heart diseases* are in the first column on the left. The second column on the right displays one example of each of those disease groups. Only diseases which are clearly defined as *chronic* (CDC, 2022) are covered in this thesis. A more detailed description of the diseases can be found in the *International Statistical Classification of Diseases and Related Health Problems* catalog (ICD-10).

1.1.1 Costs

While CVDs affect the physical well-being of patients, they also have an economic impact. CVDs lead to an increased use of medical services and higher costs (Murray et al., 2020; WHO, 2021a). In Europe the annual economic costs of CVDs are € 210 billion, whereby 53 % (€ 111 billion) of this sum are direct health care costs, 26 % (€ 54 billion) are productivity losses, and 21 % (€ 45 billion) are calculated for informal care (Wilkins et al., 2017). The following subchapter describes the number of hospitalizations as well as how long patients stay in hospitals, followed by readmission to hospital rates.

1.1.2 Hospitalization

In general, the number of deaths caused by CVDs has changed in recent years within the EU, which may be due to the implementation of new strategies such as

more screening programs (eurostat, 2022). However, the number of patients who were hospitalized in 2019 encompassed 10.3 million people (eurostat, 2022). The following bar chart presents hospital discharge rates of every European country, EU member states are located on the left-hand side and non-member states on the right-hand side. The x-axis shows the country abbreviations, while the y-axis displays the number of hospital discharge rates per 100,000 inhabitants.

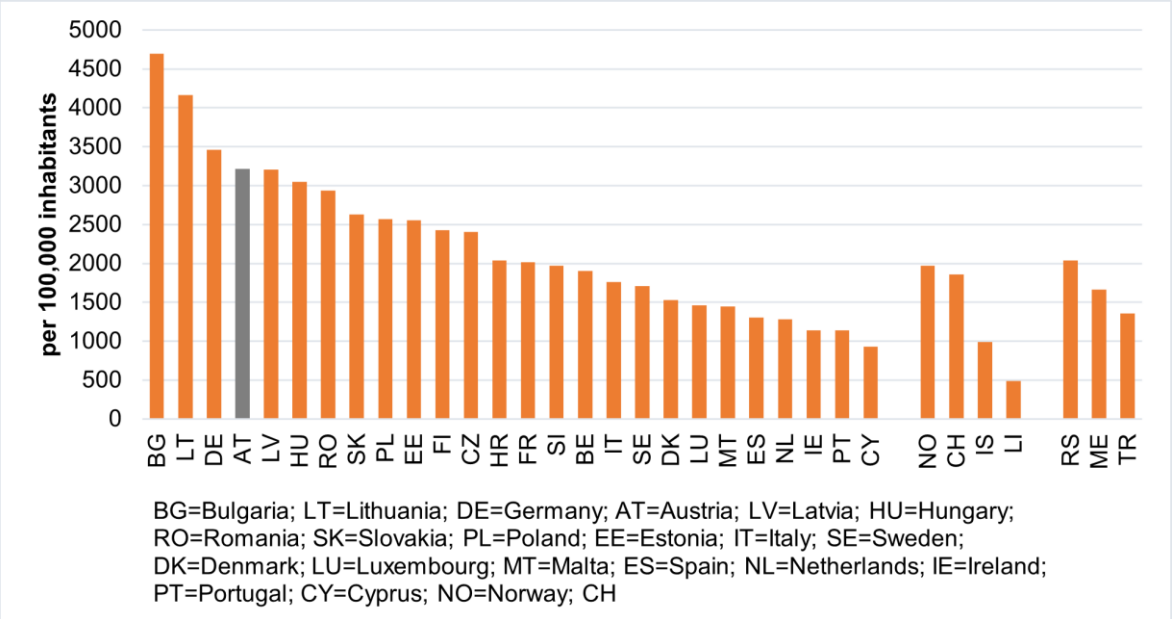
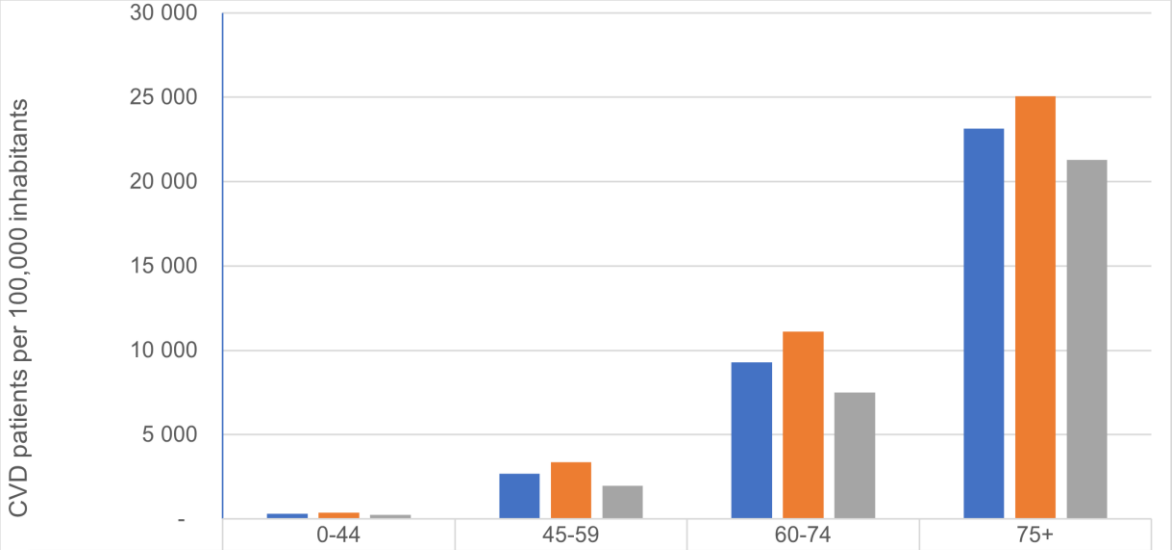


Figure 1: hospital discharge rates for in-patients with diseases of the circulatory system, 2019 (adapted version of eurostat, 2022)

Figure 1 displays the numbers of hospital discharges for in-patients with diseases of the circulatory system which comprise CVDs (ICD codes I00-I99). Data were measured in 2019 except for Germany (DE), Malta (MT) and Finland (FI), whose data correspond to 2018. Furthermore, the data for Denmark (DK), Luxembourg (LU) and Turkey (TR) were measured in 2016. Within the EU member states, Austria (AT) was with a total number of 3,210 per 100,000 inhabitants in the fourth place after Bulgaria (BE), Lithuania (LT) and Germany (DE). The calculated number of patients with CVDs in Austria was approximately 380,000 (Griebler, 2021). This comprised 27 % of all hospitalized patients, which corresponds to a crude rate of 4,286 patients per 100,000 inhabitants and a sex- and age-standardized rate of

around 4,317 patients per 100,000 inhabitants[1] (Griebler, 2021). To give an overview of Austria, these numbers are displayed in *Figure 2*.



	0-44	45-59	60-74	75+
Men and women	319	2 673	9 293	23 155
Men	379	3 360	11 109	25 056
Women	260	1 988	7 489	21 292

Figure 2: Age-standardized rate of CVD patients admitted as in-patients (ICD-10 codes I05 to I79) by age group and gender in 2019 (adapted version of Griebler, 2021)

The age-standardized rate for men was about 1.3 times higher (4,954 patients per 100,000 inhabitants) than for women (3,685 patients per 100,000 inhabitants). As shown in *Figure 2*, elderly people had a higher rate than the younger population in Austria (Griebler, 2021). The analysis of age groups showed a consistently increased number of CVD in-patients with higher age. This comprised around 3,000 patients per 100,000 inhabitants for those aged 45-59 and nearly 23,200 patients per 100,000 inhabitants for those aged 75 and older. Across all age groups, men had a higher hospitalization rate than women, with a particularly large difference between ages of 60 and 75 or older. Nearly half of all CVD in-patients (49 %) were 75 years or older in 2019 and about 18 % younger than 60 years. A comparison of men and women showed that male CVD patients tend to be younger than the female comparison cohort (Griebler, 2021). Generally, the Austrian in-patient rate increases with age, which also reflects the global trend according to *Willis Towers Watson* (WTW, 2021).

[1] standardized population = European population of 2013

1.1.3 Length of hospital stay and readmission

In terms of the length of hospital stay, in-patients stayed in hospitals for a total of 84 million days in 2019 across Europe. Between 9.9 to 11 days per CVD patient were reported in Austria (eurostat, 2022). Compared to 2014, the average length of Austrian hospital stays for diseases of the circulatory system slightly increased from 10.3 days in 2014 to 10.5 days in 2019 (eurostat, 2022). The rehospitalization rate is high for patients who are hospitalized because of heart failure, for example (Lan et al., 2021; Gangu et al., 2022). Frequent readmissions are not only an immense burden on the individual patient, but also affect the economy and the healthcare system (Savarese et al., 2022; Bauersachs et al., 2019). The most common reasons for readmissions are deterioration of heart failure, comorbidity, and complications related to the treatment (Brunner-La Rocca et al., 2020; Annema et al., 2009). So-called *disease management programs* (DMPs) or *cardiac rehabilitation* (CR) have shown a reduction in hospitalization rates and mortality, as well a positive influence on patients' quality of life (Bozkurt et al., 2021). Despite the positive outcomes of CR, cost-effectiveness, and strong practice guideline recommendations, CR remains underused (Bozkurt et al., 2021; Thompson et al., 2022). In Austria, there are already pilot projects (e.g., *HerzMobil Steiermark*) in relation to disease management of chronic heart failure. The focus lies on the monitoring of patients in terms of body weight, blood pressure, but also medication intake, and drinking behavior (Beneder et al., 2010). Resulting from this, a framework was conducted for Austria in May 2022 (Reitter-Pfoertner et al., 2022). Structured and individualized discharge planning increases the health status of chronic patients after hospital discharge and is also associated with cost savings in the health care system (Yu et al., 2006; Gonçalves-Bradley et al., 2022; Shepperd et al., 2013). Multidisciplinary programs such as CR should be tailored to patients' needs and preferences (Thompson et al., 2022).

1.2 CVD risk factors and sociodemographic differences

There are two types of risk factors, which can lead to non-communicable diseases like CVDs: behavioral and biological risk factors. Behavioral risk factors comprise smoking, alcohol abuse, physical inactivity, low consumption of fruits and vegetables, and high intake of salt as well as proceeded foods; biological risk factors, on

the other hand, are physically and biologically measurable. Thus, overweight and obesity, high blood pressure as well as high levels of glucose and cholesterol levels are biological risks factors (WHO, 2020). Factors like unhealthy diets and physical inactivity can lead to hypertension, hyperglycemia, hyperlipidemia, or obesity and are known as metabolic risk factors for CVDs (CDC, 2022). In addition, environmental or occupational factors like air pollution (e.g., heart failure) (Lee et al., 2014) and behavioral risks are risk factors, which cause the most common and serious CVDs (e.g., ischemic heart disease) (Roth et al., 2020). However, a current WHO report ascertained that risk factors vary in relation to gender (WHO, 2020). They found significant higher levels of biological risk factors in men compared to woman among most age groups. In contrast, women in older age groups have significantly higher biological risk factors, whereby men showed still higher rates in younger age groups within these risk factors (WHO, 2020). Moreover, lower educational levels correlate with a higher prevalence of behavioral risks in for men and women, whereas higher educational levels indicated lower prevalence rates (WHO, 2020). People with higher education have been measured more frequently than men and woman in lower educational groups. In relation to lower income and unemployment, a higher prevalence of biological risk factors for all genders was reported, whereby woman were particularly affected (WHO, 2020). In this regard, the *National Center for Chronic Disease Prevention and Health Promotion* has pointed out, that making healthy life choices such as regular physical activity can prevent conditions like hypertension and obesity (CDC, 2022). In order to make such healthy choices, educating patients plays an important role during the hospital stay (Dunn and Conard, 2018).

1.3 Patient education and discharge planning

Successful discharge management is essential to ensure quality of care (Mille and Stier, 2014). Patient education is crucial in terms of discharge planning, and nurses are the primary contact persons for CVD patients (Albert et al., 2015). However, there are several barriers such as lack of time resources, poor knowledge of health care providers, or communication barriers, which might hinder adequate patient education (Boyde et al., 2021). Low health literacy rates of patients are another barrier within educating patients (Margat et al., 2017). Thus, low health literacy leads to disparities, which is challenging for health care systems (Busse and Blümel, 2020;

Dickman et al., 2017). Furthermore, Cajita et al. (2016) have found out that low education went along with lower health literacy in chronic patients. Consequently, cardiac patients have a lower adherence which leads to lower participation rates in CR programs (Ruano-Ravina et al., 2016). One evidence-based strategy is the *teach back method,* which is one evidenced-based way to overcome those barriers in terms of discharge management (Klingbeil and Gibson, 2018; Wittink and Oosterhaven, 2018). Additionally, psychological barriers such as anxiety may hinder learning during hospitalization (Müller-Tasch et al., 2018). Spiritual faith or family support, on the other hand, might facilitate patient participation (Nasrawi et al., 2022). Interventions which support successful patient education and assessing patients' needs can reduce rehospitalizations (Kripalani et al., 2014). As mentioned before, nurses play an important role in patient education (Boyde et al., 2021; Dreyer et al., 2016). To deliver sustainable health education, nurses therefore need to know what information their patients need in terms of hospital discharge (Boyde et al., 2021; Lucas et al., 2015).

1.4 Needs and preferences

Every person has individual desires, but certain needs are applicable for all people. According to a medical dictionary, a *need* is defined as something that is essential or crucial. Fulfilling necessary human needs is crucial to ensure physical as well as psychological health. However, needs differ considerably depending on the level of urgency. Therefore, they can be categorized according to their importance. Needs which arise lower in hierarchy should be fulfilled before other needs on higher levels in the hierarchy (Farlex, 2009). In 1943, *Abraham Maslow* conducted a theory about this hierarchy and created a pyramid which is displayed in *Figure 3*:

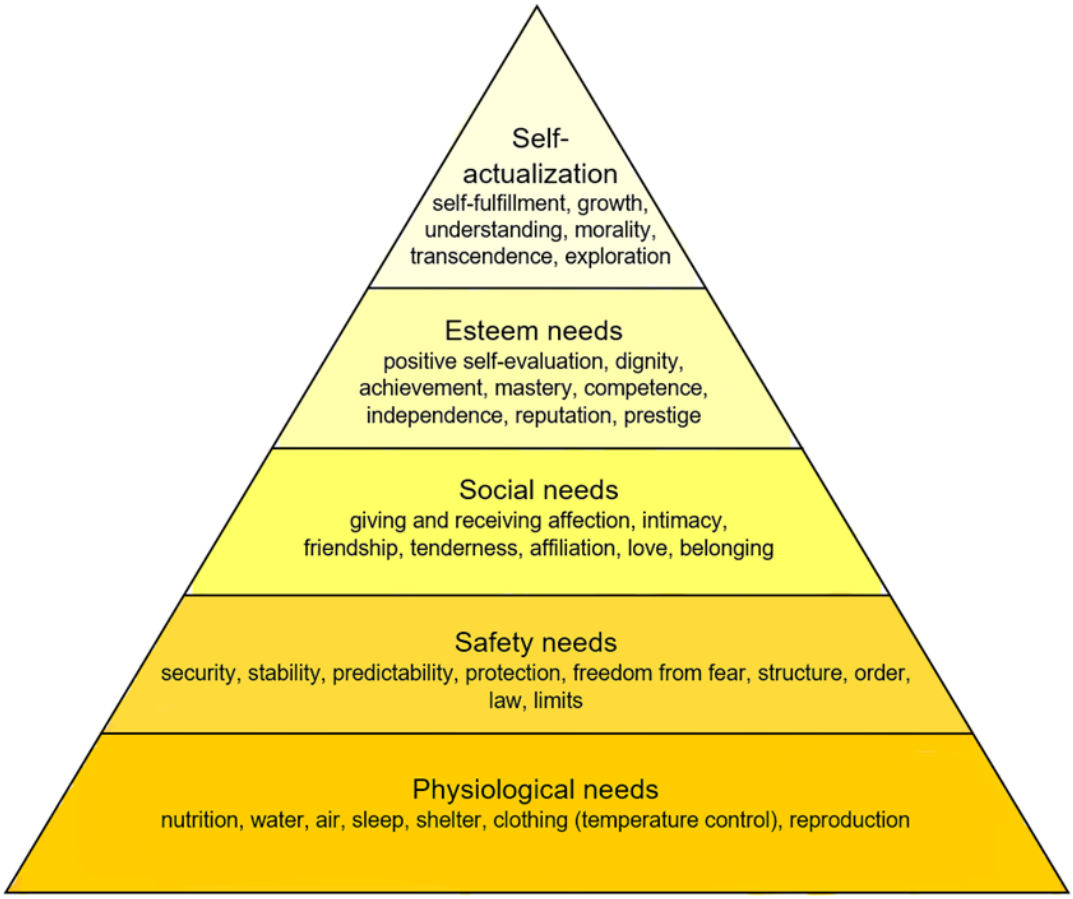


Figure 3: Maslow's pyramid (created by the author, adapted version of Desmet and Fokkinga, 2020, Maslow, 1943)

According to *Maslows' hierarchy of needs* (Maslow, 1943), human beings show *physiological needs*, *needs for safety and security*, *social needs*, *esteem needs* and *self-actualization*. Physiological needs are the basis to fulfill the other needs. They comprise basic needs (e.g., oxygen, nutrition, and sleep). Needs for safety and security include the need for protection from physical harm and control over issues which concern oneself. The need for companionship, receiving and giving love, and affection are social needs. Need for esteem and self-esteem is required for a person to respect and accept oneself. Self-actualization needs are needs to learn, create and understand or comprehend (Maslow, 1943).

However, CVDs diseases are stressful for patients in terms of disabilities, secondary diseases, and loss of quality of life (Vos, 2021; Griebler, 2021). Coping strategies like informing patients about managing their stress might be helpful to prevent cardiovascular events (Roohafza et al., 2022). What patients need and prefer is an essential and can contribute to the improvement of nursing care (Nkhoma et al.,

2022). Information needs or learning needs play a significant role in this regard (Wieldraaijer et al., 2019). Information needs are comprised within information seeking behavior (Sultana, 2016). Research has shown that patients who get more information have a greater health-related quality of life, a reduced amount of fear, and lower levels of depression (Husson et al., 2011; Brown et al., 2016; Nijman et al., 2014). Additionally, *preferences* are defined as choices and decisions. In the medical context, this means to favor one health care option over others (Farlex, 2012).

Nevertheless, assessing individual needs and preferences of patients is essential (Marton et al., 2021). Therefore, Gerard and Peterson (1984) investigated the learning needs of patients with cardiac diseases and developed an inventory which originally assessed the learning needs of cardiac patients following myocardial infarction (Gerard and Peterson, 1984). The so-called *Cardiac Patient Learning Need Inventory* (CPLNI) contains 43 items which are categorized into eight categories: (*1) Introduction to the critical care unit* (CCU)*, (2) Anatomy and Physiology, (3) Psychological Factors, (4) Risk Factors, (5) Medication Information, (6) Diet Information, (7) Physical Activity, and (8) Other Pertinent Information* (Galdeano et al., 2014, p.1533). *I need to know* is the starting phrase of each inventory item and the Likert scale reaches from 1–5 (1 = not important, 2 = somewhat important, 3 = moderately important, 4 = important and 5 = very important). Thus, the higher the score, the greater the learning need (Galdeano et al., 2014). Internal consistency in terms of *Chronbach's alpha* for the total scale ranges from 0.91 (Gerard and Peterson, 1984; Galdeano et al., 2014) to 0.95 (Karlik and Yarcheski, 1987) which is regarded as excellent. Each category ranges from 0.77 to 0.85, and is thus acceptable (Karlik and Yarcheski, 1987).

The aim of CPLNI is to assess individual patient need in order to choose the right information for patient based on individual patient needs (Galdeano et al., 2014). Individuality plays an essential role to put patients in the center of the care process (Nkhoma et al., 2022), which leads to the theoretical framework of this thesis.

1.5 Theoretical framework

The concept of person-centered care (PCC) was first mentioned as patient-centered care in the 1950s and 1960s by Rogers within the psychiatric context (Rogers, 1995;

Rogers, 1961). The psychoanalyst Balint also used the term *person-centered medicine* and contrasted it with *disease-centered* medicine (Balint, 1955). The idea of putting the person itself and not the disease in the center of care was also discussed later from Engel (1977). He separated medical practice from psychosocial needs of patients because he stated that the biomedical disease model does not take certain dimensions into account (e.g., socially, psychologically, and behaviourally) (Engel, 1977). In nursing literature, PCC has been used for more than a half century (Hobbs, 2009) with a focus on patient-specific problems instead of a task-oriented focus (Leino, 1952). Moreover, Florence Nightingale, the founder of modern nursing, represented the focus on the patient rather than on the disease and set this thought in contrast to medicine (Nightingale, 1992). However, within economic changes in healthcare such as growing health organizations and related challenges, the meaning of PCC became unclear (Byrne et al., 2020). Because of this lack of definition, it is difficult to operationalize and integrate PCC in research and clinical nursing practice (Hobbs, 2009). Despite the lack of a universal definition for PCC (Byrne et al., 2020; Sharma et al., 2015), a concept analysis of PCC provides the following definition:

> *PCC is a holistic (bio-psychosocial-spiritual) approach to delivering care that is respectful and individualized, allowing negotiation of care, and offering choice through a therapeutic relationship where persons are empowered to be involved in health decisions at whatever level is desired by that individual who is receiving the care (Morgan and Yoder, 2012, p.8).*

This definition is composed of several components such as holism, respect, individualism, and empowerment. Holistic care aims to understand how the disease affects the entire person and how to respond to the individual needs (Mead and Bower, 2000). Individuality goes along with taking unique needs of the person and their health concerns into consideration in order to provide adapted interventions (McCance, 2003). Moreover, it is about understanding the dimensions of the life of a person such as their culture, habits, and general preferences (Suhonen et al., 2005). PCC also comprises empowering persons to learn and obtain information and to support unique choices. Furthermore, efficient communication as well as negotiation are prerequisites to empower persons to be involved in health care decisions (McCarthy and Freeman, 2008). In terms of efficacy, a current review from

Nkhoma et al. (2022) found out that PCC interventions (e.g., using self-management strategies) can improve self-efficacy, decrease hospitalizations and length of stay. However, with the development of the PCC term, the *Person-centred Nursing* (PCN) framework emerged to emphasise and promote PCC in nursing practice (McCormack and McCance, 2006).

1.5.1 Person-centered nursing (PCN)

As stated, PCC is well-known in nursing and focuses on the individuality of people, respect for their rights, trust and understanding of each other, and encouraging relationships (McCormack and McCance, 2011). The PCN framework includes elements such as staff characteristics, methods of interaction, coordination of care and services, the care environment, and consideration of care outcomes. These examples provide attempts to integrate PCC in individual practice and in the delivery of health care services (Byrne et al., 2020). This core principles of this theory might seem self-evident especially to nurses, but research has shown that implementation is challenging within the daily practice (McCormack and McCance, 2006). The PCN Framework encompasses four constructs: *prerequisites, the care environment, person-centered processes,* and *outcomes*. It was developed to apply person-centered care in nursing practice. McCance et al. (2011) define *prerequisites* as the ideal characteristics of nurses such as competence, interpersonal skills, commitment to the job, clarity of beliefs and values and knowing oneself. The focus of the dimension *the care environment* is how care is delivered. This comprises a combination of appropriate skills, systems which allow shared decision making, efficacious personnel relationships, auxiliary organizational systems, power-sharing, innovation- and risk-taking capability, and the physical environment. The focus of *person-centred processes* is to include patients in terms of their needs and preferences, values, motivation, shared decision making, and providing holistic care. *Outcomes* are the main center of the framework and can be understand as the outcomes of successful PCN (McCance et al., 2011). They incorporate care satisfaction, care involvement, feeling of welfare, and creation of a therapeutic environment. The aim of this PCN framework is to close the theory practice gap in terms of applying PCC on to nursing practice (McCance et al., 2011).

1.6 Research gaps

Non-communicable diseases such as CVDs cause high costs (Murray et al., 2020; WHO, 2021a) and have impacts on hospitalization rates, length of hospital stays and readmission rates (eurostat, 2022). Since the number of in-patients with CVDs is increasing, it is relevant to focus on CVD patients within hospitalization (WTW, 2021; Griebler, 2021). PCC provides support for people with chronic health conditions (Olsson et al., 2013) and improves coordination of care for multimorbid patients (Coulter et al., 2015). Nevertheless, research to date has not yet reviewed patients with chronic CVDs in terms of PCC. Furthermore, the current nursing system is considered to be task-oriented and might not meet the actual needs of patients (Byrne et al., 2020). Little is known about the core components of PCC in nursing care (Sharma et al., 2015; Michie et al., 2003; Olsson et al., 2013; Hobbs, 2009; Byrne et al., 2020). An important facilitator in nursing care is to pay attention to needs and preferences of patients in order to facilitate a good relationship between nurses and patients during hospitalization (Kwame and Petrucka, 2021). Patients should be seen as active partners in the care process, especially in the process of medical decision-making (Tomaselli et al., 2020; Olsson et al., 2013). Although research has been carried out on the effectiveness of PCC, there is still a little scientific understanding of the impacts of PCC (Nkhoma et al., 2022). Nevertheless, health care providers should promote PCC (Sharma et al., 2015) although it is not yet fully defined (Byrne et al., 2020). Therefore, more research on individual needs and preferences of patients with chronic CVDs during their hospital stay is required, which leads to the objective of this thesis.

1.7 Research aim and question

The aim of this present thesis is to identify the needs and preferences of adult patients with chronic CVDs during their hospital stay. This leads to the following research question:

What are the needs and preferences of adult patients with CVDs during hospitalization?

2. Method

The following chapter describes the chosen research design, as well as the data collection which comprises inclusion and exclusion criteria and the search strategy. Furthermore, a description of the selection process and the assessment process of the studies is given. Then, the quality of the selected studies is delineated briefly, and data are extracted and analyzed.

2.1 Design

A scoping review was conducted to answer the research question. This review type was chosen because it shows according to Peters et al. (2020) the extent and the nature of the existing literature on a given topic. Furthermore, scoping reviews answer topic-focused questions beyond the field of the effectiveness of treatments or interventions (Peters et al., 2020). A scoping review aims to determine core components and definitions of a concept (Peters et al., 2020), which is a strong indicator for using this type of review for this thesis topic. Moreover, a scoping review can also be used to refine questions for systematic reviews. In contrast to a systematic review, a scoping review deals with a broader research question and draws on knowledge from different sources and disciplines (Peters et al., 2020; Polit and Beck, 2021).

This present scoping review is based on a manual for carrying out scoping reviews as set out by the *Joanna Briggs Institute* (JBI) (Peters et al., 2020). This manual for evidence-based synthesis describes in detail the process of planning, conducting, and preparation of a scoping review and is therefore ideally suited as an orientation for the methodical approach in this thesis. According to this manual, a scoping review is divided into the following nine steps: (1) defining the research question and objective; (2) developing the inclusion criteria based on objectives and question; (3) definition and description of the planned approach; (4) search for evidence; (5) selection of evidence; (6) data extraction; (7) data analysis; (8) presentation of evidence; (9) summarizing the evidence and noting implications of the findings (Peters et al., 2020). Additionally, a critical appraisal of the studies was performed to reflect the heterogeneity of the included studies (Tricco et al., 2018). Therefore, the JBI appraisal checklists were applied (JBI, 2020b; JBI, 2020a; JBI, 2020c).

2.2 Data collection

In order to find suitable studies, a systematic literature search was performed within the timeframe of 6th of June 2022 until 20th of August 2022 in the medical databases *Public Medical Literature Online* (PubMed), *Cumulative Index to Nursing and Allied Health Literature* (CINAHL), *Institute for Scientific Information Web of Science* and *Cochrane Central Register of Controlled Trials* (CENTRAL) via Ovid. These databases were selected due to their focus on medical topics and nursing. In addition, a hand search was conducted using *Google Scholar* and reference lists to find the largest possible amount of available literature. In *Google Scholar*, the first 150 hits were screened. The reference list screening was performed on those studies which fulfilled the inclusion criteria after the full text screening.

2.3 Inclusion and exclusion criteria

The following inclusion und exclusion criteria are based on the *PCC* (population, concept, context) *mnemonic* (Peters et al., 2020). Only studies which fulfilled the inclusion criteria were selected. The following inclusion and exclusion criteria (*Table 2*) are related to the examined population, concept and context. To ensure a clear definition, these three divisions will be described in detail after *Table 2*.

Table 2: Inclusion and exclusion criteria

PCC mnemonic	**Inclusion**	**Exclusion**
Population	Adult patients ≥18a with chronic CVDs[1]	Patients <18a without chronic CVDs (stroke, myocardial infarction, angina pectoris, heart failure)
Concept	PCC[2]	EoL[3] care, palliative care
Context	• hospital, acute care • needs and preferences in relation to hospitalization • types of sources: primary literature	• LTC[4] facilities, home care, rehabilitation • Not related to hospitalization • types of sources: secondary literature

[1]Chronic cardiovascular diseases: hypertension, ischemic heart diseases, pulmonary heart disease and diseases of the pulmonary circulation, inflammatory diseases of the heart, heart valve diseases (without inflammatory diseases), cardiomyopathies, heart rhythm disorders (Griebler, 2021); [2]Person-centered-care; [3]End-of-life care; [4]Long-time-care facilities.

Population

People of all age groups, regions, and countries are affected by CVDs and were therefore included. If a potential study examined patients with acute events like a stroke or myocardial infarction, the study was excluded to ensure a focus on chronically ill patients. Moreover, if chronic was not clearly defined in an article (e.g., heart failure instead of *chronic* heart failure) it was also excluded.

Concept

The concept of this scoping review is PCC which also represents the theoretical framework of this thesis. Furthermore, it was referred to the PCN framework from McCormack and McCance (2011) to ensure the nursing aspect. Nevertheless, individual needs and preferences of patients are a core concept of PCC (Morgan and Yoder, 2012) and are therefore the outcomes of interest. Examinations of these needs and preferences in terms of *end-of-life* (EoL) and palliative care were excluded because there already exists a comprehensive body of literature within this context (Agustia Nova, 2018; Effendy et al., 2022; Lewington et al., 2012; Nadler et al., 2020). The inclusion of studies focused on EoL and palliative care would have exceeded the frame of this thesis. Furthermore, the concept of PCC is known and has been practiced for a long time in nursing care (Hobbs, 2009). For this reason, no time limit was set.

Context

Studies, which were performed in long-time-care, rehabilitation facilities or in home care settings were excluded to ensure a focus within the hospital setting as mentioned in the research question of this thesis. Studies, which examined needs and preferences during a hospital stay were included. Additionally, studies which assessed needs and preferences after discharge but relate to hospitalization were included. Consequently, all studies whose examination of needs and preferences were not related to hospitalization were excluded. However, to assess preferences and needs, both qualitative and quantitative as well as mixed research methods can be used. Therefore, all types of primary literature sources were included. Secondary literature such as reviews and meta-analyses was excluded.

2.4 Search strategy

The used search strategy comprised *Medical Subject Headings* (MeSH terms) in PubMed and *Major Headings* (MH) in CINAHL in combination with keywords and matching synonyms. MeSH terms or MH are used to index articles and are recommended to identify other keywords (Polit and Beck, 2021). A basic search with just MeSH terms in PubMed was conducted. After screening these results, more keywords and synonyms were derived from other studies and databases. Those keywords and synonyms were added subsequently. However, the identified MeSH Terms and MH were also used as keywords in the final search string in order to identify all recent published articles. All terms were linked with the *Boolean operators* AND, OR and NOT. Truncations were used to include all terms with the same word origin. The truncation '*' was used for this purpose (Polit and Beck, 2021). The following keywords were used in PubMed: *person-centered care, preferences, needs, chronic CVDs* and *hospitalization*. *Patient-centered care, patient preference, health services needs and demand, Chronic disease* and *hospitalization* were used as *MeSH* terms, for instance. The keywords and their synonyms were the same for every database. All keyword(s), their synonyms, MeSH terms and MH can be found in *Table 3,* which also shows how they are linked with the Boolean operators. The complete search strategy can be found in the appendix.

Table 3: keywords, synonyms and Mesh-terms linked with Boolean operators

Keyword(s)	**Synonym(s)**	**MeSH-term and MH**
needs, preferences	health needs **OR** health care needs **OR** nursing care needs **OR** demands **OR** patient demands **OR** requirements **OR** patient requirements **OR** wishes **OR** patient wishes **OR** person wishes **OR** psychosocial needs **OR** individual needs **OR** biopsychosocial needs **OR** social needs **OR** patient needs **OR** desires	Health Services Needs and Demand **OR** Patient Preference
AND		
Chronic CVDs	chronic cardiovascular diseas* **OR** chronic heart diseas* **OR** chronic ischemic heart disease **OR** chronic cardiopulmonary disease **OR** chronic endocarditis **OR** chronic rheumatic endocarditis **OR** chronic rheumatic valvulitis **OR** chronic mediastinopericarditis **OR** heart rhythm disorder* **OR**	cardiovascular diseases **OR** pulmonary heart disease **OR** heart valve diseases **OR**

	chronic heart failure* **OR** chronic pericarditis **OR** chronic aortic aneurysm **OR** chronic hypertension **OR** chronic cardiomyopath* **OR** chronic atherosclerosis **OR** coronary artery disease* **OR** coronary heart disease* **OR** pulmonary heart disease* **OR** heart valve disease* **OR** coronary disease **OR** heart disease* **OR** congenital heart defect*	coronary disease **OR** heart failure **OR** heart diseases **OR** heart defects, congenital
AND		
hospitalization	Hospitalization **OR** hospital **OR** hospitalizing **OR** hospitality **OR** hospitalized **OR** hospitalizing **OR** inpatient **OR** hospitalization	Hospitalization
NOT		
end of life	Palliative care **OR** hospice **OR** palliative care nursing **OR** terminal care **OR** end of life	Palliative Care **OR** Hospice and Palliative Care Nursing **OR** Terminal Care

2.5 Selection of studies

After applying this search strategy, a total of 5,978 studies were identified in the databases. Subsequently, those studies were exported to the literature management program *EndNote X20*. The following exclusion of duplicates (n=497) reduced the number of studies as illustrated in *Figure 4.* All studies were screened according to the above-mentioned inclusion and exclusion criteria (*Table 2*). Subsequent title and abstract screenings of 61 studies led to 19 studies, which were eligible for full text screening. Full texts were downloaded through open access or retrieved from the library of the *Medical University of Graz*. Six additional studies were included within screening through the reference lists of those 19 studies. This resulted in a total of 25 studies, which were eligible for this scoping review and critically appraised using specific assessment tools (JBI, 2020a; JBI, 2020c; JBI, 2020b). P levels less than 0.05 were considered to be significant. The procedure and the results of the quality assessments will be described in detail in the next subchapter. Subsequently, the detailed literature selection procedure using the *Preferred Reporting Items for Systematic Reviews and Meta-Analyses* (PRISMA) statement according to Moher et al. (2009) is delineated.

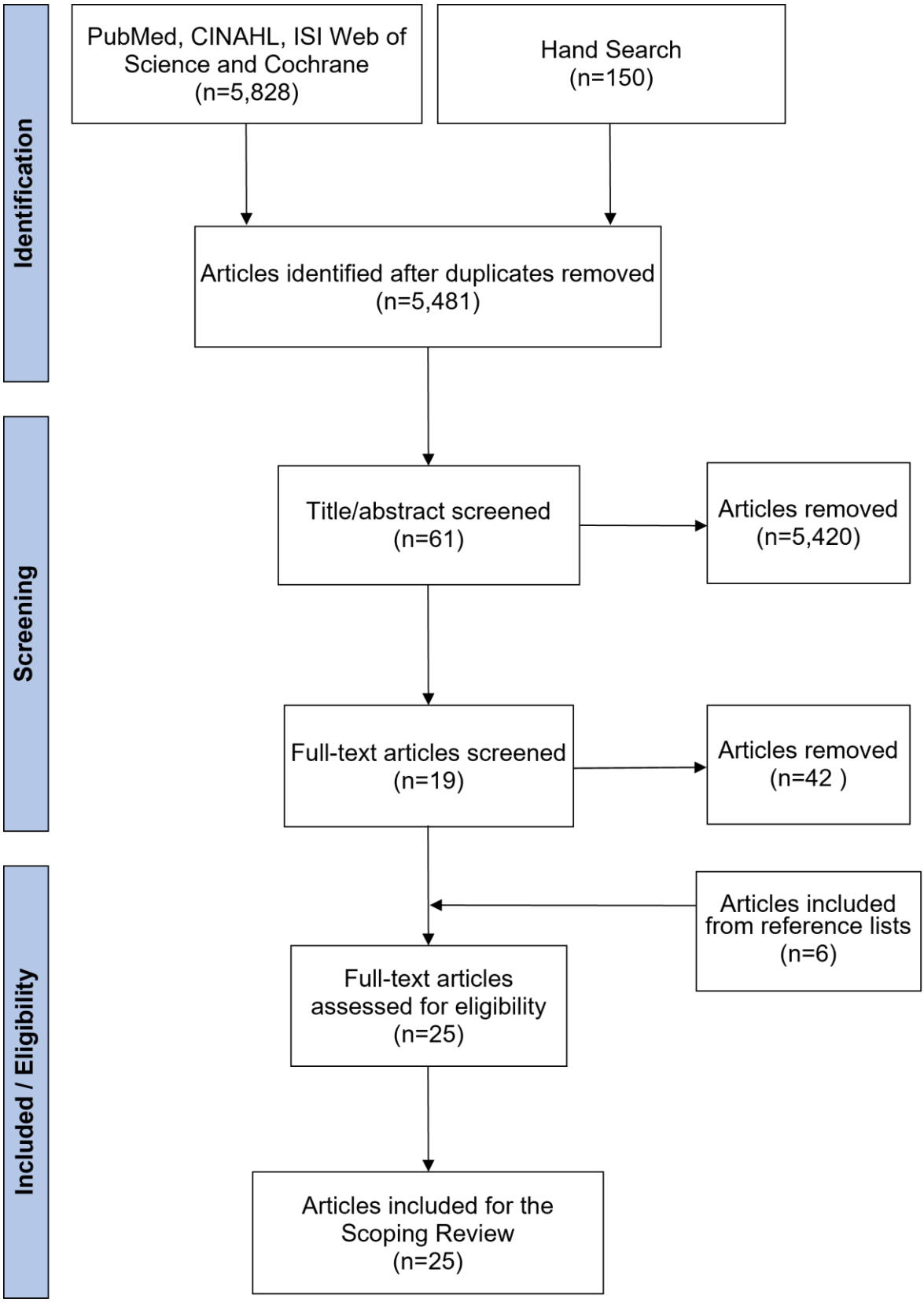


Figure 4: Flowchart (Moher et al., 2009)

2.6 Study quality assessment

To assess trustworthiness, relevance, and results of the 25 included studies, critical appraisal tools were used (JBI, 2020b; JBI, 2020a; JBI, 2020c). The subordinate aim of this evaluation was to identify the methodological quality of the studies. This quality assessment evaluates the extent to which the potential for bias in the study design, implementation, and the analysis were considered (Munn et al., 2015). The assessment was conducted with checklists from the JBI for the following study designs: analytical cross-sectional studies (JBI, 2020a), qualitative studies (JBI, 2020b), and quasi-experimental studies (JBI, 2020c). Those JBI assessment instruments tools consist of eight to eleven different questions, which can be answered with *yes*, *no*, *unsure* or *not applicable*. Furthermore, each instrument contains a detailed description of every question, which can be consulted in case of ambiguities. The questions of each instrument as well as the answers can be found in the appendix (*Table 7*, *8* and *9*). The quality and related characteristics of studies for each design are described in the next subchapter.

2.7 Quality of studies

This chapter provides an overview of the methodological quality of the included studies. Quantitative as well as qualitative designs were identified. Two mixed study designs were additionally included (Burney et al., 2002; Carroll and Gonzalez, 2009). Only quantitative data was extracted of those mixed-method studies because this part was considered as relevant by the author to answer the research question. Consequently, only the quantitative part was appraised. As recommended for scoping reviews, no studies were excluded due to poor quality (Peters et al., 2020). The appendix contains a detailed account of the conducted quality assessments.

Cross-sectional studies

Most of the included studies (n = 20) used a cross-sectional design to identify needs and preferences of hospitalized patients with chronic CVDs. They were evaluated using various *Likert* scales. Often an additional ranking was also carried out, where patients were asked to assess the importance of these needs. Furthermore, the sense of this importance was appraised, thus, how realistic patients judge it to learn learning contents in the context of their hospital stay. The inclusion criteria were

clearly stated in almost all quantitative studies except for Arora and McHorney (2000). While the study subjects were described in three studies, a clear description of the setting was missing in four studies (Rodriguez et al., 2008; Frattini et al., 1998; Arora and McHorney, 2000; Sampson and Doran, 1998). It was unclear, whether the exposure was measured in a valid and reliable way because the exposure as such in the cross-sectional studies was not identifiable. However, the measurement of the condition was comprehensible in every study because a clear definition and/or specific diagnosis was stated. Five studies identified confounding factors and stated confounding strategies (Polikandrioti, 2021; Rodriguez et al., 2008; Asadi-Lari et al., 2005; Chan et al., 2003; You et al., 2014). In three studies confounding factors were identified but no strategy was considered (Ashour et al., 2020; Higgins et al., 2005; Alkubati et al., 2013). In the rest of the studies (n = 11), neither confounding factors nor confounding strategies were stated or were unclear. Moreover, the validity and reliability of measurement of outcomes was unclear in five studies (Higgins et al., 2005; Kumar and Rai, 2018; Chan et al., 2003; Frattini et al., 1998; Arora and McHorney, 2000). Appropriate statistical analysis was not clearly stated in three of 20 cross-sectional studies (Burney et al., 2002; Hagenhoff et al., 1994; Kumar and Rai, 2018).

Qualitative studies

Three qualitative studies were included in this scoping review. The philosophical perspective or methodological approach were not clearly stated in none of the studies (Blair et al., 2014; Ghazavi et al., 2022; Shih and Shih, 1999). Similarly, the researchers' cultural or theoretical position and their potential influence on the study was not clarified. Furthermore, the study of Blair et al. (2014) did not clearly specify an ethical approval. Therefore, this category was considered as unclear.

Quasi-experimental studies

Two of the included studies had a pre-test/post-test design but used neither a randomised sample nor a comparative group. Therefore, the JBI checklist for quasi-experimental studies was applied. The interventions of interest were surgeries and the participants in pre- and post-comparisons. Krannich et al. (2009) did not conduct multiple measurements in contrast to Galloway et al. (1995). Since the two quasi-experimental studies were pre-test/post-test designs, the question of the control

group was not applicable. An incomplete follow-up was only mentioned in Galloway et al. (1995). They provided drop-out reasons but no further analysis (Galloway et al., 1995). No follow-up nor drop-out information was given in Krannich et al. (2009). Furthermore, it was unclear if outcomes (thus, patients' needs) were measured in a reliable way because no information about the questionnaire within the process of development was given (Krannich et al. 2009).

2.8 Data extraction and analysis

The extraction of data was performed according to the *Manual for Evidence Syntheses* of the JBI (Peters et al., 2020). All relevant data for the objective and the research question of this work were extracted. For this purpose, the recommended tabular presentation was chosen. The study contents were *authors (year), study design, objectives, participants, setting, data collection*, and *main results*. This summary is presented at the beginning of the results section (*Table 4*). The extracted results are presented narratively and can be seen as part of the data analysis. Moreover, a classification of the main results into main conceptual categories recommended by the JBI was carried out (Peters et al., 2020).

3. Results

This chapter presents the results which are derived from the results of the reviewed studies. At the beginning, a brief description of the study characteristics is given followed by a table outline presented in *Table 4*. Furthermore, a narrative presentation of the results which were categorized in general patient needs (e.g., medication information) and patient needs regarding an intervention (e.g., information about preparation before an intervention) as well as preferences (e.g., educator preferences) are described. Additionally, significant differences between nurses and patients are outlined.

3.1 Study characteristics

The 25 included studies were conducted in 15 different countries during the period from 1987 to 2022. The research has been carried out primarily in the general hospital setting (Ashour et al., 2020; Chan et al., 2003; Ghazavi et al., 2022; Hagenhoff et al., 1994; Higgins et al., 2005; Kumar and Rai, 2018; Mosleh et al., 2017; Polikandrioti, 2021; Shih and Shih, 1999; You et al., 2014). Five studies clearly defined the specific department or ward (Asadi-Lari et al., 2005; Blair et al., 2014; Burney et al., 2002; Carroll and Gonzalez, 2009; Kilonzo and O'Connell, 2011). Moreover, five studies examined participants in the hospital as well as outpatients or patients after discharge (Duggan and Bates, 2008; Burney et al., 2002; Galloway et al., 1995; Higgins et al., 2005; Karlik and Yarcheski, 1987). The assessed results of those five studies were thereby related to hospitalization. The study participants included had at least one chronic CVD such as hypertension, *coronary artery disease* (CAD), chronic ischemic heart disease, chronic *atrial fibrillation* (AF), or *congestive heart failure* (CHF). Ten studies examined needs and preferences related to an intervention. Four surgical interventions were identified, which are indicated in *3.3*. Furthermore, there was a wide range of study participants. The smallest sample was identified in a qualitative examination with 17 hospitalized cardiovascular patients (Ghazavi et al., 2022), the biggest sample with 2,197 participants was demonstrated by the quantitative study by Arora and McHorney (2000) which was part of a medical outcome study (Tarlov et al., 1989). The essential characteristics are depicted in the following *Table 4*.

Table 4: study characteristics

Author(s) (year)	Aim(s)	Patients (n=number)	Setting (country)	Design	Data collection, instrument(s)	Main results
Alkubati et al. (2013)	Exploration of information needs before hospital discharge and examination of differences according to age, gender, level of education and working condition	Patients undergone CABG (n=120)	Open Heart Center (Yemen)	Quantitative, descriptive correlational	24-48h before hospital discharge, pilot study Instrument: modified version of CPLNI[2]	<u>Patient needs regarding an intervention</u> Learning needs <u>Significant sociodemographic differences:</u> gender, age, educational level, working condition
Arora and McHorney (2000)	Identification of determinants of patients' preferences for participation in medical decision-making	Patients with chronic diseases (n=2,197): hypertension 73.3%, heart disease 11,4%	Different hospitals (US[3])	Quantitative, cross-sectional	Survey, preferences were collected by Medical Outcomes Study staff with the statement *I prefer to leave decisions about my medical care up to my doctor*	<u>Preferences</u> Preferences for medical decision-making <u>Significant sociodemographic differences:</u> age, education
Asadi-Lari et al. (2005)	To assess the healthcare needs, information needs, medical concerns, and concerns about health care	Patients with ischemic heart disease (n=242)	Coronary care unit (UK[4])	Quantitative, cross-sectional	Developed questionnaire with 46 questions Instruments: *Seattle Angina Questionnaire*, *Short Form-12, EuroQol-5D*	<u>General patient needs</u> Information needs, Other needs <u>Preferences</u> Preferred source of information and format of education

[2]Cardiac Patient Learning Need Inventory
[3] United States
[4] United Kingdom

Author(s) (year)	Aim(s)	Patients (n=number)	Setting (country)	Design	Data collection, instrument(s)	Main results
Ashour et al. (2020)	Assessment of patients' illness perception (IP) and examination of its influence on perceived learning needs post PCI[5]	Patients undergone PCI (n=208)	Two referral hospitals, cardiac units (Jordan)	Quantitative, cross-sectional study	Structured interview method 24h before discharge Instruments: *Brief Illness Perception Questionnaire*, *PCI Learning Needs Scale*	<u>Patient needs regarding an intervention</u> Learning needs
Blair et al. (2014)	Exploration of challenges, needs and personal experiences of cardiac patients and their informal caregivers	Patients with CVD (n=20) and informal caregivers (n=18)	private CUMC/NewYork-Presbyterian Hospital (US)	Qualitative	In-depth, structured interviews (9 patients, 9 caregivers) and focus groups (11 patients, 9 caregivers)	<u>General patient needs</u> Information needs, Other needs <u>Preferences</u> Preferred source of information and format of education, Educator preferences
Burney et al. (2002)	Assessment of satisfaction with discharge preparation, perception of importance of discharge preparation and if nurses attend to the same discharge planning needs as those identified by patients	Cardiology patients (n=161)	Cardiology step-down unit (Canada)	Mixed-method[6], cross-sectional	Questionnaire via mail one week after discharge[7] Instrument: *Modified Information System To Evaluate the Quality of Care and the Users' Satisfaction*	<u>General patient needs</u> Information needs

[5] Percutaneous coronary intervention
[6] only quantitative part was extracted
[7] assessed needs were related to hospitalization

Author(s) (year)	Aim(s)	Patients (n=number)	Setting (country)	Design	Data collection, instrument(s)	Main results
Carroll and Gonzalez (2009)	Comparison of differences in patients' preferences for visitors during hospitalization to cardiac intensive care unit patients	CVD patients (n=124)	Cardiac intensive care unit and cardiac step-down units (US)	Mixed method[5], descriptive exploratory	Open-ended questions, answers were recorded on the questionnaire by a researcher Instrument: *Visits in the Hospital questionnaire* + asking about further comments (qualitative)[8]	<u>Preferences</u> Visiting preferences
Chan et al. (2003)	Modification of the CHFPLNI[6] and examination of learning needs	Patients with CHF (n=39) + nurses (n=34)	General hospital (Canada)	Quantitative, cross-sectional	Patients' and nurses' ranking of perceived importance of eight categories regarding CHF knowledge Instrument: modified version of the CHFPLNI[9]	<u>General patient needs</u> Learning needs <u>Significant differences between nurses and patients</u>
Duggan and Bates (2008)	Identification of information needs of patients using validated measures and exploration of differences in information needs between different disease groups	Patients with CVDs (n=574)	Hospital (UK)	Quantitative, cross-sectional	Semi-structured interviews during hospital stay or with outpatients[10] Instrument: *Extent on Information Desired scale*,	<u>General patient needs</u> Information needs <u>Significant sociodemographic differences:</u> age, socioeconomic status

[8] only quantitative part was extracted
[9] *Congestive Heart Failure Patient Learning Need Inventory*
[10] assessed needs were related to hospitalization

Author(s) (year)	Aim(s)	Patients (n=number)	Setting (country)	Design	Data collection, instrument(s)	Main results
Frattini et al. (1998)	Comparison of perceived learning needs by patients and nurses and identification of existing gaps between their perceptions	Patients with CHF (n=50) and cardiac nurses (n=47)	Hospital (Canada)	Quantitative, cross-sectional	Self-completed questionnaire prior to discharge, nurses received the needs assessment via mail Instrument: modified version of the CHFPLNI	General patient needs Learning needs Significant differences between nurses and patients
Galloway et al. (1995)	Description of system distress, anxiety, depression, and discharge information needs after peripheral arterial bypass surgery	Patients undergone peripheral arterial bypass (n=32)	Community or large urban teaching hospital (Canada)	Quantitative, descriptive correlational, pre-test/post-test	Interviews before and after hospital discharge, 1-13 days after operation (pre-discharge) and 14-15 days after discharge[11] Instrument: *Patient Learning Visual Analog Scales*, *Patient Learning Need Scale*	Patient needs regarding an intervention Information needs
Gao et al. (2009)	Exploration of health care needs of patients after a coronary artery bypass graft (CABG) and identification of influential factors related to those needs	CABG patients (n=103)	Cardiovascular surgery outpatient department[3] (Taiwan)	Quantitative, descriptive correlational	Pilot phase, subsequent application of inventories regarding hospitalization Instrument: *Symptom Distress Inventory*, *Health Care Needs Inventory*	Patient needs regarding an intervention Learning needs, Other needs Significant sociodemographic differences: gender

[11] assessed needs were related to hospitalization

Author(s) (year)	Aim(s)	Patients (n=number)	Setting (country)	Design	Data collection, instrument(s)	Main results
Ghazavi et al. (2022)	Examination of COVID-19 information needs and information-seeking behaviors	CVD patients (n=17)	Shahid Chamran Hospital of Isfahan (Iran)	Qualitative	Semi-structured interviews	<u>General patient needs</u> Information needs <u>Preferences</u> Preferred source of information and format of education
Hagenhoff et al. (1994)	Examination of perceptions regarding the importance and realism of typical education content	Patients with CHF (n=30) and nurses (n=26),	Telemetry unit (Columbia)	Quantitative, cross sectional	Assessment of importance regarding learning needs and how realistic it is for patients to learn, nurses and patients were interviewed Instrument: CHFPLNI	<u>General patient needs</u> Learning needs <u>Significant differences between nurses and patients</u>
Higgins et al. (2005)	Investigation of patients' preferences regarding information provision about both heart disease and lifestyle change and identification of patient characteristics associated with specific preferences	Patients after PCI (n=218)	Three metropolitan hospitals (Australia)	Quantitative, cross-sectional	Structured telephone interviews, shortly after discharge (11±6 days)[12], recorded on a five-point Likert response scale	<u>Patient needs regarding an intervention</u> Information needs <u>Preferences</u> Preferred source of information and format of education

[12] assessed needs were related to hospitalization

Author(s) (year)	Aim(s)	Patients (n=number)	Setting (country)	Design	Data collection, instrument(s)	Main results
Karlik and Yarcheski (1987)	Replication in part the study concerning learning needs and identification of a possible source of practicing nurses' beliefs regarding the learning needs of these patients	Patients with cardiac diseases (n=30) + nurses (n=30)	CCU (US)	Quantitative, cross-sectional	Assessment during hospitalization + ambulatory visit or via telephone[13] Instrument: CPLNI*, The Educator Preference Tool*	<u>General patient needs</u> Information needs, Learning needs <u>Preferences</u> Educator preference
Kilonzo and O'Connell (2011)	Evaluation of learning needs post PCI from the perspective of patients and cardiac nurses	patients with CAD (n=33) + nurses (n=13)	CCU (Ireland)	Quantitative, cross-sectional	Patients and nurses were asked to score importance and adequacy regarding learning needs Instrument: modified *Nursing Information and Support Scale*	<u>Patient needs regarding an intervention</u> Information needs <u>Significant difference between nurses and patients</u>
Krannich et al. (2009)	Exploration of patients' needs and changes to these needs during hospitalization for coronary artery bypass graft (CABG) surgery	Patients undergone CABG (n=70)	Department of cardiothoracic surgery (Germany)	Quantitative, pre-test/post-test	Assessment two days before and ten days after CABG surgery Instrument: Self-developed 15-item questionnaire	<u>Patient needs regarding an intervention</u> Information needs

[13] the assessed needs were related to hospitalization

Author(s) (year)	Aim(s)	Patients (n=number)	Setting (country)	Design	Data collection, instrument(s)	Main results
Kumar and Rai (2018)	Assessment of oral health status and treatment needs and consideration of the association between oral health and heart disease	Patients with CVD or another systemic illness undergone CVD surgery (n=106)	Public hospital (India)	Quantitative, cross-sectional	Interviews Instrument: self-developed structured questionnaire	Patient needs regarding an intervention Other needs
Mosleh et al. (2017)	Identification of significant differences in perceived learning needs between cardiac patients and their nurses	Patients undergone coronary interventions (n=365) + nurses (n=166)	Three major hospitals (Jordan)	Quantitative, descriptive comparative study	Interviews by research assistants who provided self-report questionnaires + verbal information Instrument: Arabic version of *Patient Learning Needs Scale*	Patient needs regarding an intervention Learning needs Significant differences between nurses and patients
Polikandrioti (2021)	Exploration of significance of needs and the associated factors as well as the impact of anxiety and depression on these needs	Patients with permanent AF (n=215)	Hospital (Greece)	Quantitative, cross-sectional	Questionnaire interviews Instrument: Developed questionnaire which included the *Hospital Anxiety and Depression Scale* and *Needs of hospitalized patients with coronary artery disease* scale	General patient needs Other needs

Author(s) (year)	Aim(s)	Patients (n=number)	Setting (country)	Design	Data collection, instrument(s)	Main results
Rodriguez et al. (2008)	Assessment of patients' preferred role and perceived level of involvement in medical decision-making and testing the effects of patients' age and role preference on perceived involvement in medical decision-making	Patients with CHF (n=90)	Pittsburgh Healthcare System clinic (US)	Quantitative, cross-sectional	Telephone survey, perceptions during the most recent clinic visit Instruments: *Control Preference Scale*, *Perceived Involvement in Care Scale*	<u>Preferences</u> Preferences for medical decision-making <u>Significant sociodemographic difference</u>: age
Sampson and Doran (1998)	Identification of health needs at time of discharge	Patients with CAD (n=26)	Teaching medical center (US)	Quantitative, descriptive	Data collection by nurse care manager and associates Instrument: *Problem Rating Scale for Outcomes of the Omaha System*	<u>General patient needs</u> Information needs Other needs
Shih and Shih (1999)	Exploration of health needs of patients during their hospitalization	Male patients with heart disease (n=18),	Hospital (China)	Qualitative	Semi-structured interviews	<u>General patient needs</u> Learning needs, Other needs
You et al. (2014)	Determination of learning needs for elective PCI in order to design nurse-led education programs	Patients undergone PCI (n=395)	Tertiary referral hospital (China)	Quantitative, cross-sectional	Ward nurses distributed the questionnaires Instrument: *PCI Learning Need Inventory*	<u>Patient needs regarding an intervention</u> Learning needs <u>Preferences</u> Preferred source of information and format of education, Educator preference

3.2 General patient needs

All studies which examined general patient needs (n=15) are first divided into information, learning, and other needs. Other needs comprise needs regarding social, physiological, and psychosocial needs.

3.2.1 Information needs

There were five studies identified with different needs of information (Duggan and Bates, 2008; Asadi-Lari et al., 2005; Shih and Shih, 1999; Sampson and Doran, 1998; Blair et al., 2014; Burney et al., 2002). According to Duggan and Bates (2008) chronic CVD patients did not need as much medical information as patients with other diseases, whereby the older a person was, the less information they wanted to receive. Further, a higher socioeconomic status went along with a higher desire for medication information ($p < 0.001$) (Duggan and Bates, 2008). Asadi-Lari et al. (2005) reported that information about daily activities was needed by patients. In particular, patients specifically wanted to know which activities should be avoided or might be harmful to their main illness. Information about diagnosis and the disease was relevant for patients during hospitalization (Shih and Shih, 1999; Asadi-Lari et al., 2005). Besides the information about CVDs, information needs about COVID-19 were indicated by patients (Ghazavi et al., 2022). In particular, information about the symptoms of COVID-19 was needed. This qualitative examination (n=17) of Ghazavi et al. (2022) found that it was important for patients to know about the characteristics of the virus as well as about the prevention of COVID-19. Moreover, the following information needs prior to discharge were rated as very important by patients: (1) releasement of chest pain or shortness of breath, (2) resumption of physical activities, (3) management of stress, (4) signs and symptoms to monitor at home, (5) acting in the event of reappearance of symptoms, and (6) what to do or who to contact in the case of emergency (Burney et al., 2002). In terms of discharge information, another study found that patients received minimal knowledge about substance use, nutrition, physical activity, pain and human sexuality (Sampson and Doran, 1998). However, within educational programs, topics about diet and physical activity were prioritized by CVD patients (Blair et al., 2014).

3.2.2 Learning needs

Learning needs of patients with chronic CVDs were assessed by five studies (Hagenhoff et al., 1994; Frattini et al., 1998; Chan et al., 2003; Shih and Shih, 1999; Karlik and Yarcheski, 1987). Three used a modified version of the *Congestive Heart Failure Patient Learning Need Inventory* (CHFPLNI) to measure learning needs of CHF patients. They collected data on nearly the same categories. However, Hagenhoff et al. (1994) and Frattini et al. (1998) examined the category *other* instead of the category *treatment*, which was measured in Chan et al. (2003). The category *other* comprised for example taking pulse or *when to call a doctor* (Hagenhoff et al., 1994, p. 689). Patients' rankings (1=very important; 7=least important) of the categories differed between the three studies as shown in *Table 5*.

Table 5: patients' ratings of learning categories

Ranking	**Chan et al. (2003) (n=39*)**	**Frattini et al. (1998) (n=50*)**	**Hagenhoff et al. (1994) (n=30*)**
1	Treatment	Medication	Medication
2	Medication	Risk factors	Anatomy and Physiology
3	Anatomy and Physiology	Anatomy and Physiology	Risk factors
4	Diet	Psychological	Other
5	Activity	Other	Diet
6	Risk factors	Activity	Psychological
7	Psychological	Diet	Activity

*examined patients with congestive heart failure (CHF)

As displayed in *Table 5*, learning about medication was deemed as very important (Frattini et al., 1998; Hagenhoff et al., 1994) or at least second most important by CHF patients (Chan et al., 2003). Moreover, a significant difference between the single learning categories was reported by Chan et al. (2003): higher ratings on medication and cardiovascular anatomy and physiology were observed compared to the categories psychological and risk factor ($p<0.002$) (Chan et al., 2003, p. 415). The category psychological was measured significantly lower than treatment plan, diet, and information on activity ($p<0.05$) (Chan et al., 2003).

In addition to those three studies, Karlik and Yarcheski (1987) used the CPLNI tool to measure learning needs. This study recruited cardiac patients during hospitalization at CCU as well as outpatients at their visit to the ambulatory clinic or were contacted by telephone. These assessed learning needs were related to hospitalization for both patient groups. All patients rated information about risk factors as very important. CCU patients rated information about anatomy and physiology as second most important, while medication information was very important for outpatients within the hospital stay (Karlik and Yarcheski, 1987). Moreover, one learning need of patients was to learn selfcare strategies during hospitalization (Shih and Shih, 1999).

3.2.3 Other needs

Five studies examined needs, which were not perceived as information or learning needs (Shih and Shih, 1999; Polikandrioti, 2021; Asadi-Lari et al., 2005; Gao et al., 2009; Sampson and Doran, 1998). Those needs were related to psychological and spiritual support (e.g., companionship providing and listening to religious music). These supporting needs were reported as met during hospitalization (Shih and Shih, 1999). In addition, Shih and Shih (1999) ascertained needs which were unmet according to patients during hospitalization. Unmet needs comprised the participation in medical decision-making and receiving information from health care providers (Shih and Shih, 1999). According to Polikandrioti (2021), patients who are little or not at all informed about their disease, required more support and guidance. Additionally, those patients expressed the need of trust in medical and nursing staff and the need to communicate more with other patients and family (Polikandrioti, 2021). In terms of communication, women showed a higher need for communication with other patients and family than men ($p=0.028$) (Polikandrioti, 2021). A higher need for individualized care was reported by elderly patients (>70a) and by those who are childless ($p<0.05$) (Polikandrioti, 2021). Besides those needs, physical needs were additionally examined by three studies (Asadi-Lari et al., 2005; Gao et al., 2009; Sampson and Doran, 1998).

3.3 Patient needs regarding an intervention

Subsequently, needs in terms of surgical interventions are presented. Ten studies examined patient needs regarding an intervention (Alkubati et al., 2013; Ashour et

al., 2020; Galloway et al., 1995; Gao et al., 2009; Higgins et al., 2005; Krannich et al., 2009; Kumar and Rai, 2018; You et al., 2014; Mosleh et al., 2017; Kilonzo and O'Connell, 2011). The following interventions have been extracted: *Percutaneous coronary intervention* (PCI*), coronary artery bypass grafting* (CABG), *cardiovascular surgery* (CVS) and *peripheral arterial bypass* (PAB). Like in the previous section (*3.2*), the needs are divided into information and learning needs as well as other needs.

3.3.1 Information needs

Four studies assessed information needs (Krannich et al., 2009; Kilonzo and O'Connell, 2011; Higgins et al., 2005; Galloway et al., 1995). Information about preparation before an intervention was considered on average as helpful by patients during hospitalization (Krannich et al., 2009). Other topics that were of importance regarding information needs for patients were the intervention itself and problems after the intervention (Kilonzo and O'Connell, 2011). After undergone PCI, patients wanted to be informed about heart diseases (Higgins et al., 2005). Furthermore, these patients pointed out a desire to changing their lifestyle (Higgins et al., 2005). Information about smoking after PCI was considered as most important by patients with CAD (Kilonzo and O'Connell, 2011). Furthermore, Krannich et al. (2009) observed a significant difference for two categories before and after the CABG: On the one hand, the information need about the correct handling of drugs was higher after the CABG when compared to before the CABG ($p=0.0009$). On the other hand, receiving a letter with the latest scientific information on heart disease was significantly lower after the surgery when compared to before the surgery ($p=0.04$) (Krannich et al., 2009). Galloway et al. (1995) measured information needs before and after discharge ($n=32$). Discharge needs were related to hospitalization. Information about treatment and complications were considered in both measurements as most important. In the second place was skin care (e.g., incision care) (Galloway et al., 1995).

3.3.2 Learning needs

Learning needs in were reported before discharge by four studies (Gao et al., 2009; Mosleh et al., 2017; Alkubati et al., 2013; You et al., 2014; Ashour et al., 2020). Post-procedural PCI knowledge, followed by pre-procedural knowledge and post-

discharge PCI knowledge were considered as most important learning needs (n=103) (Gao et al., 2009). Learning about wound care as well as medication were identified as most important followed by complications, risk-factor management, and diet (Mosleh et al., 2017). Learning about physical activity rated as least important by patients (n=365) (Mosleh et al., 2017). The five highest scores (1=highest; 5=lowest) for learning needs for patients who had a CABG were (1) understanding of heart rehabilitation exercise method, (2) understanding about wound pain relief, (3) understanding of operation wound, (4) management of other physical discomfort, and (5) restoring quality of life (Ashour et al., 2020). You et al. (2014) concluded that four learning need categories were ranked by patients who had a PCI as most important (n=395). General knowledge of CHD (self-rescue on heart attack) and PCI knowledge after PCI (efficiency of PCI, post-procedural medication guide) {You, 2014 #19183}. Moreover, significant differences were calculated in terms of gender, age, educational level and working status by Alkubati et al. (2013) ($p<0.05$, n=120). Men needed significantly more learning information than women. Younger and middle-aged patients needed more information than elderly patients. Patients with education needed more information than those in the group, which had no education. Working patients wanted more information than non-working ones (Alkubati et al., 2013).

3.3.3 Other needs

Other needs like dental treatment (Kumar and Rai, 2018) as well as physiological and psychosocial needs were mentioned (Gao et al., 2009). Significant differences were reported between gender and physiological needs ($p<0.05$). Female patients had a greater need than men who had a CABG (Gao et al., 2009).

3.4 Preferences

Preferences were classified as educator preferences, preferences for information source or format. Additionally, preferences regarding medical decision-making and visitor preferences were identified.

3.4.1 Educator preferences

Two studies dealt with educator preferences (Karlik and Yarcheski, 1987; You et al., 2014). Thus, from which health care provider patients prefer to be educated or gaining information within their hospitalization. Preferred educators, who are giving an introduction to the CCU were nurses while physicians were preferred for giving instructions (e.g., physical activity restrictions) (Karlik and Yarcheski, 1987). In addition, for patients prior to PCI (n=395), their physician was ranked as the most wanted educator by 94.2% (You et al., 2014). 45.4% ranked both nurses and physicians as most preferred educators (You et al., 2014).

3.4.2 Preferred source of information and format of education

Five studies examined patients' information source preferences, and which form of education they prefer (Blair et al., 2014; Ghazavi et al., 2022; Higgins et al., 2005; You et al., 2014; Kilonzo and O'Connell, 2011). According to the qualitative examination of Blair et al. (2014) (n=20), patients preferred to receive more information directly from their healthcare providers. Gaining information was preferred in terms of educational programs via internet, television, or social media. Another favored option was educational material to be mailed after discharge (Blair et al., 2014). Regarding gaining information about COVID-19, patients preferred non-official sources (e.g., other patients) to examine the accuracy of COVID-19-related information (Ghazavi et al., 2022). According to Higgins et al. (2005) (n=218), patients' preferred information source was the staff at CR programs. Patients who were not married preferred self-education and less likely preferred CR as information source for heart disease and lifestyle change (Higgins et al., 2005). Furthermore, patients who preferred CR programs in contrast to self-education were more likely to participate CR (Higgins et al., 2005). In terms of education, patients preferred face-to-face communication compared to other forms of education (e.g., educational material) (You et al., 2014). Individual nursing counselling was rated very high by patients (Kilonzo and O'Connell, 2011, n=33).

3.4.3 Preferences for medical decision-making

Two studies examined preferences in terms of the involvement of medical decision-making (Arora and McHorney, 2000; Rodriguez et al., 2008). Nearly 1,600 patients

(69%) with chronic diseases preferred leaving their medical decisions to their physicians than deciding by themselves (n=2,197) (Arora and McHorney, 2000). Younger as well as female patients preferred a more active role in decision making. The preference for active roles were 3.5 times higher in patients with a college education than for those with less than college education (Arora and McHorney, 2000). In addition to patients' preferred role, Rodriguez et al. (2008) assessed the perceived level of involvement in medical decision-making (n=90). These results showed that 47.8 % (n=43) preferred a passive role, 21.1 % (n=19) an active role and 31.1 % (n= 8) a collaborative role in medical decision-making. Higher age was associated with passive role preference and less perceived involvement in decision making ($p<0.05$). Thus, a significant higher passive role in medical decision-making came with greater age (Rodriguez et al., 2008).

3.4.4 Visiting preferences

One study about visiting preferences showed that 49-64% of 124 CVD patients preferred unlimited visiting hours (Carroll and Gonzalez, 2009). Preferences were up to four visits per day and generally more frequent visits were preferred. The preferred number of visitors was two to six visitors per visit. The preferred visiting time was after 8 pm and close family was also preferred to visit (Carroll and Gonzalez, 2009).

3.5 Significant differences between nurses and patients

Besides assessing patient needs, nurses' perception of their patient needs was assessed additionally in five quantitative studies (Chan et al., 2003; Hagenhoff et al., 1994; Frattini et al., 1998; Kilonzo and O'Connell, 2011; Mosleh et al., 2017). Three studies, which assessed nearly the same patient learning needs (*Table 5*), included nurses' ratings of the importance relating to patient education at CCUs. Patients rated all perceived learning need categories lower compared to nurses (Chan et al., 2003). In contrast, Frattini et al. (1998), Mosleh et al. (2017) and Hagenhoff et al. (1994) reported that patients rated learning needs higher than nurses did. Regarding the importance to learn, categories *Medication* and *Other* (e.g., taking pulse) were also significantly higher rated by patients than by nurses (Hagenhoff et al., 1994). However, category *Anatomy and Physiology* was rated lower by nurses compared to patients regarding the importance ($p<0.05$). In contrast, Frattini et al. (1998)

reported that patients rated category *Anatomy and Physiology* higher than nurses. Activity information was rated as least important to learn by patients, while nurses appraised psychological factors as least important to learn (Hagenhoff et al., 1994).

Beside those three studies, nurses (n=13) were also examined in terms of counselling patients (Kilonzo and O'Connell, 2011). These results were compared to patients (n=33) and showed significant differences. Nurses ranked individual counselling significantly lower compared to their patients ($p<0.01$) (Kilonzo and O'Connell, 2011). Nurses also thought that written information about the disease is less important for patients than patients did ($p=0.053$) (Kilonzo and O'Connell, 2011).

4. Discussion

The objective of this scoping review was to identify what adult patients with chronic CVDs need and prefer during their hospitalization. This review showed that studies primarily examined needs and preferences of patients with chronic CVDs. In particular, information and learning needs were assessed. Preferences (e.g., educator preferences) were elicited and found to occur in other contexts in contrast to needs. Frequently reported needs were information about medication and the disease as well as the surgical intervention (if performed). Patients were interested in risk factors within or without an intervention prior to discharge. Other needs such as psychological or social were additionally mentioned. Regarding preferences, patients expressed preferences in terms of educator, information format, medical decision-making and visiting times during their hospitalization. Patients' desire for active participation in medical decision-making decreased with age. Moreover, differences in terms of education and gender were identified. In addition, various needs expressed by patients often differed from those perceived by nurses. Nevertheless, patients preferred health care professionals as educators prior to discharge in the form of individual counselling (Kilonzo and O'Connell, 2011).

4.1 Discussion of main results

In this subchapter, general and striking trends of similarities as well as differences in relation to the main findings are discussed. Generally, PCC is known in the nursing context for a long time (Hobbs, 2009; Leino, 1952). A shift from patient-centered approaches to a person-centered approach for guiding delivery of care has been advocated for the PCN framework (McCance et al., 2011). Nevertheless, the definition of PCC still remains unclear (Byrne et al., 2020). Out of the studies identified, none refer specifically to PCC or PCN, which might be due to the lacking definition of PCC. However, according to the theoretical framework of this thesis, needs and preferences are core components of PCN. *Person centered processes* represent one of the four PCN constructs, which comprises the consideration of patients' needs and preferences. Furthermore, it aims to include shared decision making and provision of holistic care (McCance et al., 2011). As the results showed, the components of the construct of *person-centered processes* are examined. Although an examination of needs and preferences is conducted, it seems to be unclear if the

needs and preferences identified can actually be met by nurses during hospitalization.

4.1.1 Prioritized needs of patients

Three studies in which patients underwent interventions found that patients were interested to know more about the intervention (Ashour et al., 2020; Alkubati et al., 2013; Mosleh et al., 2017). More specifically, information needs pertained to nursing care (e.g., wound care). Information about diagnosis as well as physical activity, for instance, were derived as general patient needs. For this reason, it can be concluded that other needs are paramount in patients undergoing an intervention compared to those with no intervention. Moreover, in terms of post-procedural nursing care, the results highlight the importance of wound management for patients. While information about heart disease itself was a common need of patients, another important topic was identified in this thesis: the desire to obtain information about COVID-19 as a concomitant disease beside heart diseases (Ghazavi et al., 2022). Given the ongoing COVID-19 pandemic since late 2019, it was to be expected that this topic would emerge in the results. It is interesting, though, that only one study with such a small sample size (n=17) was identified although that COVID-19 is a highly prioritized topic in research (Haleem et al., 2020). Moreover, educational programs about diet and physical activity, for instance, were prioritized by CVD patients compared to patients with other diseases (Blair et al., 2014). In terms of learning need prioritization, rankings of CHF patients differed (*Table 5*). Frattini et al. (1998) and Hagenhoff et al. (1994) measured the exact same categories; however, the respective prioritization differed. In these two studies, learning about medication was ranked in the first place. Interest in anatomy and physiology as well as being educated about risk factors came in second place. In the study of Chan et al. (2003), the information category *treatment* was administered a few years later than in Frattini et al. (1998) and Hagenhoff et al. (1994). This time difference might have an impact on perceptions reported by patients. Learning about treatment was rated in the first place of CHF patients in the study of Chan et al. (2003). In fact, the results of Frattini et al. (1998) and Hagenhoff et al. (1994) are consistent with current literature. It was found that learning about medication was ranked high by patients (Hassankhani et al., 2021; Min et al., 2020).

4.1.2 Underrepresentation of psychological needs

Besides information needs, psychological needs are some of the most frequent unmet supportive care needs within CVD patients (Kohlmann et al., 2013). Psychological disorders such as depression or anxiety have verifiable negative impacts on quality of life (Vos, 2021). Furthermore, psychological issues represent a barrier to patients' learning process during hospitalization (Müller-Tasch et al., 2018). The importance of these aspects was not reflected in the results of this scoping review. Even if one study reported that psychological needs were met (Shih and Shih, 1999), it is striking that psychological needs were not prioritized by patients (Chan et al., 2003). Neither patients nor nurses perceived psychological categories as equally relevant to other categories such as treatment plan. They rather regarded them as less important (Chan et al., 2003; Hagenhoff et al., 1994). Moreover, psychological concerns increase the risk of CVDs (Vos, 2021). This might indicate that the importance of mental health is generally underestimated although research has shown that it is an important aspect to consider in patients with CVDs (Kohlmann et al., 2013).

4.1.3 Potential confounder of socioeconomic characteristics

As the results displayed, patients' needs were often tested for correlations with sociodemographic characteristics. Age, education, and gender might indicate potential confounder because several studies found significant correlations. The three sociodemographic characteristics are discussed below.

Age and PCC

In terms of age and information needs, it was noted that younger patients needed more information (Alkubati et al., 2013). Another noteworthy aspect is the preferred role patients and how age play in medical decision-making. Elderly patients reported that they wanted to be less actively involved in the medical decision-making process as opposed to younger patients (Rodriguez et al., 2008). This might have an impact on discharge management because the empowerment to learn is essential for patients (Nkhoma et al., 2022). Further, patients above the age of 70 had a higher need for individualized care (Polikandrioti, 2021). This suggest that more personalized and needs-based care which might increase elderly patients' participation in

the care process during hospitalization. PCC aims to empower people to be involved in health care decisions (McCarthy and Freeman, 2008) and therefore might be an adequate approach. This aspects indicate that age consideration is especially relevant due to the increasing in-patient rate with higher age (WTW, 2021).

Education and PCC

Another sociodemographic confounder might be educational level. The WHO (2020) stated that there are general correlations between education and prevalence rates of chronic diseases. Lower salaries and high unemployment rates thus correlate with higher prevalence of chronic diseases (WHO, 2020). Previous research has stressed the importance of PCC in relation to education. Wolf et al. (2019) evaluated the effects of PCC on patients with acute coronary syndrome, as well as their experiences with the care they received. They found improved effects in patients with a low educational level, who are more involved in their care decisions (Wolf et al., 2019). According to the results of the studies reviewed, patients with a job needed more information than unemployed patients (Alkubati et al., 2013). In this context, a more active role in medical decision-making has been identified for patients who had a higher level of education (Arora and McHorney, 2000). One possible reason for this might be that higher socioeconomic status correlates with higher education (Stormacq et al., 2019). This assumption can be confirmed by the results obtained by Duggan and Bates (2008) who found that higher socioeconomic status correlates with a greater desire for information on medication. Additionally, people with higher levels of education have better access to health care, and risk factors are measured more frequently than in lower educational groups (WHO, 2020). This indicates that patients who do not have access to proper education are generally disadvantaged in healthcare. The consideration of lower levels of education is therefore especially relevant when working with chronically ill patients because they tend to have lower levels of health literacy (Cajita et al., 2016).

Relevance of gender

Women with low income and unemployed women in particular are affected by CVDs (WHO, 2020). However, Alkubati et al. (2013) stated that men needed more information prior to discharge than women. In contrast, Gao et al. (2009) ascertained

that women might have greater physiological needs after a surgery than men. Furthermore, in terms of medical decision-making, women preferred a more active role in making decisions (Arora and McHorney, 2000). Moreover, women showed higher communication needs than men (Polikandrioti, 2021). Therefore, gender might also be seen as a potential confounder when it comes to the measurement of needs and preferences of patients with chronic CVDs. Furthermore, previous research has also shown differences regarding risk factors for CVDs between men and women. In fact, men showed higher levels of biological risk factors than women, while women's biological risk levels increase with age (WHO, 2020). Nowadays a central focus is placed on the fact that regarding inequality, women are still disadvantaged compared to men (WHO, 2020; Flood and Howson, 2015). However, further research reported that overcoming gender inequalities could have benefits (King and Elliott, 2021). For example, increasing the equality of women might result in better mental health outcomes (Holter, 2014) as well as health-promoting behaviors in men (Balish et al., 2016; Roberts, 2012). Overcoming gender norms could therefore be a worthwhile investment in future healthcare (King and Elliott, 2021).

4.1.4 The impact of nurses

In the results, not only patients were asked for their input but also nurses (Chan et al., 2003; Frattini et al., 1998; Hagenhoff et al., 1994; Karlik and Yarcheski, 1987; Kilonzo and O'Connell, 2011; Mosleh et al., 2017). For nurses, similar methods were used to collect their perceptions of their patient's needs. Interestingly, the study authors reported significant differences between nurses and patients. Studies found that patients rated needs as more important than their nurses did (Frattini et al., 1998; Hagenhoff et al., 1994). In contrast, a survey using a similar instrument and a similar patient group showed that nurses rated learning categories higher compared to their patients (Chan et al., 2003). Furthermore, nurses considered written information about diseases as less relevant than their patients did (Kilonzo and O'Connell, 2011). Further, nurses rated the importance of individual counselling significantly lower than their patients (Kilonzo and O'Connell, 2011) although nurses are some of the primary contact persons during hospitalization (Albert et al., 2015). In comparison with further literature, Ekman et al. (2007) found that patients needed further information than nurses perceived. Consequently, the different perceptions of needs might have an impact on how nurses educate their patients, especially with

regard to discharge planning. It might be concluded that the role of nurses still seems to be underestimated by themselves, although health care professionals have been shown to play a significant role with regard to patient education (Boyde et al., 2021; Dreyer et al., 2016). Moreover, nurses' underestimation of their importance can represent another barrier to effective discharge planning. This barrier might have an impact on health care due to increasing rehospitalization rates (eurostat, 2022; Savarese et al., 2022).

4.1.5 Necessary improvement of discharge management

Looking at the results in general, it might be concluded that patients need more information. This assumption is reflected in further literature which states that health information has not been sufficient for patients with CVD (Kohlmann et al., 2013). This insufficiency might raise the question to what extent patients actually receive information. Further, in case there is a lack of information, the question of how information can be more effectively provided should be addressed. However, research has shown that PCC could improve information reception (Wolf et al., 2019), which highlights the strengths of PCC. Suffering from a CVD can be rather stressful for patients (Griebler, 2021; Vos, 2021), especially when it comes to discharge (Boyde et al., 2021; Lucas et al., 2015). Eight of the studies included, deal with information or learning needs with regard to the discharge of patients (Alkubati et al., 2013; Ashour et al., 2020; Frattini et al., 1998; Galloway et al., 1995; Gao et al., 2009; Higgins et al., 2005; Karlik and Yarcheski, 1987; Sampson and Doran, 1998). These results might be essential for discharge management, especially for chronically ill patients, for whom discharge planning is particularly important (Gonçalves-Bradley et al., 2022; Reitter-Pfoertner et al., 2022). Further research has demonstrated that one way to manage stress may be informing patients about coping strategies, for instance (Roohafza et al., 2022). Adequate discharge management is important to consider prior to discharge in order to prevent rehospitalizations (Kripalani et al., 2014). In this context, DMPs or CRs are strongly recommended in order to contribute to the reduction of hospitalization as well as mortality rates (Bozkurt et al., 2021). The results of Raines and Dickey (2019) indicated that hospitalized patients with CHF have difficulties in realization of their knowledge into self-care. There is a need for strategies to enhance self-care in the context of learning needs of

patients with CVDs (Higgins et al., 2005). Nevertheless, programs that improve patients' self-care strategies are still remain underused (Bozkurt et al., 2021; Thompson et al., 2022). For this reason, a revision of those program contents after discharge and their delivery might be necessary. As the results show, educational programs (e.g., via the internet, television, or social media) as well as printed educational material were required by patients (Blair et al., 2014). In terms of information delivery, different options were feasible for patients. While information of interventions was preferentially received in direct contact with health care providers (Karlik and Yarcheski, 1987), relevant educational material was accepted in a digital or print form for further reading (Blair et al., 2014; You et al., 2014). As the results indicate, learning self-care strategies is one of patients' expected needs (Shih and Shih, 1999). These different results raise the question of which information format patients prefer in order to improve self-care. In fact, patients who are not well informed about their disease expressed more trust in medical nursing staff and required more communication (Polikandrioti, 2021). Moreover, physicians and nurses were preferred as educators for general health information (Blair et al., 2014; Karlik and Yarcheski, 1987; You et al., 2014). Consequently, discharge information preferences (e.g., format and delivery) are, therefore, diverse. For this reason, it might be relevant to develop patient-centered educational material aimed at CVD patients. Through this customized format, actual information needs as well as perceptions of nurses as educators can be considered (Min et al., 2020).

4.2 Study quality

In general, the characteristics of the studies included vary considerably. First, the size of the hospitals and the departments examined were not identical. Secondly, the number of participants in the studies varied due to different study designs and sampling strategies. In general, the study quality was perceived as poor. This limitation in quality is due to missing and/or unclear information. Several aspects concerning study designs were rated as *unclear* or even as *not applicable*. The study procedure was either assessed as insufficient or unsuitable in more than half of the studies (n=16). *Table 6* provides an overview of the study characteristics in terms of author(s), year, study design, the JBI appraisal tool used as well as limitations.

Table 6: Overview of limitations

Author(s) (year)	Study design, appraisal tool	Limitations
Alkubati et al. (2013)	Cross-sectional, checklist for analytical cross-sectional studies	• unclear exposure • no confounding strategies
Arora and McHorney (2000)	Cross-sectional, checklist for analytical cross-sectional studies	• unclear exposure • no inclusion criteria • no description of study subjects and setting • unclear confounding factors and confounding strategies • unclear validity and reliability of outcome measurement
Asadi-Lari et al. (2005)	Cross-sectional, checklist for analytical cross-sectional studies	• unclear exposure
Ashour et al. (2020)	Cross-sectional, checklist for analytical cross-sectional studies	• unclear exposure • no confounding strategies
Blair et al. (2014)	Qualitative, checklist for qualitative research	• unclear philosophical perspective and research methodology • no statement locating the researcher culturally or theoretically • researcher influence on research: not applicable • unclear ethical approval
Burney et al. (2002)	Mixed-method, checklist for analytical cross-sectional studies	• unclear exposure • no confounding factors • confounding strategies: not applicable • unclear statistical analysis
Carroll and Gonzalez (2009)	Mixed-method, checklist for analytical cross-sectional studies	• unclear exposure • no confounding factors • confounding strategies: not applicable
Chan et al. (2003)	Cross-sectional, checklist for analytical cross-sectional studies	• unclear exposure • unclear outcome measurement
Duggan and Bates (2008)	Cross-sectional, checklist for analytical cross-sectional studies	• unclear exposure
Frattini et al. (1998)	Cross-sectional, checklist for analytical cross-sectional studies	• unclear exposure • unclear confounding factors and confounding strategies • unclear validity and reliability of outcome measurement
Galloway et al. (1995)	Pre-test/post-test, checklist for quasi-experimental studies	• control group: not applicable • unclear follow-up

Author(s) (year)	Study design, appraisal tool	Limitations
Gao et al. (2009)	Cross-sectional, checklist for analytical cross-sectional studies	• unclear exposure • unclear confounding strategies
Ghazavi et al. (2022)	Qualitative, checklist for qualitative research	• unclear philosophical perspective and research methodology
Hagenhoff et al. (1994)	Cross-sectional, checklist for analytical cross-sectional studies	• unclear exposure • no confounding factors • confounding strategies: not applicable • unclear statistical analysis
Higgins et al. (2005)	Cross-sectional, checklist for analytical cross-sectional studies	• unclear exposure • no confounding strategies • unclear validity and reliability of outcome measurement
Karlik and Yarcheski (1987)	Cross-sectional, checklist for analytical cross-sectional studies	• unclear exposure • no confounding factors • confounding strategies: not applicable
Kilonzo and O'Connell (2011)	Cross-sectional, checklist for analytical cross-sectional studies	• unclear exposure • no confounding factors • confounding strategies: not applicable
Krannich et al. (2009)	Pre-test/post-test, checklist for quasi-experimental studies	• control group: not applicable • unclear follow-up • unclear reliability of outcome measurement
Kumar and Rai (2018)	Cross-sectional, checklist for analytical cross-sectional studies	• unclear exposure • no confounding factors • confounding strategies: not applicable • unclear statistical analysis
Mosleh et al. (2017)	Cross-sectional, checklist for analytical cross-sectional studies	• unclear exposure • no confounding factors • confounding strategies: not applicable
Polikandrioti (2021)	Cross-sectional, checklist for analytical cross-sectional studies	• unclear exposure • no statement locating the researcher culturally or theoretically • researchers influence on research: not applicable
Rodriguez et al. (2008)	Cross-sectional, checklist for analytical cross-sectional studies	• unclear validity and reliability of outcome measurement
Sampson and Doran (1998)	Cross-sectional, checklist for analytical cross-sectional studies	• unclear study subject and setting description • unclear exposure • no confounding factors • confounding strategies: not applicable • unclear statistical analysis
Shih and Shih (1999)	Qualitative, checklist for qualitative research	• unclear philosophical perspective and research methodology

Author(s) (year)	Study design, appraisal tool	Limitations
You et al. (2014)	Cross-sectional, checklist for analytical cross-sectional studies	• unclear exposure

The main aspect that stood out in studies with a cross-sectional design was the unclear exposure, although the method of the exposure measurement itself should be described appropriately (Moola et al. 2020 in JBI 2020). Two of 20 cross-sectional studies did not describe the setting in sufficient detail, which negatively impacts the comparability (Moola et al. 2020 in JBI 2020). Six studies did not identify potential confounding factors (Sampson and Doran, 1998; Hagenhoff et al., 1994; Mosleh et al., 2017; Karlik and Yarcheski, 1987; Kumar and Rai, 2018; Kilonzo and O'Connell, 2011). This limits the study quality, although it must be acknowledged that it is very difficult to measure confounding factors when it comes to behavioral, attitudinal or lifestyle factors (Moola et al. 2020 in JBI 2020). The validity and reliability of the measurement tools used to measure the outcomes were not clearly stated in five studies. The lack of validity is suboptimal because it impacts outcome assessment validity. Moreover, specifying how measurements were conducted (e.g., through more than one data collector) is important in order to ensure objectivity (Moola et al. 2020 in JBI 2020). Four studies did not describe their statistical analyses, thus, those were unclear (Burney et al., 2002; Hagenhoff et al., 1994; Kumar and Rai, 2018; Sampson and Doran, 1998). Consequently, it was difficult to evaluate if the analytical techniques or strategies employed in them were appropriate. This also negatively impacts the quality of the respective study methods according to Moola et al. (2020).

As far as the ratings of the three qualitative studies are concerned, none of them mentioned the cultural or theoretical position of the researcher(s) (Shih and Shih, 1999; Ghazavi et al., 2022; Blair et al., 2014). However, the researcher's cultural and theoretical orientation can play an important role in qualitative studies (Lockwood et al., 2015). Consequently, the potential influence of the researcher on the research is not explicitly addressed in these studies. The philosophical approach taken by the respective researchers was not clearly stated in any of the qualitative studies. On the other hand, the usage of a qualitative approach was as clearly stated

within the design. As mentioned in the methods section, Blair et al. (2014) did not provide a clear specification of the ethical approval which restricts the credibility of the study.

The two quasi-experimental studies showed limitations in terms of their follow-up procedure (Galloway et al., 1995; Krannich et al., 2009). Galloway et al. (1995) mentioned an incomplete follow up patient group but did not further analyze the impact of this dropout rate on their study. Similarly, Krannich et al. (2009) did not describe the loss to the follow-up measurement of the cohort and no further impact analysis was conducted. Consequently, the unreliable way of outcome measurement may debilitate the validity of inferences as Lockwood et al. (2015) stated.

4.3 Strengths and limitations

This review displays different strengths and limitations. First, there is currently no comparable review at hand, which makes this thesis noteworthy. Another strength is the study design chosen, which allows for an overview of existing literature on needs and preferences of patients with chronic CVDs during their hospitalization. Further, the systematic way in which this scoping review was conducted can be seen as a strength. A comprehensive search strategy was created for research in several databases. In addition to this literature search, a hand search in *Google Scholar* and reference lists of the publications included was performed. Moreover, a critical quality assessment was conducted by the author using evaluation tools of the JBI.

Despite these strengths, the present work also has limitations. One such limitation is the inclusion of only German and English studies. Relevant literature in other languages may therefore have been excluded. The topicality of the studies reviewed is to be questioned since the oldest study included was conducted in 1987 (Karlik and Yarcheski, 1987). Furthermore, the literature search was conducted by one reviewer. Potential studies may have been overlooked because only one person decided on the inclusion or exclusion of studies. A further limitation of this scoping review is the heterogeneity of the studies included. The studies varied considerably in terms of the number of respective samples but also in terms of the methods used

for data collection. Data often had to be synthesized despite lacking high comparability.

4.4 Implications for research

This review has pointed out several implications for further research. As known from research, PCC lacks a clear definition (Byrne et al., 2020) and the implementation of PCN seems to be unclear. Nevertheless, PCC has a positive impact on patients with chronic CVDs (Nkhoma et al., 2022; Olsson et al., 2013). The results comprise *person centered processes* in terms of needs and preferences. However, *person centered processes* are only one construct of PCN. Therefore, further research on the remaining PCN constructs is needed. Specifically, further studies regarding the fulfillment of patients' needs and preferences might be needed to clarify to what extent patients actually receive information and how the information delivery can be enhanced. Nurses seem to have a different perception of patients' learning needs in comparison to their patients (Hagenhoff et al., 1994; Frattini et al., 1998; Chan et al., 2003; Mosleh et al., 2017; Kilonzo and O'Connell, 2011). These divergences might relate to discharge management in terms of patient education because hospital discharge is a challenge for CVD patients (Vos, 2021). Additionally, adequate discharge management is necessary (Kripalani et al., 2014). Further research in terms of discharge education might be therefore adequate considering the results of this thesis. Strongly recommended programs after hospital stays (e.g., DMPs) remain rarely used and cases of rehospitalizations have increased (eurostat, 2022; Savarese et al., 2022). Further investigations into DMPs and CR programs might contribute to drawing attention to this issue. More research on strategies to enhance discharge management involving health care professionals might be needed. Nurses' perception should be included in such programs because of their essential role in patient discharge (Min et al., 2020). Furthermore, the preferences of patients should be considered (e.g., format of information) to provide PCN in practice. In addition, the results have shown a difference between needs and preferences of patients undergoing an intervention and those who are not undergoing an intervention. Further results could potentially be obtained in future research by distinguishing between these two groups. Moreover, in terms of how information should be delivered, the results showed different preferences. Further research in this area might

be useful to further shed light on patients' different preferences in terms of information delivery.

Furthermore, since infectious diseases such as COVID-19 are common as concomitant diseases (Ghazavi et al., 2022), information regarding infectious diseases might be important for patients as well. Thus, the assessment of information needs as well as learning needs regarding infectious diseases might be of interest for further research. Moreover, the underrepresentation of psychological needs clearly emerges through the identification of different needs and preferences in the studies reviewed. According to research, psychological needs are some of the frequently unmet needs in CVD patients (Kohlmann et al., 2013). This might imply a need for further research on interventions in this population. Additionally, nurses' diverging perceptions regarding the relevance of psychological needs might indicate a need for research on nurses' awareness about psychological factors and their negative impacts on chronic CVDs.

Finally, it has been found that interest in the care process (e.g., medical decision-making) is related to age and educational level (Arora and McHorney, 2000). Considering the increasing number of elderly people in the hospital (Griebler, 2021), further research on how to educate elderly people is indicated. These correlations might be related to health literacy levels or patients' participation in the care process as well. Since PCC empowers persons to be involved in health care decisions (McCarthy and Freeman, 2008), the consideration of PCC might need further investigation. Gender was also identified as a potential confounder in terms of sociodemographic characteristics. Further research on the variable of gender might therefore contribute to clarification of this potential influence.

4.5 Implications for practice

Several practical implications can be deduced from the results of this scoping review. First, nurse's essential role, especially in terms of discharge management, seems to be underestimated. Nurses might not be aware of their important role as the results indicate: patients prefer nurses as primary contact persons and educators (Blair et al., 2014; Karlik and Yarcheski, 1987; You et al., 2014). This underlines

how important nurses are in terms of patient education. The role of nurses for discharge planning might therefore need further attention. Since it has been found that nurses seem to be unaware of the important role they play for patients, further awareness will be needed.

Moreover, age, education level and gender of patients are important to consider within discharge education as several studies found correlations (Alkubati et al., 2013; Arora and McHorney, 2000; Duggan and Bates, 2008; Gao et al., 2009; Rodriguez et al., 2008). The interest of patients in disease management decreases with age, which might influence the educational process in terms of how nurses educate patients prior to discharge. Consequently, it can be concluded that elderly patients might need other education approaches than younger patients. Furthermore, elderly patients prefer individual care which, in turn, might influence patients' participation. Furthermore, needs and preferences differed between patients undergoing a surgical intervention to those who were not undergoing an intervention. For example, information about disease, medication or risk factors was often mentioned as an information need in patients who did not undergo an intervention (Duggan and Bates, 2008; Asadi-Lari et al., 2005; Shih and Shih, 1999; Frattini et al., 1998; Hagenhoff et al., 1994; Chan et al., 2003; Karlik and Yarcheski, 1987). In contrast, patients who underwent a surgical intervention (e.g., CABG) wanted to be informed about the intervention itself and the procedure (Krannich et al., 2009; Kilonzo and O'Connell, 2011; Higgins et al., 2005; Galloway et al., 1995; Alkubati et al., 2013; Ashour et al., 2020; Mosleh et al., 2017; Gao et al., 2009; Kumar and Rai, 2018). Therefore, it can be concluded that other needs are paramount in patients undergoing an intervention compared to those without an intervention. This is relevant to consider in terms of educating patients in practice. Adequate patient education is an essential component of discharge management and is related to readmission rates (Kripalani et al., 2014). Nurses' perceptions of discharge needs differed from those perceived by patients. Advanced training courses for nurses in terms of discharge management might therefore be needed.

5. Conclusion

Needs and preferences of hospitalized adult patients with chronic CVDs are diverse. Therefore, a wide range of requirements must be met for PCC, which have, however, not yet been concisely synthesized by previous research. The aim of this thesis was, thus, to identify the needs and preferences of adult patients with chronic CVDs during their hospitalization. It has been found that patients with chronic CVDs particularly need information. In this context, the importance of nurses for educating patients seems to be underrated although their expertise is valued by patients. In order to counteract rehospitalization rates, the enhancement of discharge management is highly necessary. Therefore, information content and the way in which information is delivered should be customized to CVD patients. As striking differences between patients' and nurses' perceptions have been identified, it is important to consider both patients' needs and preferences as well as the perception of nurses. Moreover, information needs of patients with or without a surgical intervention differed. While information about medication and risk factors were relevant for all CVD patients, psychological needs generally seem to be underestimated. Further, sociodemographic characteristics such as age, education and gender might also have an influence on needs and preferences of adult patients with chronic CVDs. According to literature, PCC can significantly contribute to the reception of information. However, there is a lack of clarity as far as the definition of PCC and its implementation is concerned. More research is therefore needed to gain a better understanding of the constructs of PCN.

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Appendix

Search strings

PubMed: 1,150 hits

Filters applied: English, German, Adult: 19+ years, Sort by: Most Recent

Search string:

(preferences[Title/Abstract] OR desires[Title/Abstract] OR Patient Preference[MeSH Terms] OR needs[Title/Abstract] OR health needs[Title/Abstract] OR health care needs[Title/Abstract] OR nursing care needs[Title/Abstract] OR demands[Title/Abstract] OR patient demands[Title/Abstract] OR requirements[Title/Abstract] OR patient requirements[Title/Abstract] OR wishes[Title/Abstract] OR patient wishes[Title/Abstract] OR person wishes[Title/Abstract] OR psychosocial needs[Title/Abstract] OR individual needs[Title/Abstract] OR biopsychosocial needs[Title/Abstract] OR social needs[Title/Abstract] OR patient needs[Title/Abstract] OR Health Services Needs and Demand[MeSH Terms] OR Health Services Needs and Demand[Title/Abstract]) AND (chronic cardiovascular diseas*[Title/Abstract] OR chronic heart diseas*[Title/Abstract] OR chronic ischemic heart disease[Title/Abstract] OR chronic cardiopulmonary disease[Title/Abstract] OR chronic endocarditis[Title/Abstract] OR chronic rheumatic endocarditis[Title/Abstract] OR chronic rheumatic valvulitis[Title/Abstract] OR chronic mediastinopericarditis[Title/Abstract] OR heart rhythm disorder*[Title/Abstract] OR chronic heart failure*[Title/Abstract] OR chronic pericarditis[Title/Abstract] OR chronic aortic aneurysm[Title/Abstract] OR chronic hypertension[All Fields] OR chronic cardiomyopath*[Title/Abstract] OR chronic atherosclerosis[Title/Abstract] OR cardiovascular diseases/nursing[MeSH Terms] OR pulmonary heart disease/nursing[MeSH Terms] OR heart valve diseases/nursing[MeSH Terms] OR coronary disease/nursing[MeSH Terms] OR heart failure/nursing[MeSH Terms] OR heart diseases/nursing[MeSH Terms] OR heart defects, congenital/nursing[MeSH Terms] OR coronary artery disease*[Title/Abstract] OR coronary heart disease*[Title/Abstract] OR pulmonary heart disease*[Title/Abstract] OR heart valve disease*[Title/Abstract] OR coronary disease[Title/Abstract] OR heart failure[Title/Abstract] OR heart disease*[Title/Abstract] OR congenital heart defect*[Title/Abstract]) AND (hospitalization[MeSH Terms] OR hospitalisation[Title/Abstract] OR hospital[Title/Abstract] OR hospitalising[Title/Abstract] OR hospitality[Title/Abstract] OR hospitalized[Title/Abstract] OR hospitalizing[Title/Abstract] OR inpatient[Title/Abstract] OR hospitalization[Title/Abstract]) OR (Hospitals[Mesh]) NOT (Palliative Care[MeSH Terms] OR Hospice and Palliative Care Nursing[MeSH Terms] OR Terminal Care[MeSH Terms] OR Palliative Care[Title/Abstract] OR hospice[Title/Abstract] OR palliative care nursing[Title/Abstract] OR Terminal Care[Title/Abstract] OR end of life[Title/Abstract])

CINAHL: 1,949 hits

Filters applied: English, German; Age: all adult

Search string:

TI=(preferences) OR AB=(preferences) OR TI=(desires) OR AB=(desires) OR TI=(patient preference) OR MH=(Patient Preference) OR AB=(patient preference) OR TI=(needs) OR AB=(needs) OR TI=(health needs) OR AB=(health needs) OR TI=(health care needs) OR AB=(health care needs) OR TI=(nursing care needs) OR AB=(nursing care needs) OR TI=(demands) OR AB=(demands) OR TI=(patient demands) OR AB=(patient demands) OR TI=(requirements) OR AB=(requirements) OR TI=(patient requirements) OR AB=(patient requirements) OR TI=(wishes) OR AB=(wishes) OR TI=(patient wishes) OR AB=(patient wishes) OR TI=(person wishes) OR AB=(person wishes) OR TI=(psychosocial needs) OR AB=(psychosocial needs) OR TI=(individual needs) OR AB=(individual needs) OR TI=(biopsychosocial needs) OR AB=(biopsychosocial needs) OR TI=(social needs) OR AB=(social needs) OR TI=(patient needs) OR AB=(patient needs) OR TI=(health service needs and demand) OR AB=(health service needs and demand) OR MH=(Health Services Needs and Demand) AND MH=((Cardiovascular Diseases/NU") OR cardiovascular) OR MH= ((Heart Valve Diseases/NU) OR (heart valve diseases)) OR MH= ((Coronary Disease) OR (coronary disease)) OR MH=(Coronary Arteriosclerosis/NU) OR MH=((Heart Failure/NU) OR (heart failure)) OR MH=((Heart Diseases/NU) OR (heart diseases)) OR MH=((Heart Defects, Congenital/NU) OR (heart defects, congenital)) OR TI=(chronic cardiovascular diseas*) OR AB=(chronic cardiovascular diseas*) OR TI=(chronic heart disease) OR AB=(chronic heart diseas*) OR TI=(congenital heart defect*) OR AB=(congenital heart defect*) OR TI=(coronary disease) OR AB=(coronary disease) OR TI=(coronary artery disease*) OR AB=(coronary artery disease*) OR TI=(chronic ischemic heart disease) OR AB=(chronic ischemic heart disease) OR AB=(chronic cardiopulmonary disease) OR TI=(chronic cardiopulmonary disease) OR TI=(chronic endocarditis) OR AB=(chronic endocarditis) OR AB=(chronic rheumatic endocarditis) OR TI=(chronic rheumatic endocarditis) OR TI=(chronic rheumatic valvulitis) OR AB=(chronic rheumatic valvulitis) OR AB=(chronic mediastinopericarditis) OR TI=(chronic mediastinopericarditis) OR TI=(heart rhythm disorder*) OR AB=(heart rhythm disorder*) OR AB=(chronic heart failure*) OR TI=(chronic heart failure*) OR TI=(chronic pericarditis) OR AB=(chronic pericarditis) OR AB=(chronic aortic aneurysm) OR TI=(chronic aortic aneurysm) OR TI=(chronic hypertension) OR AB=(chronic hypertension) OR AB=(chronic cardiomyopath*) OR TI=(chronic cardiomyopath*) OR TI=(chronic atherosclerosis) OR AB=(chronic atherosclerosis) OR TI=(coronary heart disease*) OR AB=(coronary heart disease*) OR AB=(pulmonary heart disease*) OR TI=(pulmonary heart disease*) OR TI=(heart valve disease*) OR AB=(heart valve disease*) OR AB=(heart failure) OR TI=(heart failure) OR AB=(heart disease*) OR TI=(heart disease*) AND TI=(hospitalization) OR AB=(hospitalization) OR TI=(hospitalisation) OR AB=(hospitalisation) OR TI=(hospital) OR AB=(hospital) OR TI=(hospitalising) OR AB=(hospitalising) OR TI=(hospitality) OR TI=(hospitalized) OR AB=(hospitalized) OR TI=(hospitalizing) OR AB=(hospitalizing) OR TI=(inpatient) OR AB=(inpatient) OR MH= ((Hospitalization) OR (hospitalization)) NOT (MH = (Hospice and Palliative Nursing) OR MH = (Palliative Care) OR MH=(Terminal Care/NU) OR (palliative) OR TI= (end of life) OR AB=(end of life))

ISI Web of Science: 2,480 hits

Filters applied: English;

Search string:

preferences OR desires OR expectations OR experiences OR patient preferences OR perspectives OR needs OR health needs OR health care needs OR nursing care needs OR demands OR patient demands OR requirements OR patient requirements OR wishes OR patient wishes OR person wishes OR psychosocial needs OR individual needs OR biopsychosocial needs OR social needs OR patient needs OR health service needs and demand AND chronic cardiovascular disease OR chronic heart diseas* OR chronic ischemic heart disease OR chronic cardiopulmonary disease OR chronic endocarditis OR chronic rheumatic endocarditis OR chronic rheumatic valvulitis OR chronic mediastinopericarditis OR heart rhythm disorder* OR chronic heart failure* OR chronic pericarditis OR chronic aortic aneurysm OR chronic hypertension OR chronic cardiomyopath* OR chronic atherosclerosis OR pulmonary heart disease* OR coronary heart disease OR coronary artery disease* coronary artery disease* OR heart valve disease* OR coronary disease OR heart failure OR heart disease* OR congenital heart defect* AND hospitalization OR hospitalisation OR hospital OR acute care OR hospitalising OR hospitality OR hospitalized OR hospitalizing OR inpatient NOT palliative care OR hospice and palliative care nursing OR terminal care OR hospice OR palliative care nursing OR end of life OR palliative nursing

CENTRAL (OVID): 621 hits

No filters applied

Search string:

patient preference.mp. or Patient Preference/ or preferences.mp. or desires.mp. or needs.mp. or health needs.mp. or health care needs.mp. or nursing care needs.mp. or demands.mp. or patient demands.mp. or requirements.mp. or patient requirements.mp. or wishes.mp. or patient wishes.mp. or psychosocial needs.mp. or individual needs.mp. or biopsychosocial needs.mp. or social needs.mp. or patient needs.mp. or (health service needs and demand).mp. and coronary heart disease.mp. or Coronary Disease/ or cardiovascular disease.mp. or Cardiovascular Diseases/ or heart diseases.mp. or Heart Diseases/ or chronic cardiovascular disease*.mp. or chronic heart disease*.mp. or chronic rheumatic heart disease.mp. or chronic congenital heart disease.mp. or cardiovascular diseases.mp. or chronic heart disease*.mp. or chronic rheumatic heart disease.mp. or chronic congenital heart disease.mp. or cardiovascular diseases.mp. or coronary disease.mp. or coronary artery disease.mp. or chronic cardiopulmonary disease.mp. or chronic endocarditis.mp. or chronic endocarditis.mp. or chronic rheumatic endocarditis .mp. or chronic rheumatic valvulitis .mp. or chronic mediastinopericarditis.mp. or heart rhythm disorder* .mp. or chronic heart failure* .mp. or chronic pericarditis or chronic aortic aneurysm .mp. or chronic hypertension .mp. or chronic cardiomyopath* .mp. or chronic atherosclerosis .mp. or pulmonary heart disease* .mp. or heart valve disease* .mp. or coronary disease .mp. or heart disease .mp. and Hospitalization/ or hospitalisation.mp. or inpatient.mp. or Inpatients/ or hospital.mp. or Hospitals/ or hospitalization.mp. or hospitalising.mp. or hospitality.mp. or hospitalized.mp. or hospitalizing.mp. not Palliative Care/ or palliative.mp. or Hospice and Palliative Care Nursing / or terminal care.mp. or Terminal Care/ or end of life.mp. or palliative nursing.mp. or

Google Scholar: 16,600 hits

No filters applied

preferences or desires or patient preference or needs or health care needs or nursing care needs or demands or patient demands or requirements or patient requirements or wishes or patient wishes or person wishes or psychosocial needs of individual needs or biopsychosocial needs or social needs or health services needs and demands and chronic cardiovascular diseas* or chronic heart diseas* or chronic ischemic heart disease or chronic cardiopulmonary disease or chronic endocarditis or chronic rheumatic endocarditis or chronic rheumatic valvulitis or chronic mediastinopericarditis or heart rhythm disorder or chronic heart failure or chronic pericarditis or chronic aortic aneurysm or chronic hypertension or chronic cardiomyopath* or chronic atherosclerosis or coronary artery disease or coronary heart disease or pulmonary heart disease or heart valve disease or coronary disease or congenital heart defect and hospitalization or hospitalisation or hospital or hospitalising or hospitality or hospitalized or hospitalizing or inpatient not palliative care or terminal care or hospice or palliative care nursing

Quality assessment details

Table 7: JBI Critical Appraisal Checklist for analytical cross-sectional studies

Author(s) (year)	Were the criteria for inclusion in the sample clearly defined?	Were the criteria for inclusion in the sample clearly defined?	Was the exposure measured in a valid and reliable way?	Were objective, standard criteria used for measurement of the condition?	Were confounding factors identified?	Were strategies to deal with confounding factors stated?	Were the outcomes measured in a valid and reliable way?	Was appropriate statistical analysis used?
Asadi-Lari et al. (2005)	yes	yes	unclear	yes	yes	yes	yes	yes
Ashour et al. (2020)	yes	yes	unclear	yes	yes	no	yes	yes
Burney et al. (2002)	yes	yes	unclear	yes	no	not applicable	yes	unclear
Carrol and Gonzalez (2009)	yes	yes	yes	yes	no	not applicable	yes	yes
(Chan et al., 2003)	yes	yes	unclear	yes	yes	yes	unclear	yes
Duggan and Bates (2008)	yes	yes	unclear	yes	yes	yes	yes	yes
Frattini et al. (1998)	yes	yes	unclear	yes	unclear	unclear	unclear	yes
Gao et al. (2009)	yes	yes	unclear	yes	yes	unclear	yes	yes
Hagenhoff et al. (1994)	yes	yes	unclear	yes	no	not applicable	yes	unclear
Higgins et al. (2005)	yes	yes	unclear	yes	yes	no	unclear	yes
Karlik and Yarcheski (1987)	yes	yes	unclear	yes	no	not applicable	yes	yes

Author(s) (year)	Were the criteria for inclusion in the sample clearly defined?	Were the criteria for inclusion in the sample clearly defined?	Was the exposure measured in a valid and reliable way?	Were objective, standard criteria used for measurement of the condition?	Were confounding factors identified?	Were strategies to deal with confounding factors stated?	Were the outcomes measured in a valid and reliable way?	Was appropriate statistical analysis used?
Kilonzo and O'Connell (2011)	yes	yes	unclear	yes	no	not applicable	yes	yes
Kumar and Rai (2018)	yes	yes	unclear	yes	no	not applicable	unclear	unclear
Mosleh et al. (2017)	yes	yes	unclear	yes	no	not applicable	yes	yes
Polikandrioti (2021)	yes	yes	unclear	yes	yes	yes	yes	yes
Rodriguez et al. (2008)	yes	yes	unclear	yes	yes	yes	yes	yes
Sampson and Doran (1998)	yes	unclear	unclear	yes	no	not applicable	yes	unclear
You et al. (2014)	yes	yes	unclear	yes	yes	yes	yes	yes

Table 8: JBI Critical Appraisal Checklist for Qualitative Research

study	Is there congruity between the stated philosophical perspective and the research methodology?	Is there congruity between the research methodology and the research question or objectives?	Is there congruity between the research methodology and the methods used to collect data?	Is there congruity between the research methodology and the representation and analysis of data?	Is there congruity between the research methodology and the interpretation of results?	Is there a statement locating the researcher culturally or theoretically?	Is the influence of the researcher on the research, and vice-versa, addressed?	Are participants, and their voices, adequately represented?	Is the research ethical according to current criteria or, for recent studies, and is there evidence of ethical approval by an appropriate body?	Do the conclusions drawn in the research report flow from the analysis, or interpretation, of the data?
Blair et al. (2014)	unclear	yes	yes	yes	yes	no	no	yes	unclear	yes
Ghazavi et al. (2022)	unclear	yes	yes	yes	yes	no	no	yes	yes	yes
Shih and Shih (1999)	unclear	yes	yes	yes	yes	no	no	yes	yes	yes

Table 9: JBI Critical Appraisal Checklist for quasi-experimental studies

Study	Is it clear in the study what is the 'cause' and what is the 'effect' (i.e., there is no confusion about which variable comes first)?	Were the participants included in any comparisons similar?	Were the participants included in any comparisons receiving similar treatment/care, other than the exposure or intervention of interest?	Was there a control group?	Were there multiple measurements of the outcome both pre and post the intervention/exposure?	Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analyzed?	Were the outcomes of participants included in any comparisons measured in the same way?	Were outcomes measured in a reliable way?	Was appropriate statistical analysis used?
Krannich et al. (2009)	yes	yes	yes	not applicable	no	unclear	yes	unclear	yes
Galloway et al. (1995)	yes	yes	yes	not applicable	yes	unclear	yes	yes	yes