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# "The Role of Public Health Education in Promoting Heart Health and Preventing Coronary Artery Disease among adults worldwide: A Systematic Literature Review".

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# ABSTRACTS

**Background:** Coronary artery disease (CAD) continues to be a major global health issue, contributing significantly to the morbidity and mortality associated with cardiovascular disease globally. Public health education interventions play a crucial role in promoting heart health and preventing CAD. However, there is a need for a comprehensive evaluation of the effectiveness of these interventions to inform evidence-based strategies for disease prevention.

**Methods:** This systematic literature review aims to assess the efficacy of public health education interventions in promoting heart health and preventing CAD among adults worldwide. To find relevant studies from electronic databases including PubMed, Google Scholar, Science Direct, and ProQuest, an organised search approach was used. Studies published between 2003 and 2023 were included, focusing on interventions targeting heart health education and CAD prevention. Data extraction and synthesis were conducted using a narrative synthesis approach, with key themes and findings summarized.

**Results:** The review identified a total of 18 studies meeting the inclusion criteria. Findings indicate that public health education interventions have a positive impact on promoting heart health and reducing CAD risk factors. Culturally tailored interventions, community-based programs, and digital health tools emerged as effective strategies for facilitating lifestyle modifications and behaviour change. The accessibility and availability of educational resources were identified as key determinants of intervention success. Furthermore, the integration of innovative technologies, such as mobile applications and wearable devices, showed promise in enhancing patient outcomes and healthcare delivery in CAD management.

**Conclusion:** Overall, this systematic review underscores the importance of public health education interventions in CAD prevention. By synthesizing existing evidence, the study provides valuable insights for policymakers, public health practitioners, and researchers. Moving forward, continued investment in public health education and evidence-based interventions is essential to address the global burden of CAD and improve cardiovascular health outcomes.

**Keywords:** Coronary artery disease, CAD prevention, public health education, Heart health promotion, Systematic literature review.

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# ABBREVIATIONS

CAD: Coronary Artery Disease

CVD: Cardiovascular Disease

SLR: Systematic Literature Review

PICO: Population, Intervention, Comparison, Outcome

RCTs: Randomised Controlled Trials

CBPR: Community-based Participatory Research

CASP: Critical Appraisal Skills Programme

MMAT: Mixed Methods Appraisal Tool

AI: Artificial Intelligence

# 1 Introduction and Background

## 1.1 Chapter Introduction

In today's world, public health education plays a crucial role in maintaining heart health and avoiding coronary artery disease (CAD), as non-communicable illnesses represent a serious threat to public health. One of the main causes of morbidity and death globally is coronary artery disease, which is defined by the narrowing or blockage of the coronary arteries supplying blood to the heart (Brown, Gerhardt and Kwon, 2022). This research endeavour aims to comprehensively assess the efficacy of public health education initiatives in addressing CAD through a systematic literature review. According to this methodology, community-wide awareness campaigns and modifications to lifestyles are just two examples of the diverse interventions that contribute to boosting up CAD prevention efforts (Ndejjo et al., 2021).

The focus will be on examining the effectiveness of various educational interventions, including targeted health promotion programs, dissemination of evidence-based guidelines, and educational campaigns aimed at raising awareness about CAD risk factors and preventive measures (Justesen, Freyberg and Schultz, 2021). By synthesizing existing literature, this study seeks to shed light on the strengths and limitations of current public health education efforts in the context of CAD prevention (Kuchler et al., 2020). Moreover, it aims to identify gaps in knowledge and propose recommendations for enhancing the effectiveness of educational interventions to reduce the burden of CAD on both individual and population health (Brown et al., 2012). Since CAD still has a significant negative impact on society and the economy, it is critical to comprehend how public health education can help lessen its effects to influence evidence-based policies and initiatives that aim to improve cardiovascular health outcomes.

## 1.2 Background

According to the World Health Organisation (2023), cardiovascular diseases (CVDs) account for 17.9 million deaths worldwide each year, making them a major global health concern. Of the different types of CVDs, coronary artery disease (CAD) is the most common cause of death and morbidity globally. The main sign of coronary artery disease (CAD) is the buildup of plaque in the coronary arteries, which reduces blood flow to the heart muscle and may cause a myocardial infarction (heart attack) or other dangerous complications (Brown, Gerhardt and Kwon, 2022).

The prevalence of CAD has been steadily increasing over the past few decades, driven by a combination of demographic changes, urbanization, sedentary lifestyles, and dietary shifts towards high-fat, high-sodium diets (Shahjehan and Bhutta, 2023). Furthermore, the burden of CAD is increased by risk factors such diabetes, hypertension, obesity, tobacco use, and excessive alcohol intake (Roth et al., 2020). Approximately 620 million people worldwide suffer from heart and circulation problems. This figure is expected to rise further if current trends in ageing and population growth, improved heart attack and stroke survival rates, and changing lifestyles continue to contribute to this increase (British Heart Foundation, 2023). The economic impact of CAD is profound, imposing substantial healthcare costs for treatment and management, as well as indirect costs related to loss of productivity and premature mortality.

In response to the growing epidemic of CAD, there has been a concerted effort to implement preventive strategies aimed at reducing the incidence and severity of the disease. Public health education has emerged as a key component of these prevention efforts, recognizing the importance of empowering individuals and communities with knowledge and skills to adopt heart-healthy behaviours and reduce their risk of developing CAD (Ghisi et al., 2014).

Public health education encompasses a range of interventions aimed at promoting heart health and preventing CAD, including health promotion campaigns, community-based initiatives, school-based education programs, workplace wellness programs, and the dissemination of evidence-based guidelines for cardiovascular health (Anderson et al., 2017). These interventions aim to raise awareness about the risk factors for CAD, encourage adoption of healthy lifestyle behaviours (such as regular physical activity, healthy diet, smoking cessation, and stress management), and promote early detection and management of modifiable risk factors (Luepker et al., 1994).

Despite the significant potential of public health education in CAD prevention, there are challenges and limitations to its implementation and effectiveness. These include barriers related to access to healthcare and health information, cultural beliefs and attitudes towards health, socioeconomic disparities, and competing priorities within healthcare systems (Lavie et al., 2019). Additionally, the rapid pace of technological advancement and changes in communication channels present both opportunities and challenges for delivering health education messages to diverse populations (Peckham et al., 2017).

Understanding the current landscape of public health education in promoting heart health and preventing CAD requires a comprehensive review of existing literature and evidence. This systematic literature review aims to synthesize the findings of previous studies and provide insights into the effectiveness, reach, and sustainability of public health education interventions in CAD prevention (Magnani et al., 2018).

Having a deep understanding of the research topic is crucial for conducting a systematic literature review effectively. In the context of the role of public health education in promoting heart health and preventing CAD, it is essential to recognize the multifaceted nature of the disease and the complex interplay of individual, social, environmental, and healthcare system factors that influence CAD risk and outcomes (Whelton, 2002).

CAD prevention requires a holistic approach that addresses upstream determinants of health, such as socioeconomic factors, environmental conditions, and policy environments, in addition to individual-level behaviour change (Winkelstein and Marmot, 1981). Furthermore, this review will explore the potential synergies between public health education and other CAD prevention strategies, such as clinical interventions (e.g., pharmacotherapy, revascularization procedures), policy interventions (e.g., taxation on tobacco products, regulation of food marketing), and environmental interventions (e.g., urban planning for active transport, creation of heart-healthy environments). Understanding how public health education can complement and enhance these broader prevention efforts is essential for developing integrated and sustainable approaches to CAD prevention. Importantly, this review will also examine the role of digital health technologies, social media platforms, and other innovative communication channels in disseminating heart health information and facilitating behaviour change (Gray et al., 2022). With the proliferation of smartphones and internet access, digital health interventions offer new opportunities to reach diverse populations with tailored health messages and interactive educational tools. According to Lavie et al. (2019), public health education is essential for pushing for laws that support cardiovascular health, creating supportive environments that encourage healthy behaviour, and enabling people and communities to make educated decisions about their health.

A thorough understanding of the existing evidence on public health education interventions for CAD prevention is essential for identifying gaps in knowledge, informing the design of future research studies, and guiding the development and implementation of effective interventions and policies (Su et al., 2023). By critically

evaluating the strengths and limitations of previous studies, synthesizing key findings, and identifying areas for further investigation, this systematic literature review aims to contribute to the advancement of knowledge and evidence-based practice in CAD prevention.

## 1.3 Rationale for research

Heart and circulation issues are thought to be the cause of almost one in three deaths globally; 20.5 million deaths, or 56,000 deaths per day, or one death every 1.5 seconds, are predicted by 2021. The British Heart Foundation (2023) states that they are the world's deadliest killers. The rationale behind selecting this research topic lies in the paramount importance of addressing coronary artery disease (CAD) through effective public health interventions. By conducting a systematic literature review, this study aims to evaluate the efficacy of public health education in promoting heart health and preventing CAD, thereby contributing to evidence-based strategies for disease prevention (Reid et al., 2013). The boundaries and limitations of this work are defined by focusing exclusively on literature related to public health education interventions, excluding other forms of interventions such as clinical treatments or policy interventions. The knowledge gap addressed by this research lies in the need for a comprehensive synthesis of existing evidence regarding the role of public health education specifically in CAD prevention, facilitating a clearer understanding of its impact and potential limitations (Mayes and Armistead, 2012).

## 1.4 Research Questions

- How effective are current public health policies and programs in preventing and managing coronary artery disease, and what factors contribute to their success or limitations?
- To what extent does public health education contribute to lifestyle modifications and behaviour change among individuals concerning heart health, and what are the most influential factors in promoting these changes?
- How do the availability and accessibility of educational resources related to heart health influence public knowledge and decision-making, and what improvements can be made to enhance accessibility and effectiveness?
- What is the role of innovative technologies in the management of coronary artery disease, and how do these technologies impact patient outcomes and healthcare delivery?

- What evidence-based policy recommendations can be proposed for the integration of heart health education into public health initiatives, and how can these recommendations be tailored to diverse populations and settings?

## 1.5 Research Aim

To systematically review and synthesize existing literature to assess the effectiveness of public health education interventions in promoting heart health and preventing coronary artery disease among adults in worldwide, with the aim of informing evidence-based strategies for CAD prevention and improving public health outcomes.

## 1.6 Research Objectives

- To assess the effectiveness of existing public health policies and programs aimed at coronary artery disease prevention and management.
- To measure the extent to which public health education contributes to lifestyle modifications and behaviour change related to heart health.
- To evaluate the availability and accessibility of educational resources related to heart health and its impact on public knowledge and decision-making.
- To investigate the role of innovative technologies like digital health tools in CAD management.
- To propose evidence-based policy recommendations for integrating heart health education into public health initiatives.

## 1.7 Chapter Summary

The important topic of public health education's role in maintaining heart health and preventing coronary artery disease (CAD) is introduced in the first chapter. It provides background information on the significance of CAD as a global health concern and outlines the aim and rationale for conducting a systematic literature review. Significantly, this chapter sets the framework for Chapter 2 literature review, which delves into the existing literature to comprehensively assess the effectiveness of public health education interventions in CAD prevention.

# 2 Literature Review

## 2.1 Chapter Introduction

The purpose of this introduction to the literature review chapter is to examine how well public health education works to promote heart health and prevent coronary artery disease (CAD). This chapter will systematically analyse existing research literature to evaluate various public health education interventions, including health promotion campaigns, community-based programs, and educational initiatives targeting CAD risk factors (Kim et al., 2004). Additionally, it will examine the impact of these interventions on lifestyle modifications and cardiovascular outcomes. By synthesizing this literature, the chapter aims to elucidate the role of public health education in CAD prevention and identify gaps in knowledge for further research and improvement in public health strategies.

## 2.2 Literature Review

Public health education plays a crucial role in promoting heart health and preventing coronary artery disease (CAD). This literature review critically assesses existing research on public health education interventions in CAD prevention, aiming to provide a comprehensive understanding of the topic and inform future research and practice (Williamson et al., 2021). The review begins with an exploration of the extent and types of research conducted on the topic, followed by a summary and synthesis of key findings from relevant studies (Krishnan et al., 2010). Subsequently, sources are critically evaluated to identify strengths and weaknesses, and gaps or limitations in existing research are highlighted to justify the approach taken in this review (Stewart, Manmathan and Wilkinson, 2017).

The body of literature addressing public health education in relation to heart health and CAD prevention is extensive, encompassing studies from various disciplines including public health, cardiology, epidemiology, and health education (Crouch, Wilson and Newbury, 2011). Research in this field ranges from large-scale population studies to focused interventions targeting specific demographics or risk factors (Kim et al., 2004). A comprehensive search of academic databases such as PubMed, Science Direct, and Google Scholar was conducted using keywords such as "public health education," "heart health promotion," "coronary artery disease prevention," and related terms. Relevant studies published in peer-reviewed journals between 2000 and 2024 were included to capture recent advancements and trends in this area.

The literature on public health education in promoting cardiac health and preventing coronary artery disease (CAD) is vast and varied, encompassing a plethora of research methodologies and study designs (Buss et al., 2020). Numerous academic databases were thoroughly searched, and the results included cross-sectional surveys, cohort studies, qualitative research, systematic reviews, and randomised controlled trials, among other types of literature. Understanding the prevalence and contributing factors of heart disease within populations is largely dependent on epidemiological research (Krishnan et al., 2010). Many studies in this area rely on observational designs, such as cohort studies (Williamson et al., 2021; Shah et al., 2015; Kim et al., 2004) and cross-sectional surveys (Awosan et al., 2013; Awad and Al-Nafisi, 2014; Mazloomy et al., 2013), which may limit causal inference and introduce bias. Cohort studies assess the incidence and risk factors associated with CAD over time, providing insights into long-term health outcomes.

RCTs, or randomised controlled trials, are regarded as the gold standard when assessing the efficacy of public health education initiatives. To evaluate the effect of educational programmes on heart health outcomes, these trials randomly assign individuals to intervention or control groups (Ebrahim and Smith, 1997). Cluster randomized trials are also used to evaluate community-level interventions (Khare et al., 2014). RCTs offer robust evidence, they may be challenging to implement in community-based settings due to ethical and practical considerations.

While Qualitative methods, including focus groups, interviews, and ethnographic studies, explore the socio-cultural contexts shaping individual's health behaviours related to heart health. Qualitative research helps identify barriers, facilitators, and perceptions surrounding CAD prevention, informing the design of culturally relevant educational interventions (Su et al., 2023). Additionally, qualitative research offers valuable insights into individual experiences and perceptions related to heart health education.

Within this expansive body of research, numerous key findings emerge, providing valuable insights into the effectiveness of public health education interventions in CAD prevention. Health promotion campaigns, community-based programs, and educational initiatives targeting CAD risk factors have consistently demonstrated positive impacts on heart health knowledge, attitudes, and behaviours (Mazloomy et al., 2013). These interventions have been successful in encouraging lifestyle modifications such as smoking cessation, adoption of healthy dietary patterns,

increased physical activity, and improved management of hypertension, ultimately leading to reductions in CAD incidence and mortality rates.

Key findings from relevant studies indicate that public health education interventions can lead to positive changes in knowledge, attitudes, and behaviours related to heart health. For example, a cross-sectional study by Awosan et al. (2013) found that educational interventions targeting dietary habits and physical activity levels were associated with significant improvements in cardiovascular risk factors among adults. Similarly, Kim et al. (2004) conducted a cohort study which revealed that participation in a community-based heart health programme resulted in a decrease in participant's hypertension and cholesterol levels.

Furthermore, qualitative research has provided valuable insights into the socio-cultural factors influencing heart health behaviours and the effectiveness of educational interventions. For instance, a study by Su et al. (2023) explored the perspectives of individuals from low-income communities on accessing heart health information and highlighted the importance of culturally sensitive approaches in educational interventions.

Research underscores the significance of early prevention efforts in schools and communities to instil heart-healthy habits from an early age. School-based health education programs targeting children and adolescents have demonstrated long-lasting impacts on reducing CAD risk factors into adulthood (Awosan et al., 2013). By educating youth about the importance of a balanced diet, regular physical activity, and tobacco avoidance, these interventions contribute to a lifelong reduction in cardiovascular disease burden (McAlister et al., 2001).

Emerging research explores innovative approaches to delivering heart health education, leveraging technology and social media platforms. Mobile health applications, wearable devices, and online platforms offer interactive and personalized educational resources that enhance engagement and facilitate behaviour change (Zhang et al., 2017). Social media campaigns and virtual support groups provide additional avenues for disseminating heart health information to diverse populations.

However, a critical evaluation of sources reveals both strengths and weaknesses inherent in previous research endeavours. One notable strength is the inclusion of diverse study populations, including individuals of different ages, genders, ethnicities, and socioeconomic backgrounds, enhances the generalizability of findings (Unal, Capewell and Critchley, 2006). Many studies employ diverse methodologies, including epidemiological surveys, randomized controlled trials (RCTs) (Lakerveld et al., 2013;

Reid et al., 2013; Zhang et al., 2017; Khare et al., 2014), qualitative assessments (Chan, Lopez and Chung, 2010; Karner, Goransson and Bergdahl, 2003; Su et al., 2023; Pelly et al., 2023), and community-based participatory research (CBPR) (Sriram et al., 2019; Kim et al., 2004). This methodological diversity allows for a comprehensive understanding of heart health promotion from population-level trends to individual-level behavioural changes. Many studies have employed rigorous methodologies, including robust study designs, validated outcome measures, and appropriate statistical analyses, thereby enhancing the validity and reliability of results.

Additionally, previous research often integrates established behavioural change theories, such as the Health Belief Model and Social Cognitive Theory, to inform intervention design. These theories enhance the conceptual frameworks guiding educational strategies and facilitate the assessment of behaviour change outcomes (Kheiri et al., 2019). Some studies incorporate longitudinal designs to track changes in heart health outcomes over time. Longitudinal research provides insights into the sustained impact of educational interventions beyond immediate behaviour modifications, contributing to evidence-based program planning and evaluation (Moher, 2001).

Furthermore, some studies (Su et al., 2023; Kim et al., 2004) emphasize collaborative partnerships with communities, healthcare providers, and policymakers. Engaging stakeholders in research design and implementation enhances the relevance, acceptability, and scalability of public health education initiatives. Additionally, few studies (Pelly et al., 2023; Zhang et al., 2017) have explored the role of digital health technologies and innovative communication channels in delivering heart health information and facilitating behaviour change.

Despite these strengths, several weaknesses and limitations are apparent in the existing literature. One common limitation is the reliance on short-term follow-up periods to assess intervention effectiveness. Longer follow-up durations are necessary to evaluate the durability of behaviour changes and their impact on cardiovascular outcomes (DeCarlo, 2018). Several studies rely solely on self-reported measures of health behaviours, such as diet, physical activity, and medication adherence (Khare et al., 2014). This introduces potential biases, including social desirability bias and recall bias, which may inflate intervention effects. Methodological issues, such as small sample sizes, short follow-up periods, and reliance on self-reported outcomes, may introduce bias and compromise the internal validity of studies.

Studies, according to Khare et al. (2014), ignore the variety of populations impacted by CAD, such as low-income people, members of racial/ethnic minorities, and rural areas. This limits the generalizability of findings and fails to address health disparities effectively. While study by Lakerveld et al. (2013) demonstrate efficacy in controlled settings, translating interventions into real-world practice remains a challenge. Limited resources, competing priorities, and organizational barriers hinder the scalability and sustainability of successful programs.

Furthermore, few studies conduct thorough process evaluations to assess intervention fidelity and implementation quality, hindering our understanding of intervention mechanisms and facilitating factors. Additionally, research often underestimates the role of socioeconomic factors, such as income, education, and access to healthcare, in shaping heart health outcomes (Alston et al., 2016). Addressing socioeconomic determinants is crucial for developing equitable and inclusive public health strategies. In addition, there may be a tendency to publish studies with positive results, leading to publication bias and an incomplete understanding of intervention effectiveness. Negative or null findings are essential for informing evidence-based practice and policy (Frohlich and Quinlan, 2014).

While previous research on public health education for heart health promotion and CAD prevention demonstrates methodological rigor and theoretical sophistication, several weaknesses and limitations persist (Williamson et al., 2021). Addressing these challenges requires innovative approaches, including longer-term evaluations, objective outcome measures, inclusive study populations, and robust implementation strategies. By critically evaluating sources and learning from past shortcomings, researchers can advance the field and develop more effective public health education interventions to reduce the burden of cardiovascular disease.

Existing research on public health education for heart health and CAD prevention has several notable gaps and limitations that warrant further exploration and attention. One significant gap is the lack of emphasis on the intersectionality of cardiovascular risk factors with social determinants of health (Lavie et al., 2019). Some research ignores the ways in which access to healthcare services, exposure to environmental risks, and adoption of healthy behaviours are influenced by intersections of factors such geography, financial class, race, and ethnicity. Addressing these intersectional dynamics is essential for developing tailored interventions that effectively reduce health disparities and promote equitable heart health outcomes.

Moreover, existing research often focuses on individual-level interventions without sufficient consideration of broader systemic factors that shape heart health. Limited attention is given to policy-level interventions, urban planning strategies, and healthcare system reforms that could create supportive environments for heart-healthy behaviours (Kheiri et al., 2019). Comprehensive approaches are needed to address upstream determinants of heart disease, including economic policies, food environments, and healthcare access.

Another gap in the literature pertains to the scalability and sustainability of successful interventions. While some studies demonstrate efficacy in controlled settings, translating these findings into real-world practice remains challenging. Implementation science approaches are underutilized, and there is a need for more research on dissemination strategies, capacity-building initiatives, and organizational partnerships to support the adoption of evidence-based practices (Sparrow et al., 2019).

Additionally, there is a paucity of research examining the long-term impacts of public health education on cardiovascular outcomes. Most studies focus on short-term behaviour changes, such as increased physical activity or improved dietary habits, without adequately assessing their effects on CAD incidence, morbidity, and mortality over extended periods (Kim et al., 2004). Longitudinal studies with extended follow-up durations are crucial for understanding the sustained benefits of educational interventions and optimizing long-term cardiovascular health.

Lastly, the literature often lacks diversity in study populations, with underrepresentation of marginalized and vulnerable groups. This limits the generalizability of findings and may exacerbate health disparities. Future research should prioritize inclusivity and cultural sensitivity, engaging diverse communities in study design and implementation to ensure that public health education efforts are equitable and impactful across populations (Anderson et al., 2017). Addressing these gaps in existing research will advance our understanding of effective strategies for promoting heart health and preventing CAD on a population scale.

In conclusion, while the existing literature provides valuable insights into the role of public health education in CAD prevention, there are notable strengths, weaknesses, and gaps that warrant further investigation. By critically evaluating sources and highlighting limitations, this review informs the rationale for future research and practice in promoting heart health and preventing CAD through public health education interventions. Addressing these gaps is essential for advancing knowledge and

informing evidence-based strategies aimed at reducing the global burden of coronary artery disease.

## 2.3 Chapter Summary

This chapter provides a comprehensive literature review on the role of public health education in preventing coronary artery disease (CAD) and promoting heart health. The review synthesizes key findings from diverse studies, highlighting the effectiveness of educational interventions, the importance of behavioural change theories, and the need for culturally tailored approaches to address health disparities. It emphasizes the significance of early prevention efforts and innovative educational strategies. Moving forward, Chapter 3 will outline the methodology for investigating public health education interventions, building upon the insights gained from the literature review to inform research design and implementation.

# 3 Methodology

## 3.1 Chapter Introduction

In this methodology chapter, the systematic literature review (SLR) serves as the cornerstone. The chapter outlines a meticulous search strategy employing Boolean operators and relevant Medical Subject Headings. Comprehensive search terms, including "public health education" and "coronary artery disease prevention," are utilized alongside key words to refine the exploration. Multiple databases, such as PubMed and Science Direct, are strategically chosen. Inclusion and exclusion criteria ensure precision, and a PRISMA flow chart illustrates the search results. Ethical considerations centre on proper citation, enhancing the chapter's integrity, culminating in a concise chapter summary.

## 3.2 Systematic Literature Review

A Systematic Literature Review (SLR) is a structured and comprehensive method of gathering, evaluating, and synthesizing existing research on a specific topic (Elsevier, 2022). In this review, the SLR serves the critical purpose of systematically examining the body of literature related to public health education and its impact on heart health and coronary artery disease (CAD) prevention. Steps to achieve a comprehensive SLR as follows:

- Formulating the Research Questions: Clearly state the objectives or research questions that the SLR seeks to answer.
- Inclusion and Exclusion Criteria: Specify parameters such as publication date, study design, and focus when creating criteria for the selection of studies.
- Search Strategy: Create a thorough and organised search strategy that includes database selection and relevant keywords.
- Study Selection: Using predefined criteria, identify and filter studies that are relevant to the study questions.
- Quality Assessment: To determine the validity and reliability of a study, analyse its methodological quality.
- Data Extraction: Take key information out of selected study for analysis.
- Data Synthesis: Summarize and synthesize findings from the selected studies to draw conclusions and identify patterns.
- Writing a report: Clearly and methodically lay out findings, conclusions, and recommendations.

The SLR in this dissertation serves as the foundation for understanding the existing body of knowledge related to public health education's role in heart health promotion and CAD prevention. By systematically reviewing and synthesizing relevant literature, the SLR aims to identify gaps, patterns, and methodological approaches in the current research landscape (Mengist, Soromessa and Legese, 2019). This procedure not only provides information for the dissertation's subsequent stages but also advances knowledge of successful public health education strategies for the prevention of cardiovascular disease among academics. The SLR ensures a rigorous and evidence-based approach to exploring the research questions posed in the study.

## 3.3 Search Strategy

A search strategy is a systematic and structured plan for identifying relevant literature on a specific topic (Bramer et al., 2018). A thorough search strategy was developed for this dissertation to find relevant research. The search was conducted using the PICO (Population, Intervention, Comparison, Outcome) methodology. Population included individuals exposed to public health education intervention, Intervention involved the educational programs/intervention, Comparison considered variations or absence of interventions, and Outcome focused on heart health and coronary artery disease prevention (Sampson et al., 2009).

The search strategy employed a combination of keywords such as "public health education," "heart health promotion," and "coronary artery disease prevention." Boolean operators (AND, OR) were used, ensuring a nuanced exploration. The search encompassed databases like Google Scholar, PubMed, Science Direct, and ProQuest. A time limit of the last twenty-five years was set to ensure the inclusion of recent and relevant studies, aligning with the currency of the research topic.

## 3.4 Search Terms

Search terms are pivotal components of a systematic and effective literature search in research (Smith, 2024). These terms represent the words or phrases researchers use to explore databases and other information sources for relevant studies on a specific topic. Their purpose is to accurately capture the essential aspects of the research question, ensuring a comprehensive and targeted search (Cooper et al., 2018). Effective search terms facilitate the identification of literature that aligns with the research objectives, promoting the retrieval of relevant and focused information (Thomas et al., 2004). Search terms such as "public health education," "heart health promotion," and "coronary artery disease prevention" are essential to capture the multifaceted nature of the study. These terms enable researchers to navigate

databases systematically and retrieve studies that address the specific components of the research question.

***Importance of Synonyms in Searching:***

Use of synonyms in searching is crucial for overcoming the variability in terminology across different studies and disciplines. Synonyms are alternative words or phrases that convey similar meanings. This comprehensive approach enhances the likelihood of capturing a diverse range of literature, providing a more holistic understanding of the research topic (Grewal, Kataria and Dhawan, 2016).

***PICO Framework:***

The PICO (Population, Intervention, Comparison, Outcome) framework is a structured approach used to formulate clinical or research questions. In this study, the PICO framework is applied as follows:

- Population: Individuals exposed to public health education.
- Intervention: Public health education programs.
- Comparison: Variations or absence of interventions
- Outcome: Heart health improvement and prevention of coronary artery disease.

| Component | PICO elements | Key words / Synonyms |
|---|---|---|
| Population | Individuals exposed to public health education | Adults, Patients, Cardiac patients, heart disease patients |
| Intervention | Public health education programs/ Interventions | Heart health promotion, cardiovascular health promotion, coronary artery disease prevention programs |
| Comparison | Variations or absence of interventions | Variation of intervention, absence of intervention, lack of intervention |
| Outcome | Heart health improvement and prevention of coronary artery disease | Heart health improvement, coronary artery disease prevention, cardiovascular health outcomes |

*Table 1 PICO framework (self-created)*

Several reliable databases were searched out, including Google Scholar, PubMed, Science Direct, and ProQuest. The keywords and synonyms were combined using the following Boolean operators (AND, OR) to create a comprehensive search:

Search 1 (Population): (Adults OR individuals OR patients OR cardiac patients OR people with heart illness)
Search 2 (Intervention): (Heart health promotion OR cardiovascular health promotion OR coronary artery disease prevention programs)
Search 3 (Comparison): (Variations of intervention OR absence of interventions OR lack of intervention)
Search 4 (Outcome): (Heart health improvement AND coronary artery disease prevention OR cardiovascular health outcomes)
This structured approach ensures a thorough exploration of each component of the PICO framework, allowing for a nuanced and comprehensive retrieval of relevant literature in the database search.

## 3.5 Key words

Key terms are typically defined to provide clarity and ensure a shared understanding among readers (Mager, 2022). Key terms play a pivotal role in framing the research questions, guiding the literature review, and facilitating effective communication of the study's objectives and findings (DeLuca et al., 2008). In this dissertation crucial keywords include "public health education," "heart health promotion," and "coronary artery disease prevention". The strategic use of these keywords ensures focused and accurate exploration of literature, enhancing the systematic review's relevance and depth.

## 3.6 Databases

Several well-known databases, such as PubMed, Science Direct, ProQuest, and Google Scholar, were used to conduct research information. Selecting the right databases is essential to ensuring the study's thoroughness and quality. There are several reasons why it is imperative to search multiple databases. Every database has a specialised focus and may contain unique content. When more sources are consulted, the scope is widened, and more relevant research is likely to be found (LaRocca et al., 2012). If studies have demonstrated that exclusive reliance on a single database may lead to gaps in the literature review. Including many databases also makes it more likely that the most recent studies will be found, guaranteeing that the literature is current. This approach, backed by reliable databases, expands the scope of information available and improves the study's rigour and accuracy (Justesen,

Freyberg and Schultz, 2021). It guarantees that the study is comprehensive and relevant to the selected research topic, allowing for a strong and thorough assessment of the literature.

## 3.7 Inclusion/Exclusion criteria

Predetermined standards known as inclusion/exclusion criteria direct the process of choosing which research to include in a systematic review (Patino and Ferreira, 2018). These criteria enhance the study's rigor by ensuring that chosen articles align with the research objectives, population, and outcomes. The systematic application of these criteria provides transparency, minimizes bias, and contributes to the overall validity of the research (Higgins et al., 2019).

### 3.7.1 Criteria for Inclusion:

Research that is included must centre on interventions in public health education that promote heart health and prevent coronary artery disease. Articles within the last twenty-five years, published in English, with rigorous methodologies and measurable outcomes are considered (Bridges et al., 2015).

### 3.7.2 Exclusion Criteria:

Research conducted in any language other than English, with inadequate methodological rigour, or without a clear focus on the connection between heart health and coronary artery disease prevention and public health education, are excluded (Bridges et al., 2015). Additionally, non-peer-reviewed sources and studies outside the defined timeframe are excluded to ensure relevance and reliability.

| Inclusion Criteria | Exclusion Criteria |
|---|---|
| Studies within twenty-five years | Studies were older than twenty-five years |
| Research published in English Language | Studies published in other languages |
| Research that included public health interventions to prevent coronary artery disease and to promote cardiac health | No clear focus, no connection between heart health and coronary artery disease prevention and public health education. |
| Rigorous methodologies | Inadequate methodological rigour |
| Studies comparing with coronary artery disease prevention and public health intervention | Irrelevant studies, inadequate data for analysis, duplicates studies. |

| | |
|---|---|
| Studies focusing on adults | Studies conducted on animals |

*Table 2 Inclusion/Exclusion criteria (self-created)*

## 3.8 Search Results

The first 267 studies in total were found using a thorough search strategy across multiple databases. Irrelevant research was completely removed in a systemic way. After their abstracts and titles were examined for relevancy, 152 articles were found inappropriate. The remaining 115 underwent a full-text examination, and 97 of them were removed due to not meeting the inclusion requirements. In the end, it was determined that 18 studies met the criteria and underwent review.

**Prisma Flow chart**

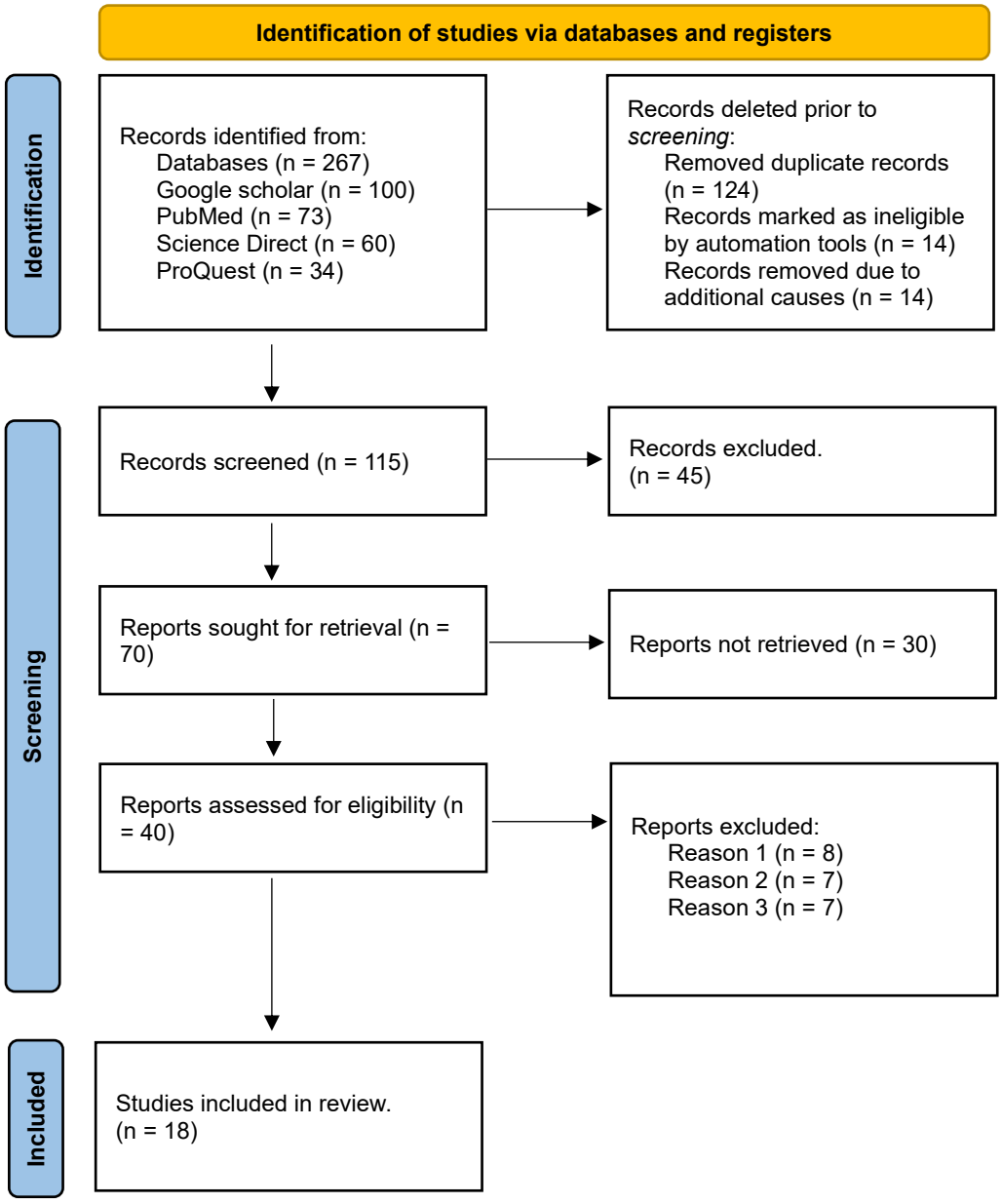

*Figure 1 PRISMA Flow Chart (self-created)*

## 3.9 Ethical Considerations

Ethics in research involves ensuring the responsible and ethical conduct of studies, protecting participant's rights, and maintaining integrity (Smart, 2018). In this systematic literature review, ethical considerations are paramount. All selected studies, having undergone ethical approval before publication, contribute to the review's credibility. Attention is given to proper citation, respecting intellectual property rights, and ensuring the ethical conduct of the research process. By incorporating ethically approved studies, the review upholds the principles of integrity and accountability in the scholarly exploration of public health education's impact on heart health and coronary artery disease prevention (Thomas et al., 2015).

## 3.10 Chapter Summary

In this methodology chapter, key components included defining search terms, implementing the PICO framework, and employing multiple databases for a comprehensive search. Ethical considerations and inclusion/exclusion criteria were also addressed. The next chapter, Data Extraction and Evaluation, will delve into the detailed analysis of the identified literature, extracting relevant information, and critically evaluating study outcomes. The main objectives of the dissertation will be furthered by this chapter, which will shed light on the effectiveness of public health education interventions in the prevention of coronary artery disease.

# 4 Data Extraction and Evaluation

## 4.1 Chapter Introduction

This chapter is an essential step in the research process that ensures the reliability and validity of specific studies. Supported by the pertinent tools for critical evaluation, it comprises an extensive critical assessment of both qualitative and quantitative research. The fundamental concept of evaluation is presented in the first section of the chapter, along with its significance in establishing the accuracy and validity of research papers. The key roles of significant appraisal instruments and the expected appraisal domains are then made clear. Each section of the chapter provides a comprehensive overview of the selected studies and is structured to critically analyse research employing mixed methodological, qualitative, and quantitative approaches.

## 4.2 Data Extraction

According to Higgins et al. (2019), Data extraction is the systematic process of collecting relevant information from selected studies to address specific research questions. In this chapter, data extraction for review on the role of public health education in promoting heart health and preventing coronary artery disease, involves utilizing a predesigned form. This form captures critical study characteristics such as publication details, study design, participant demographics, intervention specifics, and outcome measures (Schmidt et al., 2023). Extracted data will be organized systematically in a characteristic table (Appendix), providing a structured overview essential for synthesizing, and evaluating the collective evidence on the effectiveness of public health education in coronary artery disease prevention.

## 4.3 Brief Introduction to Critical Appraisal and Paper Quality Assessment

Critical appraisal is a systematic evaluation process used to assess the quality, validity, and relevance of research papers in the context of a specific research topic or question (Morrison, 2017). A study's methodology, design, data collection strategies, analysis methodologies, and result interpretation are all analysed in this process. The primary purpose of critical appraisal is to determine the trustworthiness and credibility of research findings, helping researchers make informed decisions about the applicability and reliability of study results to their own research or practice.

In the systematic literature review, critical appraisal is essential for several reasons. Firstly, it ensures that only high-quality and methodologically sound studies are included in the review, minimizing the risk of bias, and enhancing the reliability of

synthesized evidence (MacInnes and Lamont, 2014). Secondly, critical appraisal helps identify strengths and weaknesses in individual studies, allowing researchers to assess the robustness of study findings and potential limitations that may impact the validity of conclusions drawn from them.

Critical appraisal also helps researchers determine how well study results can be applied to other populations or environments, which can be useful in developing public health initiatives and policies that support heart health and prevent coronary artery disease (Kaas et al., 2019). Overall, when it comes to evaluating the quality and validity of research evidence, critical appraisal is an essential phase in the systematic review process since it offers a methodical and rigorous approach.

## 4.4 Critical Appraisal Tools

A critical appraisal tool is a structured instrument or set of criteria used to systematically assess the quality, validity, and relevance of research papers (Katrak et al., 2004). In this research selecting the appropriate critical appraisal tool is crucial. These tools provide a standardized approach for evaluating various aspects of research papers, including study design, methodology, conduct, and reporting. The chosen critical appraisal tool should be relevant to the types of studies included in the literature review. This may include randomized controlled trials (RCTs), cohort studies, cross-sectional studies, and others. The critical appraisal tool should assess key methodological aspects such as the study design, sample size, participant characteristics, sampling methods, data collection procedures, intervention details (if applicable), outcome measures, statistical analysis, and potential sources of bias (Crombie, 2022).

Selecting an appropriate instrument is crucial since it offers a methodical and standardised way to assess the advantages and disadvantages of any research project. Additionally, the critical appraisal tool should be validated, reliable, and widely accepted within the field of public health and cardiology research. It should also be user-friendly and feasible for application by researchers with varying levels of expertise (Herington, Manogaran and Jones, 2017). By selecting the right critical appraisal tool, researchers can ensure that the appraisal process is rigorous and systematic, ultimately enhancing the credibility and validity of the systematic review findings. The quality of the studies will be evaluated in this chapter using the Mixed Methods Appraisal Tool (MMAT) for mixed methods studies and the Critical Appraisal Skills Programme (CASP) tool for qualitative and quantitative studies separately.

## 4.5 Evaluation of Qualitative Studies using CASP tool

In conducting a systematic literature review, qualitative studies play a crucial role in understanding the perspectives, experiences, and behaviours related to public health education interventions. Evaluating qualitative studies requires a rigorous approach to ensure the reliability and validity of findings. Therefore, the Critical Appraisal Skills Programme (CASP) tool was chosen as the appropriate appraisal tool for qualitative studies.

### 4.5.1 The Critical Appraisal Skills Programme (CASP) tool

The CASP tool offers a structured framework for assessing the methodological quality and trustworthiness of qualitative research. It provides clear criteria to evaluate various aspects of qualitative studies, including aim, methodology, data collection, analysis, and interpretation (Lavis et al., 2009). The tool's user-friendly format facilitates a systematic and thorough appraisal process, enhancing the credibility of the review's findings.

One strength of the CASP tool is its widespread acceptance and usage in the research community. Its user-friendly format, which provides clear guidance for reviewers, even those unfamiliar with qualitative research methods. Additionally, its comprehensive criteria cover essential elements of qualitative research, ensuring a holistic assessment of study quality (Katrak et al., 2004). Furthermore, the CASP tool promotes transparency and consistency in the appraisal process, enabling reviewers to effectively evaluate the strengths and limitations of each study.

However, the CASP tool also has limitations. Its subjective nature may lead to variations in interpretation among reviewers, potentially affecting the consistency of appraisal outcomes (Harrison et al., 2017). Furthermore, the tool may not capture all nuances of qualitative research, such as reflexivity and researcher positionality, which could limit its applicability in certain contexts.

The relevant qualitative studies (Chan, Lopez and Chung, 2010; Karner, Goransson and Bergdahl, 2003; Su et al., 2023; Pelly et al., 2023) identified for the systematic literature review was appraised using the CASP tool. Major criteria were evaluated, including coherence of findings, transparency of data analysis, suitability of study design, rigour of data gathering techniques, and clarity of research goals. The appraisal results were documented in tables included in the appendix, providing readers with a transparent overview of the quality and relevance of the qualitative studies included in the systematic literature review.

The selection of the CASP instrument stemmed from its appropriateness for assessing qualitative research; alternative assessment instruments, such as the Consolidated Criteria for Reporting Qualitative Research (COREQ) or the Joanna Briggs Institute (JBI) Critical Appraisal Checklist for Qualitative Research, might also be taken into consideration dependent on research requirements. However, the CASP tool was deemed appropriate for this systematic literature review due to its widespread use and established credibility in the field of qualitative research appraisal (Sinclair et al., 2018).

The appraisal of qualitative studies using the CASP tool will enhance the systematic literature review by ensuring a rigorous assessment of the included studies' quality and validity. This approach contributes to the overall reliability and trustworthiness of the review's findings regarding the role of public health education in promoting heart health and preventing coronary artery disease. (See Appendix for the appraised qualitative studies table.)

## 4.6 Evaluation of Quantitative Studies using an appropriate tool

In this systematic literature review, quantitative studies play a crucial role in providing empirical evidence on the effectiveness of public health education interventions. Evaluating these studies is essential to ensure their methodological rigor and validity. For this purpose, The Critical Appraisal Skills Programme (CASP) tool is a suitable method for evaluating the quality and reliability of these quantitative studies. This section discusses the use of CASP for appraising relevant quantitative studies and highlights the importance of this tool in ensuring methodological rigor and validity.

### 4.6.1 The Critical Appraisal Skills Programme (CASP) tool for Quantitative studies

The Critical Appraisal Skills Programme (CASP) is an educational initiative that equips individuals with the skills to critically assess research evidence. CASP provides training resources, tools, and checklists designed to enhance critical appraisal skills, enabling users to evaluate the quality, validity, and relevance of research studies across various disciplines (Galdas et al., 2015).

To evaluate the methodological quality of quantitative investigations, CASP for research studies uses specific tools and criteria. This includes assessing aspects such as study design, sampling methods, data collection procedures, statistical analyses, and interpretation of results (Young and Solomon, 2009). CASP for quantitative research assists researchers in evaluating the reliability and robustness of quantitative evidence, supporting evidence-based decision-making in healthcare, policy development, and research.

CASP encourages critical thinking by prompting reviewers to consider key methodological issues and potential sources of bias in quantitative research, fostering a deeper understanding of research methodology.

### 4.6.2 Importance of CASP Tool for Quantitative Studies

The CASP tool offers a structured approach to critically appraising quantitative research, emphasizing key aspects of study design, methodology, analysis, and interpretation. For a literature review focused on public health education and coronary artery disease prevention, using CASP is essential to:

- Assess Study Validity: CASP helps assess the validity of quantitative studies by examining the appropriateness of study designs, methods of data collection, and statistical analyses employed (Galdas et al., 2015).
- Identify Bias and Limitations: CASP facilitates the identification of potential sources of bias and methodological limitations within quantitative studies, ensuring transparency and rigor in the evaluation process (Patel et al., 2022).
- Enhance Evidence Quality: By applying CASP, researchers can differentiate between high-quality studies and those with methodological weaknesses, thereby strengthening the evidence base for informed decision-making in public health interventions.

***Components of CASP Tool for Quantitative Studies***

The CASP tool for quantitative research typically includes critical appraisal questions aligned with fundamental principles of quantitative methodology. Key components addressed by CASP for quantitative studies include:

Study Design: Evaluating the appropriateness and clarity of the study design (e.g., randomized controlled trials, cohort studies, cross-sectional surveys) for addressing the research question.

Methodological Rigor: Assessing the quality of methods used for participant selection, data collection, and analysis, with a focus on minimizing bias and ensuring reliability.

Statistical Analysis: Examining the appropriateness of statistical methods employed, including sample size determination, data analysis techniques, and reporting of results (Buccheri and Sharifi, 2017).

Results and Interpretation: Scrutinizing the clarity, consistency, and relevance of study findings, as well as the appropriateness of conclusions drawn from the data (Singh, 2013).

***Application of CASP Tool in Literature Review***

In this systematic literature review, the CASP tool was employed to critically appraise 12 quantitative studies related to public health education and coronary artery disease prevention. Each study was evaluated based on CASP criteria to assess its methodological quality and reliability.

The detailed appraisal tables summarizing the findings from the appraised quantitative studies can be referenced in Appendix. This table provides insights into the strengths, weaknesses, and overall quality of the reviewed studies, based on the CASP assessments.

In summary, the use of the CASP tool is essential for evaluating randomized controlled trial, cohort, and cross-sectional quantitative studies within the context of a systematic literature review on public health education and coronary artery disease prevention. CASP ensures a rigorous appraisal of study quality, enabling researchers to identify robust evidence and contribute to evidence-based practices in public health education interventions.

### 4.6.3 Number of Quantitative Studies Appraised

The Critical Appraisal Skills Programme (CASP) instrument was utilised to identify and critically appraise a total of 12 relevant quantitative studies. The rationale behind the selection of these quantitative studies was their potential to offer empirical evidence about the effectiveness of public health education interventions in promoting heart health and preventing coronary artery disease, as well as their relevance to the research issue.

### 4.6.4 Aims and Methodology of Quantitative Studies

Finding out how well public health education programmes work to promote heart health and prevent coronary artery disease depends heavily on quantitative research. These studies typically utilize quantitative data collection methods, such as surveys, measurements, or clinical assessments, to quantify the impact of interventions on various health outcomes.

The overall aim of the chosen quantitative studies in this review is to investigate the relationship between public health education initiatives and heart health outcomes. Specifically, these studies aim to assess the effectiveness of different educational interventions, such as health education campaigns, lifestyle modification programs, or community-based interventions, in reducing the risk factors associated with coronary artery disease and improving overall heart health (Munn et al., 2014).

Quantitative studies are used to measure outcomes such as changes in blood pressure, cholesterol levels, body mass index (BMI), dietary habits, physical activity levels, smoking prevalence, and incidence rates of coronary artery disease. By quantifying these outcomes, researchers can evaluate the impact of public health education interventions on individual's heart health and assess the effectiveness of various strategies in reducing the burden of coronary artery disease on a population level (Abdelmoneim et al., 2009).

To confirm the appropriateness of the methodology for all relevant quantitative studies, it is essential to assess whether the study designs, sampling methods, measurement tools, and statistical analyses align with the research objectives and are suitable for addressing the research question effectively (Patel et al., 2022). The study designs among the twelve quantitative studies, three employed cross-sectional study designs, other three employed cohort study designs, one descriptive study design, one quasi-experimental while the remaining four utilized randomized controlled trial study designs.

Cross-sectional studies are commonly used to assess the prevalence of health outcomes and risk factors within a population at a specific point in time (Wang and Cheng, 2020). They provide valuable insights into the association between exposure variables (e.g., public health education interventions) and outcomes (e.g., heart health indicators) at a single time point. On the other hand, cohort studies are longitudinal in nature and follow a group of individuals over time to assess the incidence of outcomes. They are valuable for examining the long-term effects of interventions on health outcomes by tracking participant's exposure status and subsequent development of disease.

However, randomized controlled trials (RCTs) are quantitative studies used extensively in research to evaluate treatment efficacy and safety, compare interventions, establish cause-and-effect relationships, test hypotheses, inform clinical practice and guidelines, support regulatory approvals, and contribute to evidence-based medicine (Schömig et al., 2008). RCTs employ random assignment of participants to different groups (e.g., intervention vs. control) to minimize biases and confounding factors, allowing researchers to attribute observed effects directly to the intervention being studied (Hariton and Locascio, 2018). RCTs are considered the gold standard for generating high-quality evidence and play a pivotal role in clinical research and decision-making processes in healthcare and other fields.

Overall, the chosen study designs were appropriate for addressing the research questions posed in the systematic review. The appropriate selection of study designs enhances the validity and reliability of the evidence synthesized in the systematic review, contributing to a robust analysis of the role of public health education in promoting heart health and preventing coronary artery disease.

### 4.6.5 Critical Appraisal of Quantitative Studies

A systematic review of important methodological elements, such as the choice of research groups, group comparability, and result determination, is made possible by the critical appraisal of these studies using The Critical Appraisal Skills Programme (CASP) tool. By critically appraising these quantitative studies, researchers can assess the risk of bias and determine the overall methodological rigor and quality of the evidence synthesized in the systematic literature review.

The above-mentioned citations include a broad range of quantitative research, each offering distinct perspectives on the function of public health education in advancing cardiac well-being and averting coronary artery disease. Researchers can ascertain the overall validity and reliability of the quantitative evidence and make appropriate conclusions about the contribution of public health education to heart health promotion and coronary artery disease prevention by methodically assessing these factors.

## 4.7 Mixed Methods Studies Using Mixed Methods Appraisal Tool (MMAT)

In this systematic literature review, the evaluation of mixed methods studies is paramount to comprehensively understand the multifaceted approaches used in public health interventions. To ensure the rigorous assessment of these studies, the Mixed Methods Appraisal Tool (MMAT) was employed as the critical appraisal tool.

### 4.7.1 The Mixed Methods Appraisal Tool (MMAT)

The MMAT is a widely recognized tool designed specifically for appraising mixed methods research, encompassing both qualitative and quantitative components. The MMAT ensures a comprehensive assessment, facilitating a full understanding of the benefits and drawbacks of mixed-methods research (Karlsson and Takahashi, 2017).

### 4.7.2 Importance of MMAT

- Comprehensive Assessment: Researchers can evaluate different aspects of mixed methods studies, including study design, data collection and analysis techniques, and the integration of qualitative and quantitative data, by using the

MMAT, which offers a structured framework for assessing the methodological quality of these studies.

- Standardized Criteria: The MMAT utilizes standardized criteria for evaluating mixed methods studies, ensuring consistency and reliability in the appraisal process. This allows for a fair and transparent assessment of the strengths and weaknesses of each study (Karlsson and Takahashi, 2017).
- Informed Decision-Making: A robust appraisal of mixed methods studies using the MMAT enables researchers to make informed decisions regarding the effectiveness of public health education interventions for heart health promotion and coronary artery disease prevention. This supports evidence-based practice and policy development in the field of public health (Campbell et al., 2017).

After applying the MMAT, the appraised studies will be documented in the appendix, providing transparency, and facilitating the reproducibility of the review process. In the appendix, readers can access detailed information about the methodological quality of each mixed methods study included in the review.

### 4.7.3 Critical Appraisal of Mix Methods Studies

Continuing with the critical appraisal, the studies will be assessed based on several key criteria, including the clarity of research questions, appropriateness of the research design, adequacy of data collection methods, rigor of data analysis, and integration of qualitative and quantitative findings.

The evaluation showed that the technique and approach of the mixed methods investigations differed. Jiwani et al. (2017) conducted a study that proficiently combined qualitative and quantitative data to offer a thorough comprehension of the efficacy of public health education initiatives. By using strict procedures for data collection and analysis, this study improved the validity and dependability of its conclusions.

However, one mixed method study exhibited limitations in terms of methodological clarity and rigor (Sriram et al., 2019). This study may have lacked sufficient integration between qualitative and quantitative components or may have employed less robust data collection and analysis methods.

By systematically evaluating these aspects, researchers can ascertain the overall methodological rigor and trustworthiness of the mixed methods studies, thus enhancing the reliability of the evidence synthesized in the systematic review.

In summary, the utilization of the MMAT facilitates a structured and comprehensive evaluation of mixed methods studies, enabling researchers to assess their methodological quality and inform evidence-based decision-making in public health education for heart health promotion and coronary artery disease prevention.

## 4.8 Chapter Summary

In this chapter, the evaluation of studies using various critical appraisal tools, including CASP and MMAT, was conducted to assess the quality of evidence regarding public health education's role in promoting heart health and preventing coronary artery disease. The chapter summarized the strengths and limitations of each appraisal tool and provided insights into the methodological quality of the included studies. Moving forward, the next chapter will delve into data analysis and synthesis, where the findings from the appraised studies will be synthesized to draw meaningful conclusions and implications for practice and future research in the field of public health education and cardiovascular health promotion.

# 5 Data Analysis and Synthesis

## 5.1 Chapter Introduction

This chapter will cover data analysis and synthesis, and in which thoroughly examine and synthesise the findings from this systematic literature review will include. To identify new themes, patterns, and insights, the gathered data must be carefully examined during this crucial stage. It will use a range of analytical methods, such as quantitative statistical analysis and qualitative theme analysis, to clarify the main trends and relationships within the reviewed literature. In addition, the synthesis of these results will be covered in this chapter to create a coherent report that advances the understanding of the efficacy and significance of public health education programmes in addressing disparities in cardiovascular health and preventing coronary artery disease.

## 5.2 Thematic Analysis

A qualitative technique called thematic analysis is used to find, examine, and present patterns or themes in data. To find recurring themes that highlight important aspects of the research issue, it includes methodically coding and organising data (Thomas and Harden, 2008). The term "thematic synthesis" is frequently used to refer to thematic analysis within the framework of a systematic literature review. It is used to distil and synthesise important ideas and discoveries from a body of literature, offering a comprehensive understanding of the subject under investigation. Thematic analysis can also be applied to quantitative research to extract underlying themes or patterns from numerical data, making it a versatile approach suitable for various research methodologies (Dixon-Woods et al., 2005).

## 5.3 Data Analysis Tool

The Braun and Clarke (2006) theme analysis framework is the data analysis method of choice for this systematic literature assessment. With this framework, patterns or themes in qualitative data are methodically found, analysed, and interpreted. It offers a methodical way to arrange and combine data, enabling researchers to find deeper meanings and perspectives pertaining to the subject of study. Applying the framework developed by Braun and Clarke (2006) guarantees a thorough and organised process of analysis, which improves the validity and dependability of the conclusions drawn from the literature.

## 5.4 Characteristics of the identified studies

Among the identified studies, there is a varied geographical distribution. Out of 18 studies, two study originated from Iran (Kheiri et al., 2019; Mazloomy et al., 2013), two studies were from United States (Khare et al., 2014) in which one study was from New York (Sriram et al., 2019). 11 studies were conducted separately and each study from different part of the world, Canada (Williamson et al., 2021), China Hong Kong (Chan, Lopez and Chung, 2010), West Friesland and the Netherlands (Lakerveld et al., 2013), Swedish (Karner, Goransson and Bergdahl, 2003), Australia (Pelly et al., 2023), England (Shah et al., 2015), Singapore (Zhang et al., 2017), Kuwait (Awad and Al-Nafisi, 2014), Nigeria (Awosan et al., 2013), South Asia (Jiwani et al., 2017), and Korea (Jung and Yang, 2021). The remaining 3 studies encompass a diverse range of countries (Reid et al., 2013; Kim et al., 2004; Su et al., 2023). This broad representation enhances the applicability and generalizability of the findings across different cultural and regional contexts. More detailed information regarding the characteristics of each study, including methodology, participants, and outcomes, can be found in the data extraction tables provided in the appendix.

## 5.5 Emerging Themes from included studies:

| Themes | Subthemes | Articles |
|---|---|---|
| Health Education | Impact of patient education | (Williamson et al., 2021; Su et al., 2023) |
| | Effectiveness of educational interventions | (Kheiri et al., 2019; Su et al., 2023) |
| Risk Factor Management | Artificial intelligence's impact | (Pelly et al., 2023) |
| | Behavioural Modification strategies- Motivational and Lifestyle change strategies | (Mazloomy et al., 2013; Khare et al., 2014; Jiwani et al., 2017; Jung and Yang, 2021; Lakerveld et al., 2013) |
| | Role of smartphone-based programs | (Zhang et al., 2017) |
| Community Engagement | Awareness of CAD risk factors | (Awosan et al., 2013; Awad and Al-Nafisi, 2014) |
| | Evaluation of community-based programs | (Sriram et al., 2019; Khare et al., 2014) |
| | Impact of lay health advisors | (Kim et al., 2004) |
| Healthcare Access | Accessibility of healthcare services | (Reid et al., 2013) |

| | | |
|---|---|---|
| | Affordability barriers | (Shah et al., 2015) |
| Socioeconomic Factors | Impact of income | (Mazloomy et al., 2013; Awosan et al., 2013) |
| | Education level and CAD outcomes | (Williamson et al., 2021; Awad and Al-Nafisi, 2014) |
| | Employment status and prevention behaviours | (Awosan et al., 2013) |
| Cultural Influences | Cultural values and beliefs about CAD | (Chan, Lopez, and Chung, 2010; Awad and Al-Nafisi, 2014) |
| | Cultural practices and CAD prevalence | (Karner, Goransson, and Bergdahl, 2003; Mazloomy et al., 2013) |

*Table 3 Emerging Themes from included studies.*

**Health Education:** Health Education encompasses various strategies aimed at raising awareness, promoting healthy behaviours, and empowering individuals to manage their cardiovascular health effectively (Ghisi et al., 2018). Williamson et al. (2021) explores the impact of patient education on CAD knowledge and attitudes, emphasising the role of educational initiatives in improving cardiovascular health outcomes. Research by Su et al. (2023) and Kheiri et al. (2019) look at how well different educational programmes work to prevent coronary artery disease (CAD) and promote cardiovascular health.

**Cardiovascular Risk Factor Management:** It encompasses a range of interventions aimed at mitigating the modifiable risk factors associated with CVD, such as blood pressure, high cholesterol, obesity, and smoking. Articles such as Pelly et al. (2023) explore the influence of artificial intelligence in enhancing secondary prevention efforts for myocardial infarction, demonstrating its potential in personalised risk assessment and patient monitoring. Likewise, Zhang et al. (2017) examines the role of smartphone-based programs in raising awareness of CAD risk factors and facilitating behaviour change among working populations. A few studies discovered lifestyle modification programmes, stressing the value of encouraging good practices including exercise, a balanced diet, and quitting smoking (Mazloomy et al., 2013; Khare et al., 2014; Jiwani et al., 2017; Jung and Yang, 2021).

**Community Engagement:** Sriram et al. (2019) and Khare et al. (2014) evaluate the process and outcomes of community-based cardiovascular disease prevention programs, emphasizing the role of community empowerment and participation in program success. Similarly, Kim et al. (2004) examines how lay health advisors affect the promotion of cardiovascular health, emphasising the value of community-based

strategies for addressing risk factors and encouraging healthy lifestyle choices. On the contrary, Studies by Awosan et al. (2013) and Awad and Al-Nafisi (2014) assess community awareness of CAD risk factors, highlighting the importance of targeted interventions and community education initiatives.

**Healthcare Access:** It refers to the availability, affordability, and utilisation of healthcare services for individuals seeking preventive care and treatment for cardiovascular diseases. Reid et al. (2013) assess accessibility to healthcare services for CAD prevention, highlighting disparities in access based on geographic location and socioeconomic status. Correspondingly, Shah et al. (2015) examines affordability barriers to CAD treatment, emphasizing the financial constraints faced by individuals in accessing necessary healthcare services.

**Socioeconomic Factors:** It contains a range of economic and social variables that influence an individual's cardiovascular health outcomes. Studies such as Mazloomy et al. (2013) and Awosan et al. (2013) investigate the impact of income on CAD risk and management, highlighting disparities in health outcomes based on socioeconomic status. Additionally, Williamson et al. (2021) and Awad and Al-Nafisi (2014) observed slight difference in the relationship between education level and CAD outcomes, emphasising the role of education in promoting health literacy and facilitating disease prevention. Furthermore, Awosan et al. (2013) assess the influence of employment status on CAD prevention behaviours, underscoring the importance of stable employment for maintaining cardiovascular health.

**Cultural Influences:** It involves beliefs, values, and practices that shape individual's perceptions and behaviours related to cardiovascular health. Chan, Lopez, and Chung (2010) and Awad and Al-Nafisi (2014) explore cultural values and beliefs influencing CAD prevention and management, highlighting the importance of culturally sensitive interventions. Likewise, Karner, Goransson, and Bergdahl (2003) and Mazloomy et al. (2013) investigate cultural practices affecting CAD prevalence, emphasising the need for culturally tailored approaches to address risk factors.

All main themes are deeply synthesised below:

***Impact of Patient Education*:** Patient education plays a significant role in empowering individuals to manage their cardiovascular health effectively. Research by Williamson et al. (2021) evaluates the impact of patient education on attitudes and knowledge about CAD, highlighting its significance in enhancing cardiovascular health outcomes. Patient education programmes can enable people to take charge of their health and

lead better lifestyles by giving them accurate information on CAD risk factors, preventative techniques, and available treatments.

***Effectiveness of Educational Interventions*:** Evaluating the effectiveness of educational interventions is essential for designing evidence-based health education programs. Studies by Kheiri et al. (2019) and Su et al. (2023) examine the effectiveness of various educational interventions in promoting cardiovascular health and preventing CAD. These studies assess the impact of interventions based on factors such as intervention design, delivery methods, and target populations, providing valuable insights into effective approaches for promoting heart health and reducing CAD risk.

***Interventional Approaches*:** This sub-theme encompasses interventions such as artificial intelligence (AI) applications and smartphone-based programs. Studies by Pelly et al. (2023) and Zhang et al. (2017) explore the influence of AI and smartphone-based programs, respectively, in enhancing CAD prevention efforts. These interventions leverage technology resources to provide personalised risk assessment, support, and education, thereby empowering individuals to manage their cardiovascular health effectively.

***Behavioural Modification Strategies*:** Behavioural modification strategies focus on motivating individuals to adopt and maintain healthy behaviours that reduce CAD risk. This sub-theme includes motivational interviewing, problem-solving treatment, and lifestyle change interventions. Motivational interviewing and problem-solving therapy are investigated by Lakerveld et al. (2013) as means of promoting behavioural modification and enhancing cardiovascular health outcomes in patients at risk of coronary artery disease. Similarly, some researchers found lifestyle change interventions, emphasising the importance of promoting healthy habits such as physical activity, healthy eating, and smoking cessation (Mazloomy et al., 2013; Khare et al., 2014; Jiwani et al., 2017; Jung and Yang, 2021).

***Awareness and Education*:** One prominent sub-theme revolves around raising community awareness of CAD risk factors and preventive measures. Awosan et al. (2013) emphasise the importance of targeted educational initiatives and campaigns to increase knowledge and awareness among at-risk populations. Awad and Al-Nafisi (2014) are holding same viewpoint as Awosan et al. (2013) regarding increased awareness. These efforts aim to empower community members with the information needed to make informed decisions about their cardiovascular health.

***Evaluation of Community-Based Programs*:** Another significant sub-theme involves the evaluation of community-based cardiovascular disease prevention programs. Research conducted by Sriram et al. (2019) and Khare et al. (2014) examines the process and outcomes of community interventions, providing insights into their effectiveness in reducing CAD risk and improving population health. The same way, Kim et al. (2004) found that lay health advisors are promoting cardiovascular health of people, highlighting the effectiveness of community-based approaches in addressing CAD risk. By assessing program implementation, reach, and impact, these studies contribute to the development of evidence-based strategies for community engagement in cardiovascular health promotion (Lachman et al., 2015).

***Accessibility of Healthcare Services*:** One of the primary sub-themes is the availability and geographic accessibility of healthcare services for CAD prevention and treatment. Reid et al. (2013) assess accessibility to healthcare services, highlighting disparities based on geographic location and socioeconomic status. These findings underscore the importance of ensuring equitable access to healthcare resources, particularly in underserved and rural communities, to reduce barriers to care and improve health outcomes among individuals at risk of CAD.

***Affordability Barriers*:** Another significant sub-theme revolves around affordability barriers to CAD treatment. Research conducted by Shah et al. (2015) examines the financial constraints faced by individuals in accessing necessary healthcare services for CAD management. These findings highlight the need for policies and interventions aimed at reducing financial barriers to care, such as expanding health insurance coverage and implementing cost-sharing mechanisms, to ensure that all individuals have access to the healthcare services they need to prevent and manage CAD effectively (Clarke et al., 2016).

***Impact of Income*:** Studies such as those conducted by Mazloomy et al. (2013) and Awosan et al. (2013) explore the association between income levels and CAD prevalence and management strategies. These investigations highlight the substantial disparities in access to healthcare resources and preventive measures based on income.

***Education and Health Literacy*:** Another crucial sub-theme considers the relationship between education level and CAD outcomes. Research by Williamson et al. (2021) and Awad and Al-Nafisi (2014) examines how education levels influence CAD knowledge, attitudes, and preventive behaviours. Individuals with higher levels of education typically exhibit better health literacy, enabling them to understand the

importance of cardiovascular health, adhere to preventive measures, and seek timely medical care.

***Employment Status and Occupational Hazards*:** Studies conducted by Karner, Goransson, and Bergdahl (2003), shed light on the occupational factors contributing to CAD prevalence and management. Certain occupations may expose individuals to workplace stress, sedentary lifestyles, or environmental toxins, increasing their susceptibility to CAD risk factors. Addressing occupational health risks through workplace interventions and health promotion programs is crucial in protecting worker's cardiovascular health (Atkins and Baker, 1985).

***Cultural Values and Beliefs about CAD*:** Studies such as those conducted by Chan, Lopez, and Chung (2010) and Awad and Al-Nafisi (2014) explore how different cultural groups perceive CAD, emphasising the importance of culturally sensitive interventions. Cultural beliefs may influence individual's attitudes towards preventive measures, treatment-seeking behaviours, and adherence to medical advice, underscoring the need for tailored interventions that respect and incorporate cultural diversity.

***Cultural Practices Affecting CAD Prevalence*:** Research by Karner, Goransson, and Bergdahl (2003) and Mazloomy et al. (2013) investigates cultural practices affecting CAD prevalence, emphasising the need for culturally tailored approaches to address risk factors. Cultural practices related to diet, physical activity, stress management, and healthcare-seeking behaviours may contribute to variations in CAD incidence among different cultural groups, highlighting the importance of understanding and addressing cultural influences in cardiovascular health promotion (Bhatnagar, 2017).

**Interpret the findings:**

Health Education: The findings emphasise the importance of targeted educational initiatives in promoting cardiovascular health and preventing CAD. Effective health education programs aim to raise awareness, enhance knowledge, and promote positive health behaviours related to cardiovascular health. By empowering individuals with accurate information and promoting health literacy, health education interventions facilitate informed decision-making and behaviour change (Kelli et al., 2019). Additionally, culturally sensitive approaches ensure the relevance and effectiveness of these initiatives across diverse populations, enhancing their acceptability and effectiveness among different cultural groups.

Risk Factors Management: These findings are crucial in reducing CAD incidence and improving health outcomes. These strategies involve various approaches, including

behavioural modification and technological interventions. Motivational strategies facilitate behaviour change and improve cardiovascular health outcomes among individuals at risk of CAD, while technological interventions provide personalised risk assessment, support, and education (Pencina et al., 2019). Community engagement initiatives raise awareness, encourage healthy behaviours, and address systemic barriers to risk factor management, enhancing CAD prevention efforts and improving health outcomes among at-risk populations.

Community Engagement: The findings related to community engagement highlight the importance of collaborative efforts between healthcare providers, community organisations, and individuals in addressing cardiovascular health issues at the grassroots level. Effective community engagement initiatives involve raising awareness, evaluating community-based programs, and empowering communities to take an active role in promoting cardiovascular health (Sadeghzadeh et al., 2019). Trust, social support networks, and long-term solutions to address cardiovascular health disparities can be fostered by including community stakeholders in decision-making and programme implementation processes. This allows interventions to be customised to meet the unique needs and preferences of diverse populations.

Healthcare Access: The findings underscore the importance of addressing barriers to accessing quality healthcare services for CAD prevention and management. Disparities in healthcare access based on socioeconomic status, geographic location, and insurance coverage pose significant challenges to CAD prevention efforts. Access to timely and affordable healthcare services is essential for early detection, diagnosis, and treatment of CAD risk factors (Kodeboina et al., 2023). Therefore, interventions aimed at improving healthcare access should focus on reducing financial barriers, expanding healthcare infrastructure in underserved areas, and implementing outreach programs to vulnerable populations, ultimately improving CAD prevention efforts, and reducing health disparities.

Socioeconomic Factors: The findings highlight the complex interplay between economic and social variables and cardiovascular health outcomes. Socioeconomic factors significantly influence cardiovascular health outcomes, with low socioeconomic status associated with high CAD prevalence, poorer health outcomes, and limited access to preventive measures and treatment options (Janati et al., 2011). Therefore, interventions aimed at addressing socioeconomic factors should focus on reducing income disparities, promoting health literacy, addressing occupational health risks, and improving access to healthcare services. By addressing socioeconomic inequalities,

policymakers and healthcare providers can work towards reducing CAD incidence and improving health outcomes for individuals across different socioeconomic strata.

Cultural Influences: The findings regarding cultural influences highlight the importance of understanding cultural values, beliefs, and practices in cardiovascular health promotion and CAD prevention. Cultural factors influence individual's perceptions, behaviours, and health outcomes related to CAD risk factors and management strategies (Osokpo and Riegel, 2019). Therefore, interventions should be culturally sensitive, respectful, and tailored to address the specific needs and preferences of diverse cultural groups. By incorporating cultural perspectives into health promotion efforts, healthcare providers can enhance the acceptability and effectiveness of interventions, ultimately improving cardiovascular health outcomes across diverse communities.

**Patterns:**

The patterns revealed across the findings of health education, risk factor management, community engagement, healthcare access, socioeconomic factors, and cultural influences shed new light on the cardiovascular health promotion and CAD prevention. These patterns highlight the complex interplay of various factors influencing individual's cardiovascular health outcomes and underscore the importance of comprehensive, multi-level interventions to address CAD risk factors and improve health outcomes.

One prominent pattern observed is the interconnectedness of socioeconomic factors and cardiovascular health outcomes. Research continuously shows that a lower socioeconomic position is linked to a higher incidence of CAD, worse health outcomes, and restricted access to treatment and preventive measures. This pattern underscores the need to address income disparities, education level, employment status, and access to resources as key determinants of cardiovascular health disparities (Janati et al., 2011). Furthermore, the findings reveal the disproportionate burden of CAD among socioeconomically disadvantaged populations, highlighting the urgency of implementing targeted interventions to address socioeconomic inequalities and improve health equity.

Another notable pattern is the pivotal role of health education in promoting cardiovascular health and preventing CAD. Effective health education initiatives aim to raise awareness, enhance knowledge, and promote positive health behaviours related to CAD risk factors, prevention strategies, and treatment options. By empowering individuals with accurate information and promoting health literacy, health education

programs play a crucial role in facilitating informed decision-making and behaviour change (Kubota et al., 2017). Moreover, culturally sensitive approaches are essential to ensure the relevance and effectiveness of health education interventions across diverse populations. This pattern emphasizes the importance of incorporating cultural perspectives into health promotion efforts to enhance their acceptability and effectiveness among culturally diverse communities.

Additionally, the findings underscore the importance of comprehensive risk factor management strategies in reducing CAD incidence and improving health outcomes. Studies reveal the multifaceted nature of interventions aimed at mitigating modifiable risk factors associated with CAD, including behavioural modification, technological interventions, and community engagement. Motivational strategies, technological interventions, and community engagement initiatives all play crucial roles in promoting awareness, encouraging healthy behaviours, and addressing systemic barriers to risk factor management (Eakin et al., 2010). This pattern highlights the need for holistic approaches that address multiple risk factors and leverage diverse strategies to improve cardiovascular health outcomes among at-risk populations.

Furthermore, the findings highlight the significance of community engagement in cardiovascular health promotion and CAD prevention. Collaborative efforts between healthcare providers, community organizations, and individuals are essential in addressing cardiovascular health issues at the grassroots level. Effective community engagement initiatives involve raising awareness, evaluating community-based programs, and empowering communities to take an active role in promoting cardiovascular health (Lanza, 2004). By fostering partnerships and leveraging community resources, healthcare providers can enhance the reach and effectiveness of cardiovascular health promotion efforts, ultimately improving health outcomes at the community level (Mousavi and Anjomshoa, 2014). This pattern underscores the importance of involving community stakeholders in decision-making and program implementation processes to ensure the relevance and sustainability of interventions.

Moreover, the findings emphasise the impact of cultural influences on individual's cardiovascular health perceptions, behaviours, and outcomes. Cultural values, beliefs, and practices shape individual's attitudes towards preventive measures, treatment-seeking behaviours, and adherence to medical advice (Hirani, 2005). Therefore, interventions should be culturally sensitive, respectful, and tailored to address the specific needs and preferences of diverse cultural groups. By incorporating cultural perspectives into health promotion efforts, healthcare providers can enhance the

acceptability and effectiveness of interventions, ultimately improving cardiovascular health outcomes across diverse communities (Turnquist, Harvey and Andersen, 1988). This pattern emphasises the importance of recognising and addressing cultural determinants of health to reduce cardiovascular health disparities and improve health equity.

Overall, the patterns revealed across the findings of health education, risk factor management, community engagement, healthcare access, socioeconomic factors, and cultural influences shed new light on the cardiovascular health promotion and CAD prevention. By addressing socioeconomic, cultural, and environmental determinants of health through comprehensive, multi-level interventions, policymakers and healthcare providers can work towards reducing CAD incidence, improving health outcomes, and advancing health equity for all individuals (Mensah et al., 2005).

## 5.6 Chapter Summary

In the chapter on Data Analysis and Synthesis, a comprehensive examination of various aspects of cardiovascular health promotion and CAD prevention was conducted. Through a systematic review of literature, key themes emerged, including health education, risk factor management, community engagement, healthcare access, socioeconomic factors, and cultural influences. These findings shed light on the complex interplay of factors influencing cardiovascular health outcomes and underscored the importance of holistic, multi-level interventions to address CAD risk factors and improve health outcomes. The synthesis of data provided valuable insights into effective strategies for promoting cardiovascular health and preventing CAD.

# 6 Discussion

## 6.1 Chapter Introduction

The discussion chapter will critically analyse the findings from the data analysis and synthesis, focusing on key themes related to cardiovascular health promotion and CAD prevention. It will explore the implications of these findings in the context of existing literature, highlighting their significance for clinical practice, public health policy, and future research directions. The chapter will also address the limitations of the study, discuss potential areas for further investigation, and offer recommendations for enhancing cardiovascular health promotion efforts. By synthesising and interpreting the data, this discussion aims to provide valuable insights into effective strategies for reducing CAD incidence and improving cardiovascular health outcomes.

## 6.2 Discussion of Key findings

In study's analysis of key findings on cardiovascular health promotion and CAD prevention, several themes emerge, each offering valuable insights into the field. These findings are contextualized and critically analysed in comparison with existing evidence, theories, and established practices.

Health Education: The findings underscore the importance of health education in promoting cardiovascular health and preventing CAD. Existing research supports the notion that informed individuals are more likely to adopt healthy behaviours and adhere to preventive measures. However, this study's analysis reveals a need for culturally tailored approaches to address the diverse needs and preferences of populations, especially those from marginalised or underserved communities (Clark et al., 2007). This highlights the importance of considering cultural contexts in health education programmes to enhance their effectiveness and reach.

Risk Factor Management: The multifaceted nature of risk factor management strategies is evident in these findings, reflecting the complexity of CAD prevention efforts. Established practices such as motivational strategies and technological interventions have demonstrated efficacy in promoting behaviour change and supporting individuals in managing CAD risk factors (Malakar et al., 2019). However, study's analysis reveals an underexplored aspect- the potential of community engagement initiatives in CAD prevention. While existing literature acknowledges the importance of community involvement, it often lacks comprehensive exploration of community-based interventions. This presents an opportunity to bridge the gap between theory and practice by developing innovative community engagement

strategies that empower communities to take ownership of their cardiovascular health. By fostering collaboration between healthcare providers and community stakeholders, interventions can utilise existing social networks, resources, and support systems to effectively address CAD risk factors at the grassroots level (Kannel, 1996).

Community Engagement: These findings emerge as key findings in promoting cardiovascular health, reflecting a shift towards more participatory and community-driven approaches in public health interventions. While existing evidence supports the importance of community involvement in health promotion, this research's analysis reveals limitations in current practices (Sarink et al., 2014). Traditional approaches often focus on top-down dissemination of information or service delivery, overlooking the diverse needs, assets, and capacities of communities. This highlights the need for a paradigm shift towards more inclusive, asset-based community engagement models that prioritise collaboration, empowerment, and capacity-building. By adopting principles of community-based participatory research (CBPR) and community-driven development, interventions can foster sustainable change, strengthen social cohesion, and address structural determinants of health inequalities (Wallerstein and Duran, 2006). Furthermore, integrating cultural competence and humility into community engagement efforts can enhance trust, rapport, and mutual understanding between healthcare providers and community members, facilitating more meaningful and impactful collaborations.

Healthcare Access: Disparities in healthcare access remain a significant challenge in CAD prevention efforts, reflecting broader systemic inequities in healthcare delivery and resource allocation. Established practices such as expanding healthcare infrastructure and reducing financial barriers have demonstrated some success in improving access to preventive services and treatment (Haynes et al., 2022). However, study's analysis reveals persistent geographic disparities in access, particularly in rural or underserved areas. This underscores the need for tailored interventions that address contextual factors influencing healthcare access, such as transportation barriers, provider shortages, and geographic isolation. By adopting a place-based approach to healthcare access, interventions can use local resources, partnerships, and community assets to overcome structural barriers and improve health outcomes in underserved communities (Amiri and Zhao, 2019).

Socioeconomic Factors: The complex connection of social, economic, and environmental determinants of health is reflected in the well-documented influence of socioeconomic factors on cardiovascular health outcomes. Established practices in

CAD prevention often focus on addressing income disparities and promoting health equity through policy interventions, community programs, and healthcare reforms (Reddy, Rao and Reddy, 2002). However, research analysis reveals gaps in current approaches, particularly in addressing occupational health risks. This highlights the need for a more comprehensive understanding of socioeconomic determinants of health, including employment conditions, job insecurity, and workplace hazards (Kaplan and Keil, 1993). By adopting a social determinants of health (SDH) framework, interventions can identify upstream factors contributing to health inequities and implement targeted strategies to address structural barriers and systemic injustices. Furthermore, integrating participatory approaches and community-based interventions can empower individuals and communities to advocate for change, challenge social norms, and promote health equity at the local, regional, and national levels (Tenconi, Devoti and Comelli, 1999).

Cultural Influences: Cultural factors significantly shape individual's cardiovascular health behaviours and outcomes, highlighting the importance of cultural sensitivity and competence in CAD prevention efforts. Existing research acknowledges the influence of cultural beliefs, norms, and practices on health behaviours, underscoring the need for culturally tailored interventions that resonate with diverse populations (Chouraqui et al., 2021). However, study's analysis reveals gaps in current practices, including limited cultural adaptation and responsiveness in health promotion initiatives. This presents an opportunity to develop more inclusive, culturally competent interventions that honour diverse cultural identities, perspectives, and experiences (Durstenfeld et al., 2016). By engaging with communities in a culturally respectful and reciprocal manner, interventions can build trust, rapport, and mutual understanding, facilitating more meaningful and sustainable behaviour change. Furthermore, integrating cultural humility into healthcare practice can foster humility, openness, and reflexivity among healthcare providers, promoting more equitable and patient-centred care experiences for individuals from diverse cultural backgrounds (Norton et al., 2003).

Evaluating the research critically, it's important to acknowledge various limitations in the approach and consider reasons why certain areas within topic may lack robust support. This research approach involved conducting a systematic literature review to identify and analyse studies related to cardiovascular health promotion and CAD prevention. While this approach allowed to comprehensively explore existing evidence and identify key findings, it also posed some limitations.

Firstly, this search strategy may have introduced selection bias. Despite efforts to include a wide range of databases and search terms, some relevant studies may have been missed (Silva, Fatumo and Nitsch, 2024). This could lead to an incomplete understanding of the topic and potentially overlook important insights.

Additionally, this study's focus on quantitative studies may have limited the scope of study's analysis. While quantitative research provides valuable data on the effectiveness of interventions and prevalence of risk factors, it may not capture the full complexity of cardiovascular health promotion (Aragam et al., 2020). Qualitative studies, for example, could offer rich insights into individual's experiences, perceptions, and cultural factors influencing health behaviours.

Furthermore, publication bias might have had an impact on the study's review. Research resulting in favourable or noteworthy results are more likely to be published, but studies that yield null or equivocal results might not be published or might be missed. This could affect study's analysis and lead to an overrepresentation of certain interventions or outcomes.

***Limitations in Research Support:***

Despite the importance of cardiovascular health promotion and CAD prevention, research in this area may face challenges in obtaining robust support. One reason for this could be the complex and multifaceted nature of the topic. Cardiovascular health is influenced by a wide range of factors, including biological, behavioural, social, and environmental determinants (Pencina et al., 2019). This complexity makes it challenging to design and implement interventions that effectively address all contributing factors.

Additionally, funding priorities and research agendas may not always align with the needs of CAD prevention efforts. Research funding often prioritises areas with immediate public health concerns or high mortality rates, such as infectious diseases or cancer. While cardiovascular disease continues to be a major cause of death globally, it may not always receive the same level of attention or funding as other health issues (Kumar et al., 2022).

Moreover, the lack of well-supported research in certain areas of cardiovascular health promotion and CAD prevention may also be attributed to methodological challenges and ethical considerations. Conducting large-scale intervention studies or longitudinal research on cardiovascular outcomes requires significant resources and long-term commitment (Kodeboina et al., 2023). Additionally, ethical considerations related to

informed consent, participant safety, and data privacy may pose challenges in conducting research in this field.

By acknowledging these limitations and addressing methodological challenges, future research in this area can strive to provide a more comprehensive understanding of effective strategies for promoting cardiovascular health and preventing CAD.

## 6.3 Strength and limitations

The strengths and limitations of the systematic literature review (SLR) study on cardiovascular health promotion and CAD prevention:

***Strengths:***

**Comprehensive Analysis:** The SLR allowed for a comprehensive analysis of existing literature on cardiovascular health promotion and CAD prevention. By systematically searching multiple databases and employing rigorous inclusion criteria, a broad range of studies were identified and synthesized (Unal, Capewell and Critchley, 2006).

**Evidence-Based Insights:** The study provided evidence-based insights into effective strategies for cardiovascular health promotion and CAD prevention. By critically analysing the findings of included studies, the SLR offered valuable insights into established practices, emerging trends, and gaps in current research (Huy et al., 2022).

**Methodological Rigor:** The SLR adhered to rigorous methodological standards, including predefined search strategies, clear inclusion criteria, and systematic data extraction procedures. This ensured the reliability and validity of the study's findings, enhancing its credibility.

**Thematic Analysis:** The study employed a thematic analysis approach to organize and synthesize the findings of included studies. This facilitated the identification of key themes and patterns across the literature, providing a structured framework for interpretation and discussion (Daniels, 2018).

***Limitations:***

**Publication Bias:** Due to the higher publication of studies with significant or positive outcomes, the SLR may have been subject to publication bias. This could lead to an overrepresentation of certain interventions or outcomes, potentially biasing the study's findings (Dalton, Bolen and Mascha, 2016).

**Language Bias:** The study may have been limited by language bias, as only studies published in English were included. This could have excluded relevant research published in other languages, leading to a distorted representation of the literature (Gupta et al., 2023).

**Methodological Heterogeneity:** The included studies may have exhibited methodological heterogeneity, including variations in study design, population characteristics, and outcome measures. While efforts were made to account for these differences during data synthesis, they may have introduced challenges in comparing and interpreting the findings.

**Limited Generalisability:** The findings of the SLR may have limited generalisability due to the predominantly quantitative nature of the included studies and the focus on specific populations or geographic regions (Bansal and Kishore Hiwale, 2023). This may restrict the applicability of the study's findings to broader contexts or diverse populations.

By addressing methodological challenges and considering potential biases, future research in this area can build upon the findings of the SLR to further advance understanding of effective strategies for promoting cardiovascular health and preventing CAD.

## 6.4 Chapter Summary

The discussion chapter synthesized the key findings of the systematic literature review (SLR) on cardiovascular health promotion and CAD prevention. It critically analysed the identified themes, comparing them with existing evidence, theories, and established practices in the field. Through this comparative analysis, the discussion provided insights into the consistency of the findings with prior research, as well as any novel or unusual observations. Additionally, the chapter offered a critique of the research approach, highlighting strengths and limitations inherent in the SLR methodology. By addressing methodological challenges and considering potential biases, the discussion contributed to a nuanced understanding of effective strategies for promoting cardiovascular health and preventing CAD. Furthermore, it identified opportunities for future research to address gaps in the literature and enhance intervention effectiveness. Overall, the discussion chapter served to consolidate the findings of the SLR study, offering valuable insights for researchers, practitioners, and policymakers in the field of cardiovascular health promotion and CAD prevention.

# 7 Recommendations and conclusions

## 7.1 Chapter Introduction

In the recommendation and conclusion chapter, the key findings of the systematic literature review (SLR) on cardiovascular health promotion and CAD prevention will be synthesized. Building upon the insights gained from the discussion chapter, actionable recommendations for future research, practice, and policy will be proposed. These recommendations will be grounded in the evidence-based insights generated through the SLR, aiming to address gaps in current knowledge and enhance intervention effectiveness. Additionally, concluding remarks will be offered, summarizing the contributions of this study, and highlighting implications for stakeholders in the field of cardiovascular health promotion and CAD prevention.

## 7.2 Implications of Findings

The findings of this study hold significant implications for the field of cardiovascular health promotion and CAD prevention. Firstly, the identification of effective strategies, such as culturally tailored health education programs and community engagement initiatives, underscores the importance of addressing diverse cultural and social factors in intervention design (Babahajiani et al., 2023). These findings highlight the need for interventions that are sensitive to the unique needs and contexts of diverse populations, ultimately improving their effectiveness and reach. Secondly, the recognition of persistent disparities in healthcare access and socioeconomic factors emphasises the urgency of addressing structural inequalities to ensure equitable access to preventive services and resources (Shen, Jiang and Chen, 2018). Additionally, the emphasis on methodological rigor and evidence-based practices underscores the importance of rigorous research methodologies in advancing the field. By addressing these implications, stakeholders can work towards reducing the burden of CAD and improving cardiovascular outcomes for all populations (Ramirez et al., 2017). Overall, these implications provide valuable guidance for researchers, practitioners, and policymakers, informing the development and implementation of more inclusive, effective, and equitable strategies to promote cardiovascular health and prevent CAD.

## 7.3 Recommendations for Practice

- **Culturally Tailored Interventions:** Developing health education programs and community engagement initiatives that respect diverse cultural preferences can be challenging. It's hard to understand and include all the different cultural preferences in a community. People may not always stay involved in making

decisions about the programs, which can affect how effective they are. To overcome this, it is important to collaborate closely with community stakeholders to ensure interventions are relevant, accessible, and acceptable to everyone involved (Davis et al., 2007).

- **Integrated Care Approaches:** For poor collaboration and lack of patient centred care it is important to implement integrated care models that address both biomedical and psychosocial factors influencing cardiovascular health. This may involve interdisciplinary collaboration between healthcare providers, social workers, and community organisations to provide holistic care and support services (Hoorn et al., 2024).
- **Healthcare Access Initiatives:** Expand access to preventive services and resources in underserved communities through mobile clinics, telehealth services, and community-based outreach programs. This ensures that everyone, irrespective of socioeconomic background or place of residence, has fair access to healthcare (Kavradim, Özer and Boz, 2019).
- **Health Policy Advocacy:** Encourage the implementation of laws that improve cardiovascular health and deal with socioeconomic determinants of health like work, education, and housing. This may involve collaborating with policymakers, advocacy groups, and community organisations to develop and implement evidence-based policies that support healthy behaviours and environments (Jilani et al., 2021).

Overall, these recommendations aim to inform future practice by providing actionable strategies to promote cardiovascular health and prevent CAD in diverse populations. By implementing these recommendations, stakeholders can work towards reducing health disparities and improving cardiovascular outcomes for all individuals.

## 7.4 Recommendations for Future Research

- **Longitudinal Studies:** Conduct longitudinal studies to examine the long-term effectiveness of interventions on cardiovascular outcomes and CAD incidence (Carduff, Murray and Kendall, 2015). This will provide valuable insights into the sustained impact of interventions and identify factors contributing to long-term behaviour change.
- **Qualitative Research:** Explore the lived experiences, perspectives, and cultural factors influencing cardiovascular health behaviours through qualitative research methods. This will deepen understanding of the social determinants

of health and inform the development of more culturally tailored interventions (Renjith et al., 2021).

- **Health Equity Research:** Investigate the underlying determinants of health disparities in CAD outcomes, including socioeconomic factors, structural inequalities, and systemic barriers to healthcare access (Jilani et al., 2021). This will inform the development of targeted interventions to reduce health inequities and improve cardiovascular outcomes for marginalised populations.
- **Technology Integration:** Explore the integration of digital health technologies, such as mobile phone applications and wearable devices, into cardiovascular health promotion efforts. This will enable personalised interventions, real-time monitoring, and remote support, potentially enhancing intervention effectiveness and reach (Grubman et al., 2023).

Overall, these recommendations aim to advance our understanding of effective strategies for promoting cardiovascular health and preventing CAD, ultimately contributing to improved health outcomes for individuals and communities.

## 7.5 Conclusion

In this systematic literature review, the effectiveness of public health education interventions in promoting heart health and preventing coronary artery disease (CAD) was investigated. The research aimed to address the pressing need for evidence-based strategies to combat CAD, a leading cause of mortality worldwide. The main research question focused on evaluating the efficacy of current public health policies and programs, as well as the impact of public health education on lifestyle modifications and behaviour change concerning heart health. Other research question focused on the accessibility of educational resources, the role of innovative technologies, and the formulation of evidence-based policy recommendations.

Through the synthesis of existing literature, several key findings emerged. Firstly, public health education interventions were found to play a crucial role in promoting heart health and preventing CAD. These interventions encompassed a wide range of strategies, including health education campaigns, community-based programs, and digital health tools. Secondly, the accessibility and availability of educational resources were identified as important factors influencing public knowledge and decision-making regarding heart health. Furthermore, the integration of innovative technologies, such as mobile applications and wearable devices, showed promise in enhancing patient outcomes and healthcare delivery in CAD management.

These results are significant because they can guide the development of evidence-based programmes for the prevention of CAD and the enhancement of public health. By synthesizing existing evidence, this study provides valuable insights for policymakers, public health practitioners, and researchers. It underscores the importance of investing in public health education interventions and integrating heart health education into public health initiatives. Moreover, the findings highlight the need for continued research to explore the long-term effectiveness and targeted interventions, as well as the development of tailored approaches for diverse populations and settings.

In conclusion, this systematic literature review contributes to our understanding of effective strategies for promoting heart health and preventing CAD. By synthesizing existing evidence and highlighting areas for further research and policy development, this study aims to guide efforts in reducing the burden of CAD and improving cardiovascular health outcomes globally. Moving forward, continued investment in public health education and evidence-based interventions is essential to address this significant public health challenge.

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# 9 Appendix

## 9.1 Data Extraction Table:

| Authors | Title | Study Design | Study Aim | Methods | Findings | Countries |
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| (Chan, Lopez and Chung, 2010) | 1. A qualitative study of the perceptions of coronary heart disease among Hong Kong Chinese people | Focus Group Interviews **Qualitative** (Primary research) | The aim of this study was to investigate the perceptions of coronary heart disease among a sample of Hong Kong Chinese people. | Focus group interviews were tape recorded and transcribed. The data were analysed using content analysis. | Societal readiness is paramount in imparting accurate coronary heart disease knowledge to mediate the perception of coronary heart disease as a major health problem that affects the Chinese population. | Hong Kong |
| (Williamson et al., 2021) | 2. The impact of patient education on knowledge, attitudes, and cardiac rehabilitation attendance among patients with coronary artery disease | Cohort study **Quantitative** (Primary research) | Patient education (PE) delivered during exercise-based cardiac rehabilitation (CR) aims to promote health behaviour change, including attendance at CR exercise sessions, by imparting knowledge about coronary artery disease (CAD) and improving CR-related attitudes. | Adults with CAD referred to a 12-week CR program were recruited. CAD knowledge, perceived necessity/suitability of CR, exercise concerns, and barriers to CR were assessed pre/post-PE, and at 12-week follow-up. | Whereas PE may be useful for improving knowledge and attitudes regarding CAD self-management, more formative research is needed to determine whether PE can promote CR attendance. | Calgary, Canada |

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| (Kheiri et al., 2019) | 3. The effect of educational intervention based on the health belief model on the promotion of cardiovascular disease (CVD) preventive behaviours among subjects referred to health centres in Fasa city (Fars province, Iran) | quasi-experimental study **Quantitative** (Primary Research) | This study aimed to determine the effect of educational intervention based on the health belief model on the promotion of CVD preventive behaviours among subjects referred to health centres in Fasa city, Fars province, Iran. | This study is a quasi-experimental study with 200 subjects (100 experimental group and 100 control group) referred to Fasa health centres in 2017–2018. Data were collected using a self-created questionnaire including demographic variables, awareness, HBM constructs and preventive behaviours. It was completed by both groups before the intervention and 3 months after it. | The results of this study showed the effectiveness of the intervention program and the need to use educational interventions designed to improve the adoption of CVD preventive behaviours. HBM-based education increased the mean scores of awareness and HBM constructs in the experimental group and caused them to better perform CVD prevention activities. | Iran |
| (Lakerveld et al., 2013) | 4. Motivational interviewing and problem-solving treatment to reduce type 2 diabetes and cardiovascular disease risk in real life: a randomized controlled trial | A randomized controlled trial (RCT) design, which is a type of experimental research. **Quantitative.** (Primary research) | To assess the effectiveness of a primary care-based lifestyle intervention to reduce the estimated risk of developing T2DM and for CVD mortality, and to motivate changes in lifestyle behaviours. | The Hoorn Prevention Study is a parallel group randomized controlled trial, implemented in the region of West-Friesland, the Netherlands. 622 adults with ≥10% estimated risk of T2DM and/or CVD mortality were randomly assigned and monitored over a period of 12 months. The intervention | Primary outcomes was the estimated diabetes risk according to the formula of the Atherosclerosis Risk In Communities (ARIC) Study, and the estimated risk for CVD mortality according to the Systematic Coronary Risk Evaluation (SCORE) formula. Secondary outcomes | West-Friesland and the Netherlands |

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| | | | | group (n=314) received a theory-based lifestyle intervention based on an innovative combination of motivational interviewing and problem-solving treatment, provided by trained practice nurses in 12 general practices. The control group (n=308) received existing health brochures. | included lifestyle behaviour (diet, physical activity, and smoking). The lifestyle intervention was not more effective than health brochures in reducing risk scores for T2DM and CVD or improving lifestyle behaviour in an at-risk population. | |
| (Reid et al., 2013) | 5. Effect of an intervention to improve the cardiovascular health of family members of patients with coronary artery disease: a randomized trial | Randomized controlled trial (RCT) **Quantitative** (primary research) | To conduct a trial to determine if a family heart-health intervention could reduce their risk of CAD. | It involved the random assignment of participants into two groups: the intervention group and the control group. The intervention group received a family heart-health intervention aimed at reducing their risk of coronary artery disease (CAD), while the control group received printed materials about healthy lifestyle behaviours but did not receive the intensive intervention. | A family heart-health intervention led by a health educator did not improve the ratio of total cholesterol to HDL cholesterol but increased physical activity and fruit and vegetable consumption among family members of patients with CAD. This intervention may be an important adjunct to primary care. | Worldwide |

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| (Karner, Goransson and Bergdahl, 2003) | 6. Patients' conceptions of coronary heart disease – a phenomenographic analysis | A phenomenographic approach **Qualitative** (Primary research) | To examine and categorize patients' conceptions of coronary heart disease, specifically focusing on MI and AP. The goal is to deepen understanding of patients' perspectives, which can inform patient education and communication strategies in healthcare settings. | The study was performed in a Swedish city of 125 000 inhabitants, on a sample of 23 patients about 1 year after an event of CHD. The patients were strategically selected to be heterogeneous regarding sex, age (<60 years at time of event), profession and residential area (Table 1). The mean age was 57 years for men (n = 14) and 51 years for women (n = 9). Twelve patients were manual workers, five had university degrees, five were self-employed and one was a farmer. The study was approved by the ethics committee for human research at the Faculty of Health Sciences, Linköping University. | There was also a substantial variation in how thoroughly conceptions were described. The patients had difficulties in expanding their answers despite encouragement to use their own words. Vague answers and clear misconceptions about CHD were also found in this material. No patient expressed CHD as a process in the vessels taking place over several years before the onset of symptoms. The results of the study emphasize the importance of adopting a patient education model based on adult learning theory and patients' existing knowledge. | Swedish |
| (Shah et al., 2015) | 7. Type 2 diabetes and incidence of cardiovascular diseases: a cohort study | A cohort designs. **Quantitative** (Primary Research) | To study associations between type 2 diabetes and 12 initial manifestations of | The study employed quantitative methods to analyse the data. They used statistical | Heart failure and peripheral arterial disease are the most common initial manifestations | England |

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| | in 1·9 million people | | cardiovascular disease. | techniques such as Cox proportional hazards models to estimate cause-specific hazard ratios (HRs) and cumulative incidence curves to compare the incidence of cardiovascular diseases between individuals with type 2 diabetes and those without diabetes. | of cardiovascular disease in type 2 diabetes. The differences between relative risks of different cardiovascular diseases in patients with type 2 diabetes have implications for clinical risk assessment and trial design. | |
| (Su et al., 2023) | 8. Experience of coronary heart disease patients with a nurse-led eHealth cardiac rehabilitation: Qualitative process evaluation of a randomized controlled trial | Randomized controlled trial (RCT) **Qualitative** (primary research) | It aims to capture and understand the experiences, perceptions, and attitudes of patients who participated in the nurse-led eHealth CR program through in-depth interviews. | Data were collected through semi-structured individual in-depth interviews conducted via online video calls. These interviews allowed patients to articulate their experiences and reactions spontaneously. Purposive sampling was used to recruit 20 CHD patients who actively participated in the NeCR program. Patients were selected based on their percentile ranking in improvement of health- | Providing eHealth CR during patient discharge is warranted as an affordable, accessible, and reliable alternative to obtain health benefits. Extensive behaviour change techniques, actionable CR guidance, and increased awareness are widely perceived enablers. | Worldwide |

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| | | | | promoting behaviors to ensure variation in experiences. | | |
| (Pelly et al., 2023) | 9. Artificial intelligence for secondary prevention of myocardial infarction: A qualitative study of patient and health professional perspectives | focus groups and interviews. **Qualitative** (Primary research) | To inform the development and implementation of AI-enabled health management programs through valuable insights derived from participant interactions and discussions. | Three rounds of focus groups were conducted via videoconferencing with 38 participants: 22 PHMI and 16 health professionals. | Findings provide key insights from end-users to improve the likelihood of successful implementation and adoption of AI-enabled systems in the context of MI, as an exemplar of broader applications in chronic disease management. | Australia |
| (Kim et al., 2004) | 10. The Impact of Lay Health Advisors on Cardiovascular Health Promotion. Using a community-based Participatory Approach | Cohort study **Quantitative** (Primary research) | To improve lifestyle behaviours related to cardiovascular risk factors among adult Latinos, to demonstrate the feasibility and effectiveness of using LHAs for community health promotion initiatives. | Latina lay health advisors (LHAs) (n = 12) from the community were recruited and trained to teach 3 classes on healthy nutrition, physical activity, and maintaining smoke-free environments. Classes were offered in Spanish to adult Latinos recruited through the LHAs' social networks. A questionnaire on lifestyle behaviours was completed at baseline | The study reported significant increases in overall lifestyle behaviour scores and specific behavioural subsets (nutrition, physical activity, smoke-free behaviour) among participants following the outreach program facilitated by LHAs. | Worldwide |

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| | | | | and 1 month following the last class. | | |
| (Zhang et al., 2017) | 11. The effect of a smartphone-based coronary heart disease prevention (SBCHDP) programme on awareness and knowledge of CHD, stress, and cardiac-related lifestyle behaviours among the working population in Singapore: a pilot randomised controlled trial | Randomized Controlled Trial (RCT) **Quantitative** (Primary Research) | To develop and examine the effect of a 4-week Smartphone-Based Coronary Heart Disease Prevention (SBCHDP) programme in improving awareness and knowledge of CHD, perceived stress as well as cardiac-related lifestyle behaviours in the working population of Singapore. | The smartphone app "Care4Heart" was developed as the main component of the programme. A pilot randomised controlled trial was conducted. Eighty working people were recruited and randomised to either the intervention group (n = 40) or the control group (n = 40). The participants' CHD knowledge, perceived stress and behavioural risk factors were measured at baseline and on the 4th, week using the Heart Disease Fact Questionnaire-2, Perceived Stress Scale, and Behavioural Risk Factor Surveillance System. | This pilot study partially confirmed the positive effects of the SBCHDP programme in improving awareness and knowledge of CHD among the working population. Due to the small sample size and short follow-up period, this study was underpowered to detect significant differences between groups. | Singapore |

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| (Awosan et al., 2013) | 12.Awareness and prevalence of risk factors of coronary heart disease among teachers and bankers in Sokoto, Nigeria | Cross sectional study **Quantitative** (Primary research) | To assess the awareness and prevalence of risk factors of coronary heart disease in Sokoto, Nigeria. | This was a comparative cross-sectional study among bankers and teachers in Sokoto, Nigeria in August 2011. Those that have worked for one year and above in the core banking and teaching profession were considered eligible. The minimum sample size was estimated at 104, and adjusted to 110 to compensate for non-response (with an anticipated 95% response rate) using the formula for comparing two proportions. The eligible participants were selected by multistage sampling technique. | This study demonstrated poor awareness and high prevalence of CHD risk factors among bankers and teachers in Sokoto. Public health education and promotion of healthy lifestyles are suggested to reduce this burden. | Nigeria |
| (Awad and Al-Nafisi, 2014) | 13. Public knowledge of cardiovascular disease and its risk factors in Kuwait: a cross-sectional survey | Cross sectional study **Quantitative** (Primary research) | To assess the level of knowledge towards CVD types, warning symptoms of heart attack or stroke, and CVD risk factors. | A descriptive cross-sectional survey was performed using a pretested self-administered questionnaire on a sample of 900 randomly | There are deficiencies in CVD knowledge among Kuwaiti population, which could turn into insufficient preventative | Kuwait |

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| | | | | selected Kuwaiti individuals. Descriptive and multivariate logistic regression analysis were used in data analysis. | behaviours and suboptimal patient outcomes. There is an apparent need to establish more wide-spread and effective educational interventions, which should be sensitive to the perceptions, attitudes, and abilities of targeted individuals. | |
| (Sriram et al., 2019) | 14. Process Evaluation of Strong Hearts, Healthy Communities: A Rural Community-Based Cardiovascular Disease Prevention Program | **Mixed methods** process evaluation. (Primary research) | To evaluate the implementation of the Strong Hearts, Healthy Communities (SHHC) program, which is a community-based cardiovascular disease prevention program for rural women. | 101 women from eight rural, medically underserved towns were enrolled in the SHHC program; 93 were enrolled as controls. Eligible participants were 40 years or older, sedentary, and overweight or obese. Local health educators (n=15) served as SHHC program leaders within each town. | Designing programs that require reasonable time commitments from participants, while providing adequate opportunities for skill-based learning and group interaction remains a challenge for health promotion programs. Findings from this research have informed a second round of implementation and evaluation of the SHHC program in medically underserved, rural communities. | Montana and New York |

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| (Khare et al., 2014) | 15. Heart smart for women: a community-based lifestyle change intervention to reduce cardiovascular risk in rural women | Randomized Controlled Trial (RCT) **Quantitative** (Primary Research) | To implement and evaluate the Heart Smart for Women (HSFW) lifestyle behaviour change intervention aimed at reducing cardiovascular disease (CVD) risk in rural women. | The HSFW evidence-based lifestyle intervention was delivered by a trained facilitator in 12 weekly 1-hour sessions to groups of women in the rural S7 region of Illinois. Dietary and physical activity assessments were collected at baseline, postintervention, and 1 year. Clinical measurements were taken at baseline, 6 months and 1 year. Data were analysed for change in behavioural and clinical outcomes over time. | In total, 162 women completed HSFW in 13 communities across the S7 region. HSFW participants showed improvement in dietary and physical activity indicators at the end of the 12-week intervention, but only increases in vegetable consumption and physical activity were sustained over 1 year. A decrease in total cholesterol was observed at 6 months but not maintained at 1 year. These findings suggest that more intensive follow-up maybe required to help maintain long-term behaviour change, especially in rural areas where women are geographically dispersed. | United States |

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| (Mazloomy et al., 2013) | 16. A study of the knowledge, attitudes, and practices (KAP) of the women referred to health centres for cardiovascular disease (CVDs) and their risk factors | Cross sectional study **Quantitative** (Primary research) | To assess the knowledge, attitudes, and practices (KAP) of Iranian females aged 15-49 regarding cardiovascular disease (CVD) risk factors. The study seeks to describe their level of knowledge, explore attitudes towards CVD prevention, and investigate current practices related to CVD prevention behaviours for targeted intervention development. | Participants were 200 women ages 15-49 referred to health centres in Yazd, selected from four different centres. Data were gathered through a questionnaire consisting of demographics and questions related to KAP. The validity of the questionnaire was determined by a health education specialist, with its reliability determined by piloting and measuring the related Cronbach's alpha (Alpha = 0.720). | There is a need for enhancing mothers' general knowledge about the disease, because of the increasing rates of CVD in females. This will lead to improvements in attitude and practice. Furthermore, learning in groups of 12 can be a beneficial educational method. | Iran |
| (Jiwani et al., 2017) | 17. Understanding Self-regulation Behaviours in South Asians with Coronary Artery Disease A Mixed-Methods Study | **Mixed methods** process evaluation. (Primary research) | To inform the development of culture-specific interventions for CAD management in this population. | In this mixed-methods study, quantitative data were collected using 3 survey questionnaires (demographics, Illness Perception Questionnaire –Revised, and Coping/Self-Regulation Behaviours). Before completing the surveys, a subset of the sample (n = 20) participated in | Most of the participants modified their lifestyle after their CAD event. Participants expressed regret for not having changed their lifestyle earlier when they were experiencing early symptoms of their CAD. Findings from this study enhance the understanding | South Asia |

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| | | | | individual face-to-face or telephone interviews. | of self-regulation behaviours of SAs with CAD. | |
| (Jung and Yang, 2021) | 18. Factors influencing health behaviour practice in patients with coronary artery diseases | Descriptive Study **Quantitative** (Primary research) | To investigate the relationships among cardiac rehabilitation knowledge, educational need, and health behaviour practice in patients with coronary artery disease and explain factors influencing health behaviour practice. | The research participants were 189 patients with coronary artery disease from general hospital located in Korea. Self-evaluation questionnaires were used to collect the data. Data was collected from January to May 2020. Data were analysed using descriptive statistics, independent t-test, one-way ANOVA, Pearson correlation coefficients and multiple regression with the SPSS 24.0 program. | There were significant positive relationships between cardiac rehabilitation knowledge and health behaviour practice ($r = .37$, $p < .001$), and significant positive relationships between educational need and health behaviour practice ($r = .17$, $p = .022$). Factors influencing health behaviour practice were identified, the most critical predictive factor was age, followed by cardiac rehabilitation knowledge, regular exercise, family history, age (60-69), cohabitation and educational needs. | Korea |

## 9.2 CASP Checklist:

Section A: Are the results valid?

1. Was there a clear statement of the aims of the research?

Yes

Comments: The aims of the research were clearly stated in the background section, outlining the need to evaluate public health education interventions for CAD prevention.

2. Is a qualitative methodology appropriate?

No

Comments: A qualitative methodology was not used in this study. Instead, a systematic literature review approach was employed to synthesize existing evidence.

Is it worth continuing?

3. Was the research design appropriate to address the aims of the research?

Yes

Comments: The research design, a systematic literature review, was appropriate for addressing the aims of evaluating public health education interventions for CAD prevention.

4. Was the recruitment strategy appropriate to the aims of the research?

N/A

Comments: Not applicable as the study did not involve participant recruitment.

5. Was the data collected in a way that addressed the research issue?

N/A

Comments: Not applicable as the study did not involve data collection from participants.

6. Has the relationship between researcher and participants been adequately considered?

N/A

Comments: Not applicable as the study did not involve interaction with participants.

Section B: What are the results?

7. Have ethical issues been taken into consideration?

Yes

Comments: Ethical considerations were addressed in the methods section, stating that the study involved a systematic review of existing literature and did not involve human participants.

8. Was the data analysis sufficiently rigorous?

Yes

Comments: The data analysis process was clearly described, including the methods used for data extraction and synthesis.

9. Is there a clear statement of findings?

Yes

Comments: The findings were clearly presented in the results section, summarizing the key themes and findings identified from the literature review.

Section C: Will the results help locally?

10. How valuable is the research?

Yes

Comments: The research provides valuable insights into the effectiveness of public health education interventions for CAD prevention, which can inform practice and policy decisions in promoting cardiovascular health.