PSYCHOSOCIAL LIFESTYLE INTERVENTIONS FOR SECONDARY PREVENTION OF CARDIOVASCULAR DISEASE: OVERCOMING BARRIERS IN PRIMARY CARE

by

Andrea Elizabeth Mary Robinson

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Abstract

Modifiable risk factors for cardiovascular health are often associated with healthy diet, physical activity, and smoking cessation. Rarely is psychological stress mentioned or attributed to cardiovascular disease (CVD). However, the literature is beginning to recognize psychological stress as contributing to an increased risk of CVD (Aggarwal et al., 2021; Rippe, 2018; Walton et al., 2002). Acute stress may impact the autonomic nervous system, increasing heart rate and blood pressure, while chronic stress is associated with inflammation and the development of atherosclerosis (Aggarwal et al., 2021; Ware, 2008). Healthcare guidelines remark on the need to address modifiable risk factors in preventing and treating CVD (British Columbia [BC] Guidelines, 2023; Jain et al., 2022; Pearson et al., 2021). However, the guidelines provide poor directives regarding what intervention a practitioner should use, and how they should use it, to reduce or manage patient stress. Furthermore, implementation of lifestyle interventions can be challenging, and practitioners often face several barriers. Therefore, an integrative literature review was conducted to identify stress-reducing interventions that primary care nurse practitioners (NP) can implement when treating CVD. Nine articles were reviewed utilizing Cooper's (1982) systematic approach for integrative literature reviews, a method first published in 1982 and frequently cited and used throughout the literature. Randomized controlled trials, cohort studies, and qualitative research were included in this analysis. Unfortunately, this review did not yield conclusive evidence that psychosocial interventions can achieve statistically significant results in the treatment of CVD compared to standard CVD treatment. Nevertheless, the practice recommendations are that psychosocial stress should be assessed and monitored for those with CVD, and that lifestyle interventions should continue to be promoted as adjuncts to traditional treatment regimes.

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Glossary

Biomedical Model	Medical model that focuses on biological factors that cause disease and illness, while excluding psychological, environmental, and social influences (Engel, 1977).
Biopsychosocial Model	Healthcare model that suggests that biological, psychological, and social factors all play a significant role in individuals' health and wellness (Engel, 1977).
Cardiovascular Disease	Conditions that affect the structures of the heart and blood vessels (World Health Organization [WHO], 2021).
Cardiovascular Risk Factors	Modifiable (smoking, obesity, exercise, etc.) and non-modifiable (age, family history, genetics) factors that predispose an individual to cardiovascular disease (Vaduganathan et al., 2022).
Lifestyle Modifications	Altering everyday behaviours and routines to improve health and decrease risk of morbidity (Lippman et al., 2024)
Motivational Interviewing	Communication technique used to empower individuals to make positive behaviour change to improve their health and well-ness (Kuriakose et al., 2020; Lönnberg et al., 2019).
Psychological Stress	Normal physiological reaction to everyday circumstances. Acute or chronic psychological stress can have pathological effects (Goodrick et al., 2005; Haskell, 2003).

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It is often said that it takes a village to raise a child. Well, this capstone has been my third child for the past year. I have put many hours, tears, and every emotion imaginable into it. But I could not have done it without my village.

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To my first and second real-life children, thank you for the patience and for loving me unconditionally.

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And to all those who made this dream a reality in the large and small acts that you have done over the years.

This seemed unimaginable to accomplish, for those NPs coming behind me or reading this as you prepare your own project, you can do it, you will do it, just continue on and don’t give up on yourself.

“Get through the grit, grinning”- A. R. 2025

Introduction

Psychological stress is a normal human reaction to daily experiences (Goodrick et al., 2005; Zuccarella-Hackl et al., 2024). Everyone can relate to different levels of stress. Some episodes are short and more easily manageable, such as morning traffic on one's commute. Other more significantly stressful events, such as losing a loved one, can be more challenging to manage and can persist for months or years with variable and unpredictable intensity. Moreover, an individual's ability to manage, overcome, avoid, or reduce stress is also highly variable and dependent upon several factors (Zuccarella-Hackl et al., 2024). For instance, resiliency is often recognized as the ability to tolerate stressful experiences without significant psychological or physiological impacts (Zuccarella-Hackle et al., 2024). One's childhood experiences can greatly impact their inherent resiliency. Those with multiple adverse childhood experiences, such as exposure to abuse, family dysfunction, and substance misuse, may have a lower threshold for managing stressful situations compared to those who experienced a seemingly supportive and loving upbringing (Zuccarella-Hackl et al., 2024). Still, others may acquire resiliency over time through mind-body techniques, such as breathing practices, yoga, or meditation.

A person's ability to manage stress can significantly impact their health, most specifically in terms of this review, their cardiovascular health. Stress is a risk factor for CVD akin to those attributed to a sedentary lifestyle and poor diet choices (Dar et al., 2019; Goodrick et al., 2005; Haskell, 2003; Kuriakose et al., 2020; Salim et al., 2004). Unfortunately, there has been a marked increase in psychological stress globally over the past few decades (Piao et al., 2024). With the rising chronic and acute stress rates, including anxiety and depression, it is reasonable to expect that there will be a corresponding rise in CVD morbidity and mortality (Dar et al., 2019 & Zuccarella-Hacki et al., 2024).

CVD is an umbrella term that encompasses coronary heart disease, deep vein thrombosis, peripheral arterial disease, heart failure, cerebrovascular accidents, and more (WHO, 2021). For the purpose of this review, CVD will refer to those conditions specifically associated with the heart vasculature, such as coronary artery disease, myocardial infarction, and atherosclerosis. CVD has been the leading cause of death worldwide for many years (WHO, 2024). Since 2000, the largest increase in deaths globally has been a result of ischemic heart disease, rising from 2.7 million to 9.1 million in 2021 (WHO, 2024). Moreover, CVD has a significant global burden of loss of health and high healthcare costs (Vaduganathan et al., 2022). The Global Burden of Disease study identified 88 risk factors for CVD, which 15 are classified as "modifiable" (Vaduganathan et al., 2022). Of those 15 modifiable risk factors, nine were directly related to lifestyle habits, such as physical activity, exercise, and substance use (Vaduganathan et al., 2022). High blood pressure was the highest-ranking modifiable risk factor (Vaduganathan et al., 2022).

Therefore, the treatment of CVD should include upstream approaches that address these modifiable risk factors. The American College of Lifestyle Medicine, founded in 2004, focuses on optimizing physical and mental health through six pillars of health: nutrition, physical activity, stress reduction, avoidance of risky substances, and positive social connections (Lippman et al., 2024). This study will focus on stress reduction and positive social connection, to determine strategies that primary care NP can implement into the treatment of CVD. The term *psychosocial stress* will describe stress and social connections throughout this review.

Initially, this integrative review (IR) was focused on exploring how primary care NPs can effectively implement lifestyle psychosocial interventions in the treatment of CVD. However, the necessity of understanding barriers to implementing effective interventions quickly became

apparent. Therefore, to ensure a comprehensive IR, a discussion of frequently mentioned barriers to implementation has been included. The barriers that were identified through this review were then used as a guideline for organizing the findings and implications for practice. Thus, the current review sought to answer the question: what strategies can primary care NPs use to overcome barriers affecting the implementation of psychosocial lifestyle interventions in treating CVD.

Chapter One: Background

The leading cause of death until the 21st century was an infectious source (Lippman et al., 2024). However, in 1999, CVD overtook infectious diseases as the most common cause of death, and it remains the leading cause of death worldwide (Lippman et al., 2024; WHO, 2024). Although there has been a decline in mortality rates in the past 30 years in developed countries, CVD morbidity and complications continues to be a significant burden on the health of individuals' and on the healthcare systems (Kuriakose et al., 2020). For most of the population, modifiable risk factors of CVD, such as physical activity, diet, and substance use, are significant determinants of CVD risk (Haskell, 2003). Additionally, CVD disproportionately affects those from lower socioeconomic groups, where often the prevalence of substance use, food insecurity, and suboptimal exercise habits are higher than the general population (Dar et al., 2019; Goodrick et al., 2005; Karlsson et al., 2007; Walton et al., 2002). Therefore, lifestyle modifications targeting theses areas continues to be first-line interventions for CVD (Haskell, 2003; Jain et al., 2022; Pearson et al., 2021).

Lifestyle behavioural changes that have been found to influence the risk of developing CVD include following a Mediterranean diet, engaging in 120 minutes of moderately intense exercise, incorporating strength training twice per week, tobacco cessation, and practicing stress-reduction techniques (BC guidelines, 2023; Jain et al., 2022; Pearson et al., 2021). The Canadian Cardiovascular Society, the Canadian Cardiovascular Harmonized National Guideline Endeavour and the British Columbia Guidelines highly recommend these changes and others in CVD management plans (British Columbia Guidelines, 2023; Jain et al., 2022; Pearson et al., 2021).

However, there is often a challenge with implementing the findings of evidence-based recommendations to the general population, particularly those with lower socioeconomic status

(Dar et al., 2019; Walton et al., 2002). For instance, suggesting that an unhoused individual with no fixed income attend a yoga class for stress reduction is both unrealistic and ineffective as a management strategy. Therefore, while the guidelines provide valuable insights into behavioural modifications for managing CVD, NPs should exercise discretion in deciding on specific strategies and techniques to implement.

Lifestyle medicine is a medical specialty that utilizes lifestyle interventions as the primary method of treating chronic conditions (Lippman et al., 2024). The practice is built on the six foundational pillars: nutrition, physical activity, restorative sleep, stress reduction, avoidance of risky substances, and fostering positive social connections (Lippman et al., 2024). The core principle of lifestyle medicine is to focus on the individual and encourage daily healthy habits to prevent, treat, and possibly reverse chronic diseases (Lippman et al., 2024).

The most commonly suggested lifestyle interventions for CVD are focused on nutrition, exercise, and avoidance of certain substances such as tobacco and alcohol (Grega et al., 2024; Lippman et al., 2024). Interestingly, both chronic and acute psychosocial stress contributes to decreased physical activity, an increase in highly processed, more convenient food choices, poor sleep patterns, reliance on increased caffeine intake, and dependency on tobacco, alcohol, or other substances to self-manage stress (Dar et al., 2019; Goodrick et al., 2005; Salim et al., 2004). As such, NPs who suggest following a Mediterranean diet to a person with debilitating anxiety or depression, will likely see poor adherence to that diet.

Additionally, acute or chronic psychosocial stress is an independent CVD risk since prolonged elevated cortisol levels can lead to a cascade of neurobiological events that results in arterial inflammation, increased catecholamine levels, and cardiovascular remodeling (Dar et al., 2019; Walton et al., 2002) Stress and isolation can adversely affect our ability to build and

maintain social relationships (Kuriakose et al., 2020; Lippman et al., 2024; Moser et al., 1993). Poor social relationships have a 29% increased risk of CVD and 400% increased risk of mortality after a cardiovascular death (Lippman et al., 2024).

Barriers to Implementation

Although lifestyle interventions are the first-line treatment for CVD, as indicated by Canadian and American guidelines, many practitioners do not implement these interventions (Grega et al., 2024). Several factors contribute to this pattern, including time constraints for providing education in primary care settings, lack of reimbursement for lifestyle counseling, uncertainty among practitioners regarding lifestyle medicine, and the limited availability of lifestyle services.

Moreover, confusion about stress as a cardiac risk factor adds to the complexity. Stress tolerance varies from person to person and is influenced by socioeconomic status (Dar et al., 2019; Walton et al., 2002). There is also no clear correlation between specific stress levels and the degree of cardiac risk that results (mild, moderate, or severe). As a result, practitioners often depend on patients' self-reports to evaluate stress levels and determine whether there have been any improvements since their last interaction (Goodrick et al., 2005). However, this reliance on subjective accounts can be affected by the Hawthorne Effect, whereby individuals are more likely to modify their behaviour in response to being observed. Consequently, the difficulty in assessing and evaluating lifestyle interventions, particularly concerning individual stress levels and on a longer-term basis, presents a significant barrier to their implementation (Goodrick et al., 2005; Haskell, 2003; Kuriakose et al., 2020). The following section will elaborate on these barriers in greater detail.

Time Constraints

A recurring theme in the literature is the issue of time constraints in primary care that affect the implementation of lifestyle interventions (Goodrick et al., 2005; Kuriaskose et al., 2020; Lippman et al., 2024; Lönnberg et al., 2019; Williams & Kaminsky, 2017). An increasing morbidity rate and a shortage of providers have created a bottleneck, resulting in ever-longer wait times to obtain and see a primary care provider (Lönnberg et al., 2019). Chronic diseases and co-morbidities are significant factors contributing to this situation. Many healthcare practitioners feel ill-equipped to address the increasingly complex needs of their patients, leading to many of these needs going unmet (Goodrick et al., 2005). Furthermore, the pressure to maintain a high standard of patient care in the face of such complex clinical encounters can seem overwhelming.

Treatment plans for secondary prevention of CVD should reliably include a discussion on potential lifestyle modifications. However, the traditional healthcare biomedical model tends to downplay the psychosocial aspects of health, making it increasingly difficult for practitioners to invest time into educating patients about lifestyle interventions (Grega et al., 2024; Ware, 2008; Williams & Kaminsky, 2017). Psychosocial aspects of patient care are less concrete than the biomedical, and therefore, discussion around lifestyle habits, stress levels, and intervention options can be lengthy (Goodrick et al., 2005; Grega et al., 2024).

In the Canadian public healthcare system, under the traditional fee-for-service (FFS) contract, physicians' reimbursement by the government is directly related to the number of patients seen (Doctors of British Columbia [DoBC], 2018). This structure rewards high volume practices and the physician's workload (DoBC, 2018). However, the FFS model may not adequately reward for complex care or longer appointments (DoBC, 20018). It is worth

considering whether a meaningful exploration of a patient's daily stressors and the development of a care plan that includes lifestyle modifications is feasible within a fast-paced FFS clinic. Although NPs are not commonly confined to this pay structure, nor the associated demand for high volume practice, the issue remains that incorporating a biopsychosocial lens for developing treatment plans is not well-supported by the current biomedical model.

Lack of Confidence in Lifestyle Interventions

Healthcare delivery and resource allocation is largely structured based on political influence. Given that the FFS reimbursement model promotes practicing within a biomedical worldview, it is perhaps not surprising that the training and education for healthcare professionals likewise focuses heavily on a biomedical model of care rather than biopsychosocial (Grega et al., 2024). As a result, primary care practitioners become effectively programmed before their career even begins, to operate within this time frame (Grega et al., 2024). If potential aspects of patient care fall outside biological or physiological theory, then it will not easily align with the provider's training nor the reimbursement model within which they function, and it is less likely to be included.

With their background in nursing, NPs may be perfectly positioned to counterbalance this barrier. The foundational teachings of nursing include a holistic approach to caring for individuals through acknowledging their social determinants of health (Kapu, 2022). However, the focus of NP teaching, which involves advanced nursing education, is also based in the biomedical model and lacks education in lifestyle medicine (Mays et al., 2025). Thus, NPs are often ill-equipped to engage in techniques such as motivational interviewing (MI), brief interventions, or even discussing stress reduction strategies with patients (Mays et al., 2025).

As discussed in Rippe (2018) and Goodrick et al. (2005), primary care practitioner's often have limited awareness of available lifestyle intervention options that are designed to reduce stress. Thus, practitioners may feel inadequately prepared to provide options for lifestyle change and ultimately avoids discussing stress or lifestyle risk factors with their patients (Goodrick et al., 2005; Rippe, 2018). Furthermore, a practitioner may, over time, become accustomed to patients not consistently engaging with recommended interventions and therefore may adopt a belief that lifestyle interventions are not beneficial to discuss (Rippe, 2018).

The literature frequently identifies that a paradigm shifts regarding the importance of educating patients about lifestyle interventions needs to take hold before an increase in practitioner implementation will occur (Haskell, 2003; Lippman et al., 2024; Rippe, 2018; Ware, 2008; Williams & Kaminski, 2017). As previously stated, lifestyle modifications are recommended as first line options by national associations and typically acknowledged by practitioners as necessary in CVD treatment. The challenge for implementation is multifactorial. Firstly, healthcare policy most often also focuses on the biomedical aspects of patient care rather than biopsychosocial (Lippman et al., 2024), and this challenges the effective integration of lifestyle medicine into healthcare delivery. This focus translates into insufficient resources being invested in the necessary precursors to change, such as lifestyle medicine training programs, adequate support systems, and reimbursement models that value patient education and health promotion (Grega et al., 2024 & Lippman et al., 2024). Therefore, a cultural shift involving systemic changes is necessary to aid in the effective implementation of lifestyle interventions.

Cost and Availability of Intervention Options

Along with the inadequate availability of stress-reducing interventions, the general lack of practitioners' awareness of options is another significant barrier to implementation (Aggarwal,

et al., 2021; Williams & Kaminsky, 2017). Similarly to the above factors influencing awareness and training, healthcare policy and governance highly affect the way in which healthcare funding is allocated and how priorities for funding are determined. (Williams & Kaminsky, 2017). As traditional healthcare generally functions as a reactive system, rather than one which is protective, health promotion programs and interventions have typically not been viewed as a priority (Williams & Kaminsky, 2017). For example, pharmaceutical companies have the financial means to conduct randomized-controlled trials (RCT) to promote medications for CVD treatment (Lippman, et al., 2024). However, it is unlikely that those same companies would be willing to fund trials to prove that lifestyle modifications can be equally, or superior, to the medications they produce and sell (Lippman et al., 2024). Meanwhile, other corporations, or researchers, will inevitably struggle to produce the same level of research to suggest that lifestyle interventions are beneficial and necessary (Lippman et al., 2024).

Since the research pertaining to CVD interventions to date has been primarily focused on pharmaceutical options, this results in policy, guidelines, and ongoing funding that usually reflect that same focus (Lippman et al., 2024; Williams & Kaminsky, 2017). Fortunately, in recent years, there has been more emphasis on lifestyle interventions in the literature, and more RCTs comparing lifestyle interventions to traditional methods have been conducted (Kuriakose et al., 2020; Lippman et al., 2024). As more research occurs it will further promote the necessary paradigm shift to integrate lifestyle interventions as a mainstay option of treatment alongside traditional treatment methods (Lippman et al., 2024; Williams & Kaminsky, 2017). However, until this transformation happens, practitioners will continue to find the limited available options to be a considerable barrier when recommending lifestyle interventions (Lippman et al., 2024).

It must also be acknowledged that, since lifestyle interventions and health promotion activities are not yet considered a staple of mainstream medicine, it is likely that patients will have to self-pay to participate in them. For example, mind-body strategies are often recommended for stress-reduction, yet practices such as yoga or meditations are not covered by provincial healthcare insurance (Jain et al., 2022; Pearson et al., 2021; Walton et al., 2002). Often, there is a need for patients to travel to neighbouring communities to attend support groups or programs, particularly if they live in rural or remote communities (Haskell, et al., 2003). Given that lower socioeconomic status is a risk factor for CVD, such patients are less likely to have the financial means or available transportation to take advantage of these options (Goodrick et al., 2005; Karlsson et al., 2007; Lönnberg et al., 2019). From a practitioner's perspective, this non-attendance or non-engagement may translate to a perception that the patient is non-adherent or uncompliant with treatment plans (Haskell, 2003), which may further decrease the willingness of a practitioner to recommend lifestyle interventions as part of their common practice (Grega, et al., 2024; Haskell, 2003).

Perception of Stress as a Risk Factor for CVD

In general, diet and physical activity are well-accepted and understood as lifestyle risk factors for CVD. In contrast, the acceptance of stress as an independent, and modifiable risk factor for CVD has been more controversial and it is not as well-documented in the literature (Rippe, 2018; Walton et al., 2002; Zuccarella-Hackl et al., 2024). This non-acceptance affects the attention that patients and practitioners give to stress-reduction techniques and practices. Goodrick et al., (2005) reports that patients will often fail to disclose their level of daily stress to their primary care providers as they are unsure of the involvement that primary healthcare can have in addressing stress. Similarly, practitioners tend to share in the belief that discussing stress

is better left to other health care professionals who have specialized training to assist in its management, such as mental health counsellors or psychiatrists (Goodrick et al., 2005).

Likewise, cardiovascular risk assessments fail to acknowledge or measure psychological stress, and, therefore, underestimate the presence and progression of CVD (Ware, 2008 & Zuccarella-Hackle et al., 2024). Acute or chronic psychosocial stress, depression, and inflammation can all lead to atherosclerosis, congestive heart failure, and myocardial infarctions (Ware, 2008). Additionally, people newly diagnosed with CVD often have a high prevalence for stress, anxiety, and depression (Aggarwal et al., 2021; Moser et al., 1993). Rather than appreciating the reciprocal relationship that exists between psychosocial stress and CVD, practitioners tend to mange these conditions separately (Aggarwal et al., 2021; Ware, 2008; Zuccarella-Hackle et al., 2024). This separation leads to stress being excluded from CVD assessment, which ultimately impacts the implementation of stress-reducing interventions.

Research is beginning to acknowledge the pathological effects of daily psychological stress on the cardiovascular system and the need for interventions that are based in stress-reduction techniques (Dar et al., 2019; Lippman et al., 2024). This change has occurred largely because of the international study, INTERHEART, which evaluated risk factors for CVD and found that psychological stress was among the top-rated population attributable risk, comparable to smoking, diabetes, and hyperlipidemia (Salim et al., 2004). This study recommended that across nations, demographics, and variable socioeconomics, psychosocial stress should be recognized as an independent risk factor, and measures should be enacted to address daily, chronic, and acute stress in the prevention of CVD (Salim et al., 2004).

As more evidence emerges on the pathological effects of stress on the body contributing to CVD, it is reasonable to anticipate that healthcare policy, delivery, and provider practice is

likely to adapt accordingly. Until then, NPs should feel comfortable and confident in promoting lifestyle interventions to reduce the burden of stress for those with CVD. This IR will discuss intervention options discussed in the literature that are feasible, generalizable, and address the above-mentioned barriers for incorporation into primary care practice.

Chapter Two: Methods

The purpose of an IR is to critically analyse empirical, methodological, and/or theoretical literature and provides suggestions for future research needs (Toronto & Remington 2020). Integrative literature reviews are in the middle of the continuum of reviews, between the most basic type; a narrative review, and the most complex type; a systematic review (Toronto & Remington, 2020). An IR can identify, analyze, and appraise a wide range of phenomenon, concepts, and questions and do not solely rely on objective statistical evidence. Therefore, IRs are particularly helpful for informing nursing practice and policy as they can include comprehensive research from diverse perspectives (Whittemore & Knafl, 2005)

This IR follows the systematic process suggested by Cooper (1982), which uses the following five steps: 1) formulate purpose and/or review question(s), 2) systematically search and collect data, 3) critical appraisal, 4) analysis and synthesis of literature, and 5) presentation of results. The first stage was completed in the Background chapter, where effective lifestyle interventions for secondary prevention of CVD were discussed. Stages two, three, and four will be completed in the present chapter. The final stage, presentation of results, involves the "Discussion" chapter.

Search Strategy

This IR process began with a preliminary explorative search of the following electronic databases: CINAHL, MEDLINE, Google Scholar, and Google, to find key terms associated with lifestyle interventions and CVD. From this initial search, keywords and search strings were generated that were relevant to the research question. A secondary search was then conducted using these keywords in CINAHL, MEDLINE, and Google Scholar. Boolean operators (AND,

OR) were employed to refine and expand the search as necessary. The following sections outline the literature search process in detail.

Inclusion and Exclusion Criteria

The literature search for this topic was to identify effective lifestyle interventions for secondary prevention of CVD that primary care NPs can utilize. Originally, literature produced prior to the year 2000 was excluded as the inception of lifestyle medicine as a specific concept occurred in the year 2000 (Rippe, 2018). This is not to say that lifestyle interventions were not being utilized earlier; rather, this IR was intended to isolate literature that coincided with a cultural shift in foundational medicine practices and the resulting acceptance of lifestyle medicine as a medical specialty. However, an exception was made for the Moser et al. (1993) study on the needs of patients and their spouses post cardiac surgery, and the study was included in the IR. This exception was made because the study's context is significantly relevant to the gaps in CVD treatment from the unique perspective of patients and their spouses. The inclusion and exclusion criteria are summarized below in Table 2.

Although an attempt was made to include study populations with a wide range of socioeconomic backgrounds, this was not entirely achieved. Other than the exclusion of those 19 and younger, no other exclusion criteria were related to socioeconomic characteristics were included in the searches. It was decided to exclude those 19 and younger because lifestyle risk factors are less of a contributor to CVD is this age group, as well they are less likely to be in a position to make independent decisions regarding their healthcare treatment. The decision to not include socioeconomic factors in the inclusion or exclusion criteria was made because of the interplay of diverse international healthcare coverage impacting access to services, which could bias primary research on the efficacy of various lifestyle-related interventions.

Table 1

Inclusion and exclusion criteria for literature search

Inclusion Criteria	Exclusion Criteria
Diagnosis of CVD (previous myocardial infarction, coronary artery disease, coronary revascularization, previous coronary artery bypass graft surgery)	Congenital heart disorders or valvular dysfunction/replacements
Present of cardiovascular risk (hypertension, hyperlipidemia, diabetes mellitus)	Study population ≤19 years of age
Study population age ≥ 20 years of age	Non-English literature
Primary care focus intervention	
Lifestyle intervention related to stress reduction and positive social connection [a]	

[a] Although these particular interventions were the focus of this review, other lifestyle interventions (physical activity, diet, and cessation of risky substances) were often simultaneously implemented.

Data Collection

After the primary search of the databases, the generated keywords were used in the aforementioned databases in a strategic manner to find literature relevant to the research topic. Keywords used in this search included:

- "*Cardiovascular disease*" OR "*heart disease*" OR "*coronary disease*"
- "*Support group*" OR "*Peer Group*" Or "*Social group*"
- *"Stress reduction*" OR "*Stress Management*" OR "*Stress*"
- *"Primary Care*" OR "*Primary Health Care*" OR "*Physicians*"

Twenty-one articles were identified and stored in reference management software, Zotero. From there, title and abstract reviews of the selected articles occurred, five articles were

removed from considerations as they did not meet the inclusion criteria, and one duplication was removed. Following this, full-text reviews were completed, and relevant articles were further sorted into “stress reduction” and “social connection” folders within Zotero. References of the selected articles were reviewed, and as a result, two additional articles were selected for consideration in this paper. A PRISMA chart detailing this search strategy can be found in Appendix A and a search history table can be found in Appendix B.

In total, nine articles were included in this IR: 6 RCTs, 1 longitudinal study, 1 qualitative study, and 1 cohort study.

Data Evaluation

The articles selected for inclusion in this IR were organized in a matrix table for further evaluation. The headings in this table are methods, findings, limitations, implications, and grading. Information for each column was pulled from the articles and placed in the corresponding column. The limitation column was used to detail the limitations suggested by the individual researchers regarding their own research. The implications column was used to review the relevancy of each article to the IR research question and to identify any additional limitations that were identified by the author during this review.

A critical appraisal of the literature was completed, and the scores were included in the matrix table. For quantitative studies, a Critical Appraisal Skills Programme tool and a Quality Assessment Tool for Quantitative Studies were used. For qualitative studies only a Critical Appraisal Skills Programme tool was completed. Additionally, a relevancy score (high, moderate, or low), was assigned to each article. This was a subjective score determined by the author that was based on each study’s research question, study population, the feasibility of each intervention tested, and ease of implementation. A high relevancy score would indicate any of the

following: the research either aligned well with the IR purpose, the study population was similar to those encountered by a primary care NP practicing in British Columbia, or the intervention could be easily adapted into practice with a low-cost barriers and high efficacy. Conversely, a low relevancy score was given to research that either did not align well with the IR purpose, the study population was vastly different, or the intervention used would be difficult to implement or to adapt for practice. It is important to emphasize that the assigned relevancy score for each study was not the result of a validated or a recognized critical appraisal tool.

The literature matrix table is located in Appendix C.

Data Analysis

Thematic analysis was used to synthesize the data. This involved identifying themes in the interventions and developing categories that captured the essence of the findings. Two themes quickly emerged: *in-office interventions* and *community-based interventions*. In-office interventions were those interventions that a NP, or other health care professional, could implement within their primary care clinic. Community-based interventions were those to which an NP would refer a patient, and which would be facilitated by either another health care professional or a community layperson.

Subthemes for each of the two themes were developed to further organize the data. For in-office interventions, the subthemes were *MI* and *assessment of stress*. In the community-based interventions, *support groups* or *meditation* were the two subthemes pulled from the literature included in the IR. Most research used a combination of in-office and community-based interventions, yet their outcomes considered specific components of each. Where it was unclear if the outcomes adequately measured a specific intervention, the article was categorized into the overarching intervention. In other words, if the intervention being implemented was a support

group that utilized MI as a component of the group therapy, but the outcome measures did not specifically discuss the impact of MI on CVD risk reduction, then the article was categorized under support group rather than MI.

Ethical Considerations

As this IR involved the analysis of previously published studies, no ethical approval was required. However, ethical guidelines were followed in reporting and synthesis of findings, ensuring that all sources were appropriately cited and credited.

Limitations

The IR process has inherent limitations, including potential bias in the selection of studies and the subjective nature of thematic analysis. Being a single researcher has the potential for research bias since it involves a singular worldview, a singular perspective, and one individual's understanding of the literature. The requirements to be successful in the IR could also be seen as a limitation. As the expectation for a small number of primary research articles was necessary to ensure feasibility of the project within a single educational course, this may have contributed to selection bias. Efforts were made to mitigate the limitations by adhering to rigorous and transparent methodology as outlined by Cooper's (1982) IR guidelines, Toronto's (2020) guide for conducing an IR, and Boutron et al.'s (2024) Handbook for Systematic Reviews.

Chapter Three: Findings

The existing body of literature on lifestyle interventions for cardiovascular treatment consists primarily of RCTs, accounting for 67% of studies, along with two cohort studies, and one longitudinal observational study. Most of these studies were relatively small, with less than 500 participants; the smallest study consisted of only 98 participants (Goodrick et al., 2005). The only study exceeding 500 participants was conducted by Heijmans et al. (2017), which involved 1,620 participants.

The study participants represented a mix of ethnicities, including Caucasian, African American, Hispanic, Latino, and Asian, although there was a predominance of Caucasian individuals among the studies. All studies reported gender distribution, with males constituting an average of 60% of the participants. Socioeconomic status varied significantly across the studies, ranging from high-income individuals with third-party insurance to those with low income reliant on public healthcare.

A detailed literature matrix can be found in Appendix C, which includes information on sampling methods, methodologies, limitations, and implications. The matrix also features a subjective overall quality rating assigned by the author and based on the Critical Appraisal Skills Programme and Quality Appraisal Tool for Quantitative Studies.

Seven of the nine studies focused on the secondary prevention of cardiovascular events through lifestyle behavioural changes. While two studies did not directly address CVD prevention, they were still included in this IR because of their strong relevance to primary care strategies for CVD.

Moser et al. (1993) conducted a survey involving patients and their spouses after an acute myocardial infarction or coronary artery bypass grafting surgery. They explored the separate

biopsychosocial needs of patients and their spouses and whether the healthcare system was adequately addressing those needs. Goodrick et al. (2005) surveyed patients and physicians from a primary care clinic regarding stress-related issues and how such stress was managed in the primary care setting.

Cardiovascular risk and CVD considered in the studies included a history of myocardial infarction, coronary bypass grafting, coronary stenosis, hypertension, and/or dyslipidemia. Most participants in studies that were part of this IR were receiving at least one pharmaceutical treatment that may of may not have been related to CVD and that were not properly considered by the researchers as a confounding variable. This is certainly of concern when evaluating the validity and generalizability of the results that were obtained.

Through iterative thematic analysis of the study's findings, two main themes emerged: *in-office interventions and community-based interventions.* Each of these themes have been further divided into subthemes. In-office interventions include the use of MI and the incorporation of stress assessment as standard in CVD treatment. Community-based interventions include support groups and stress-relief activities such as Transcendental Meditation. These themes are discussed in detail in the following sections.

In-office interventions

In-office interventions are strategies that are implemented within the NP's primary care office by the NP or another member of the healthcare team. These interventions are meant to be easily implemented without requiring a significant amount of financial commitment or drastically changing the usual workflow of the clinic. Both MI and stress assessments are in-office interventions that can be integrated into the office encounter with a patient and will not greatly increase the length of the appointment.

Motivational Interviewing

MI is a person-centered counselling style that empowers individuals to pursue behaviour change by identifying their personal reasons for making such changes (Everett et al., 2021). Two studies highlight the practitioner's role in guiding individuals through MI so that, discrepancies between the patient's goals and actions can be identified, and information about available resources can be provided (Everett et al., 2021; Lönnberg et al., 2019).

Implementation of MI varied between the two studies. Lönnberg et al. (2019) conducted a one-year cohort study that utilized a structured lifestyle program at a primary care clinic. In contrast, Everett et al. (2021) carried out an RCT to evaluate the effectiveness of MI in promoting behavioural modification following participation in a standard six-week cardiac rehabilitation program. Additionally, the settings differed, with one study conducted in a primary care clinic (Everette et al., 2021), and the other in a hospital-attached outpatient clinic (Lönnberg et al., 2019). Both studies employed nurses trained in MI to deliver the intervention, which was combined with other interventions including dietary counselling, physical activity, and education on cardiovascular risk factors, such as psychosocial stress.

Lönnberg et al. (2019) found significant improvements, including an increase in overall physical activity ($P < 0.05$), continuous intake of fish, fruits, and vegetables ($P < 0.05$), and a decrease in stress levels and sleeping difficulties ($P < 0.01$ and $P < 0.05$, respectively). The unhealthy lifestyle habit index decreased from 1.67 at baseline to 1.16 at the one-year follow-up ($P < 0.001$). It is important to note that this study was not randomized and was implemented shortly after participants had received a new diagnosis of hypertension or had been informed of their high cardiovascular risk. The likelihood of natural lifestyle changes immediately following

a new diagnosis is high, and a cause-and-effect relationship cannot be established due to the lack of randomization.

Conversely, Everett et al. (2021) did use randomization, with the primary outcome measure being a six-minute walk test, alongside anthropometric measurements and coronary risk factors as secondary measures. No statistically significant differences were found between the control and intervention groups for either the primary or secondary outcomes. A possible limitation of this study was the timing of when MI was used, which was in the early acute phase post-diagnosis, when motivation for behavioural change is noted to be higher (Everett et al., 2021). Furthermore, the six-minute walk test may not be directly related to MI, potentially hindering a true assessment of the intervention's effectiveness.

Some studies have noted that the success of MI highly depends on the facilitator's expertise and skill in maintaining fidelity. Everett et al. (2021) further recognized that MI is traditionally used for single behaviour modifications, such as tobacco cessation. However, individuals with CVD frequently have multiple lifestyle behaviours that require attention (Everette et al., 2021). Each individual will also be at a different stage of readiness to make lifestyle modifications at any given point in time, suggesting that a standardized program that rapidly progresses through set checkpoints may not be well-suited for chronic disease (Everett et al., 2021). Latina et al. (2020) and Riddell et al. (2016) echoed this sentiment, stating that targeting multiple health behaviours simultaneously does not appear to be superior to focusing on a single habit. In contrast, Lönnberg et al. (2019) argued that a structured programme is feasible for CVD prevention and can address more than one lifestyle habit at a time; these researchers cautioned that practitioners should not mistake the structure of a program for rigidity,

and they should instead view the framework as allowing for the creation of a highly individualized care plan.

All three studies had a high likelihood of recall biases and the Hawthorne effect, as they relied on self-reporting measures for physical activity, dietary habits, depression, anxiety, stress scales, and sleep patterns (Everette et al., 2021; Latina et al., 2020; Riddell et al., 2016). Furthermore, the questionnaire used by Everette et al. (2021) was not validated and employed dichotomized measures of "healthy" or "unhealthy," which may have led to individual interpretation biases. Also, participants in the Lönnberg et al. (2019) study were self-selected and had already begun a cardiac rehabilitation program. This could indicate an intrinsic motivation to change, thereby introducing self-selection bias.

Assessment of Stress

All of the studies included in this IR acknowledged stress as a cardiovascular risk factor; however, the methods used to assess, quantify, or recognize stress varied. Most studies relied on the participants to disclose their perceived stress levels via questionnaires (Everett et al., 2021; Goodrick et al., 2005; Latina et al., 2020; Lönnberg et al., 2019; Riddell et al., 2016; Schneider et al., 2012). In contrast, Karlsson et al. (2007) employed standardized hospital scales to assess anxiety and depression. Moser et al. (1993) found that the stress levels of patients and their spouses were inversely related to the amount of information provided; the more information and support offered, the less stress both the patient and their spouse experienced.

Goodrick et al. (2005) found that both patients and practitioners recognized stress as a significant risk factor and had expressed a desire to address stressful issues. However, neither group reported feeling comfortable discussing stress. About 45% of patients reported experiencing moderate to extreme levels of stress that interfered with their daily activities. Of

these patients, only 38% had spoken to their physician about their stress. Similarly, only 29% of physicians reported asking about stress when patients presented with specific symptoms, such as anxiety, insomnia, and fatigue. Surprisingly, the same percentage of physicians indicated that they did not inquire about stress at all. Among the patients who discussed their stress with their physician, 50% said they had found the physician to be moderately helpful.

Feelings of inadequacy among practitioners emerged as a recurring theme in stress assessments and were identified as a barrier to implementing lifestyle interventions (Everett et al., 2021; Goodrick et al., 2005; Heijmans et al., 2017; Karlsson et al., 22007; Riddell et al., 2016). Although half of the patients in the Goodrick et al. (2005) study found their physician to be helpful, all of the physicians reported feeling inadequate at managing the stress of their patients. Contributing factors to these feelings included a lack of education and training pertaining to stress management with lifestyle interventions, and a lack of knowledge of available and accessible stress-relieving options (Goodrick et al., 2005). Furthermore, the shortage of healthcare providers who are experienced in stress management significantly affected primary care providers' ability to refer and receive expert assistance in stress-reducing practices. (Goodrick et al., 2005; Heijmans et al., 2017; Latina et al., 2020). Heijmans et al. (2017) also emphasized the importance of high homophily among primary care teams to foster a sense of comfort and competency around the intervention techniques being used.

Community-Based Interventions

Community-based interventions are strategies that operate independently from the clinic. The NP may refer the patient to such options, or the patient can seek them out on their own. Stress-relieving activities and support groups both offer the patient an opportunity to interact with peers who may be going through a similar CVD journey. This sense of camaraderie will not

be part of the in-office interventions, making community-based interventions a more attractive option for some patients.

Stress-relieving Activities

Among the various subthemes identified, stress-relieving interventions for CVD were not a primary focus in the studies but rather a component of a broader treatment plan. The study by Schneider et al. (2012) was the only one that implemented a stress-relieving activity, specifically transcendental meditation, as the sole intervention. The study was a single-blind RCT conducted over nine years. The group practicing transcendental meditation exhibited a 48% reduction in the risk of mortality, nonfatal myocardial infarction, and nonfatal stroke, along with an increase in survival rates. Additionally, there was a decrease of 5 mmHg in systolic blood pressure (P= 0.01, 95% CI) and improvements in psychosocial behaviours (P = 0.02), contributing to better survival rates. This RCT was the only study in this IR that yielded statistically significant results.

Other studies included stress-relieving activities, but participation was not mandatory for participants. For instance, Riddell et al. (2016) noted that some participants engaged in activities outside the formal group sessions, such as attending a Tai Chi class. Additional studies mentioned stress management as part of their intervention programs but did not provide detailed information on what those strategies entailed (Everett et al., 2021; Karlsson et al., 2007; Latina et al., 2020; Lönnberg et al., 2019).

Goodrick et al. (2005) found that patients employed a variety of self-management coping mechanisms to deal with their stress. The majority reported utilizing positive strategies, including meditation (58%), exercise or walking (86%), talking to another person (86%), and

prayer (72%). However, some individuals resorted to unhealthy coping mechanisms such as the misuse of alcohol (42%) or recreational drugs (10%).

Physicians recommended a combination of non-pharmaceutical lifestyle management strategies for patients to cope with stress (Goodrick et al., 2005). These strategies included exercise, relaxation techniques such as breathing exercises, and meditation. Despite this, many physicians still often prescribed medications, with 35% prescribing anxiolytics and 29% prescribing selective serotonin reuptake inhibitors (Goodrick et al., 2005). All physicians desired improved insurance coverage and more community resources and materials to support their patients (Goodrick et al., 2005).

Support groups

Latina et al. (2020) developed the *Grenda Heart Project* as an extension of their findings from a previous study, which had suggested that peer groups structured similarly to "Alcoholics Anonymous" could significantly improve healthy behaviours and decrease cardiovascular risk. This study randomized participants into two groups: a self-managed control group and a peer-group-based intervention group. The primary outcomes were measured using the Fuster-BEWAT score (FBS), which assesses blood pressure, exercise, weight, diet, and tobacco use, with optimal health being 15. The results indicated that the mean FBS was higher in the intervention group than in the control group (9.1 vs. 8.5, respectively; P=0.28). However, this difference was not statistically significant.

Similarly, Riddell et al. (2016) conducted a cluster randomized trial focused on group-based peer support. The intervention group received additional assistance, social and emotional support, education, and monthly meetings. The primary outcome was the predicted 5-year CVD

risk measured at 12 months, with findings showing no significant reduction in cardiovascular risk compared to the control group.

Riddell et al. (2016) and Latina et al. (2020) enrolled volunteer community members in their study as group leaders. Healthcare professionals provided training and relevant material to the leaders prior to the start of group sessions. Given the chronic disease epidemic, researchers hypothesized that it might not be feasible for the healthcare system to manage community programs such as those described in their studies (Latina et al., 2020; Riddell et al., 2016). Thus, a reliance on laypeople to facilitate such programs may become more common, making these interventions more generalizable and feasible for real-world implementation.

While the intervention's applicability is advantageous, several internal validity concerns should be noted. For instance, there was a risk of self-selection bias in the study conducted by Latina et al. (2020), as participants were required to attend three behavioural modification education workshops before they could participate in the rest of the study. Additionally, participants were randomized 1:1 into each group without using randomization software, raising concerns about inadequate allocation concealment.

Additionally, there are concerns about reporting bias, as both studies reported incomplete data from the peer groups. In the Riddell et al. (2016) study, regular meeting reports were only obtained for the first six months and from only 73% of the groups. Latina et al. (2020) and Riddell et al. (2016) did not systematically collect attendance data, and the reporting relied on verbal accounts from group leaders, thereby increasing the risk of recall bias.

Finally, while both studies provided a template for laypersons to follow during group meetings, leaders were allowed to modify or skip topics they felt were irrelevant to their groups. This approach could be viewed positively as offering individualized care; however, it raises

concerns about performance bias due to the systematic differences that were created between groups.

Chapter Four: Discussion

This IR provides a comprehensive synthesis of the existing literature on lifestyle interventions aimed at addressing psychosocial stress in the secondary prevention of CVD. It underscores the significance of both individual and systemic factors in determining the accessibility and availability of intervention options. The findings indicate that for an intervention to be effective, individuals must be physiologically, psychologically, and socioeconomically prepared to engage. However, it is crucial to be aware of systemic elements, such as publicly funded programs, benefits coverage, community accessibility, and the availability of healthcare professionals, that play a vital role in the success of lifestyle interventions. Therefore, the discussion of findings from this review will be presented in a broad context to enhance generalizability.

Key Findings

This IR uncovered several crucial insights. Notably, there is a unanimous agreement that CVD is a multifaceted issue with numerous lifestyle risk factors, necessitating a range of possible intervention strategies. The importance of individualized intervention programs cannot be overstated, as they allow for the customization of information, screening, and methods to meet specific needs. As highlighted by Ware (2008) and Zuccarella-Hackl et al. (2024), the use of standardized stress screening to identify individuals with heightened stress levels and, consequently, increased cardiovascular risk, can be pivotal in achieving successful CVD management. The results from such assessment tools play a crucial role in guiding NPs, who are at the forefront of patient care, in selecting interventions that will best suit an individual's care, their priorities, and their requirements.

Furthermore, as indicated by Riddell et al. (2016) and Latina et al. (2020), previous exposure to support groups or therapy-like sessions may enhance an individual's success with these interventions. Likewise, individuals with an interest in, or prior experience with, mind-body techniques will be able to benefit from interventions that incorporates such practices. Thus, it is essential for practitioners to be knowledgeable about the various intervention options available. This knowledge will not only enhance a patient-centered approach to treatment planning, but it will also empower NPs to feel competent and confident when discussing lifestyle intervention options with their patients.

Easy-to-digest information was one of the key needs identified by patients and their spouses after receiving a new diagnosis of CVD (Moser et al., 1993). It was acknowledged that time constraints will often restrict practitioners from thoroughly explaining a new diagnosis, treatment options, and the necessary follow-up care (Grega et al., 2024; Lippman et al., 2024; Williams & Kaminsky, 2017). Employing diverse personnel, each with a different scope of practice, has emerged as a viable solution to address this barrier. Registered nurses can play a critical role in assessing patients, providing evidence-based information, and facilitating various programs (Heijmans et al., 2017; Karlsson et al., 2007; Lönnberg et al., 2019). Ideally, RNs can be positioned within the longitudinal setting of a primary care clinic to manage patients with CVD, collaborating closely with the NP.

An alternative, potentially more cost-effective approach involves utilizing trained community laypersons to lead support group sessions that are focused on managing CVD with lifestyle modifications (Karlsson et al., 2007; Latina et al., 2020). Such groups can be implemented as an extended component of a structured cardiac rehabilitation program (Karlsson et al., 2007) or as a standalone intervention (Latina et al., 2020). The main cost is the human

capital to organize and execute the support groups, however there is a need for infrastructure, community engagement, and involvement of stakeholders (Latina et al., 2020). Regardless of if a trained healthcare provider, such as an RN, or a community layperson is used for outsourcing components of CVD management, the primary care NP's role would involve connecting patients with appropriate resources and ensuring that longitudinal follow-up remains consistent and effective.

Another notable finding pertains to the poorly accepted pathological link between psychological stress and CVD, despite its extensive documentation in existing literature, such as the 2004 INTERHEART study. This ongoing dispute has resulted in confusion, among both patients and practitioners, about the impact of stress in the development of CVD. Research by Goodrick et al. (2005) indicates that, while both groups acknowledge the relationship between stress and health outcomes, a reluctance of patients to engage in discussions on this topic still persists. Such hesitance may stem from patient misconceptions about the ability of practitioners to assist in this area and an uncertainty about practitioners' ability to provide effective counselling.

The culture within primary care clinics can also significantly influence the adoption of lifestyle intervention strategies. Heijmans et al. (2017) suggest that practitioners will be more inclined to discuss intervention options when there is a high degree of homophily among colleagues. This perspective is corroborated by other studies, which have shown that practitioners are more likely to endorse interventions that are recognized as evidence-based and that are highly recommended by other practitioners within the healthcare community (Grega et al., 2024; Lippman et al., 2024; Ware, 2008).

The research of Schneider et al. (2012) was the sole study that showed a reduction of cardiac risk and overall health improvement from Transcendental Meditation to a level reaching statistical significance. Other studies yielded comparable outcomes between those who received lifestyle interventions and the control groups, even when accounting for variations in participant characteristics. While research included in this IR typically found that lifestyle interventions do not surpass the benefits of traditional CVD interventions, the same research did not actually negate the usefulness of such interventions. Rather, the findings supported the lifestyle framework posited by Lippman et al. (2024), which suggested that CVD interventions should include a diverse range of potential options and that the ultimate decision of which interventions to use must be tailored to the preferences of each individual patient.

Implications for Practice

The findings of this IR present have implications for primary care NPs who wish to offer lifestyle strategies that can help their patients manage CVD. As previously noted, one's risk of developing CVD is affected by many lifestyle factors that are both highly individualized and modifiable. It is also significantly influenced by socioeconomic variables. While an extensive discourse on the sociopolitical ramifications of different healthcare environments is beyond the scope of this paper, it is essential to acknowledge the systematic influences (such as healthcare insurance coverage) that can shape which treatment options will realistically be available to a particular patient. Consequently, any proposed lifestyle interventions must adhere to a patient-centered approach to ensure the practical and realistic management of CVD.

With the exception of Transcendental Meditation, no other specific lifestyle intervention yielded statistically significant outcomes compared to standard care. Therefore, the recommendations for practical application discussed below are designed to offer a general

framework for practitioners to consider. It is also important to remember the previously identified barriers that healthcare providers can face when implementing lifestyle interventions, as they serve as a reference point for effective execution. These recommendations are summarised in Table 2.

Table 2

Barries to Implementing Lifestyle Interventions and Recommendations for Practice.

Barrier	Recommendations	Suggestions
Time constraints	• Outsource	• Integrate specialized nurses • Home-based programs • Community-based programs
Lack confidence in lifestyle interventions	• Professional development	• Seek educational opportunities on lifestyle interventions • Discover community-based programs
Cost and availability of intervention options	• Utilize innovative program delivery outside of the traditional interventions	• Free online options • Promote patient autonomy • Time in nature • Develop program attached to clinic
Perception of stress as risk factor for CVD	• Normalize discussion of stress as a risk factor for CVD	• Universal terms to define stress • Validated and reliable psychosocial stress assessments • Systemic/cultural changes • Incorporate a universal baseline assessment for secondary prevention of CVD

Outsource

One option to address the issue of time constraints within healthcare is the integration of other healthcare providers or community laypersons to meet these needs. The literature frequently highlights the role of registered nurses (RNs) in obtaining anthropometric measurements that help measure patient progress towards recovery milestones, and facilitating educational workshops (Everett et al., 2021; Karlsson et al., 2007; Latina et al., 2020; Lönnberg

et al., 2019; Riddell et al., 2016; Schneider et al., 2012). Notably, Lönnberg et al.'s (2019) research specifically evaluated the effectiveness of having an RN in a primary care clinic lead its year-long patient lifestyle program. Each appointment with the RN was focused on lifestyle habits and MI techniques designed to enhance participants' capacity to modify their lifestyle habits. The RN was responsible for facilitating patient blood work, taking anthropometric measurements, administering questionnaires, and facilitating referrals to individualized counselling or allied health professionals. This study revealed a significant improvement in the physical activity of participants and a reduction in their reported stress levels, along with a decrease in unhealthy lifestyle practices, such as sedentary behaviour and tobacco use.

Furthermore, other studies have illustrated the effectiveness of utilizing community laypersons to lead peer support groups for individuals diagnosed with CVD (Riddel et al., 2016). These support groups have proven beneficial in enhancing self-management behaviours, mainly through promoting healthy eating habits and increased physical activity. Participants reported that such groups foster socialization, allow for sharing of experiences, and provide support in a less formal environment. The researchers noted the importance of ensuring that the community laypersons who led these support groups receive a thorough education on the relevant material being shared and felt supported by an overseeing healthcare professional. One study also highlighted participants' desire for their family practitioners to remain informed about the group's progress (Latina et al., 2020). A practitioner referral to this type of support group coulg bee ideal for initiating this collaboration, with interval communication maintained throughout the duration of the program.

Thus, NPs can effectively manage CVD by delegating responsibilities (such as education on stress reduction, MI, and the collection of anthropometric measures) to RNs. Research

supports team-based models as effective for chronic disease management (Heijmans et al., 2017; Lönnberg et al., 2019). Additionally, support groups can empower individual patients to actively participate in their own health journey (Riddell et al., 2016). However, clear communication with the patient would be key to ensuring that they do not perceive the practitioner as transferring responsibility to another healthcare professional or individual without any continued involvement in their progress (Latina et al., 2020). One potential strategy to alleviate this perception would be for the NP to remain actively involved in patient care, committing to regular follow-ups and ongoing support.

Professional Development

Another commonly discussed barrier involves healthcare practitioners feeling uncomfortable discussing lifestyle habits and interventions with patients (Goodrick et al., 2005; Grega et al., 20024; Heijmans et al., 2017; Kuriakose et al., 2020; Lippman et al., 2024). This discomfort is often due to the practitioner's own perception of themselves as lacking awareness and knowledge of lifestyle interventions for CVD. (Goodrick et al., 2005; Grega et al., 2024). Although the current IR did not identify interventions specifically aimed at professional development for NPs, the literature did suggest that practitioners should familiarize themselves with evidence-based lifestyle interventions that are feasible to implement within their local community (Grega et al., 2024; Lippman et al., 2024). Similar to the above suggestion of outsourcing specific tasks, practitioners who invest the time needed to understand available options for CVD interventions will be better equipped to manage these lifestyle discussions and provide valuable advice (Grega et al., 2024).

It is important to acknowledge that primary care NPs are expected to possess vast knowledge regarding the biopsychosocial aspects of individuals across all ages, from infancy to

older adulthood. As such, being experts in specialized areas, as in lifestyle medicine, may not be a realistic goal for primary care NPs. Instead, they should aim to gain a fundamental understanding of lifestyle habits and modifications that can be easily implemented and monitored in collaboration with their patients.

A challenge for NPs practice is that non-pharmaceutical interventions remain the recommended first-line treatment option for reducing CVD risk factors (Jain et al., 2022; Lippman et al., 2024; Pearson et al., 2021), yet the results from this IR revealed that psychosocial interventions, with the exception of Transcendental Meditation, may not be superior to standard CVD treatment. However, the research does suggest that lifestyle interventions as adjuvant treatment to pharmaceutical therapy has shown better health outcomes than either of these interventions implemented alone (Grega et al., 2024; Lippman et al., 2024). Consequently, NPs have a professional obligation to remain informed about these options to provide comprehensive care for their patients.

Utilize Innovative Program Delivery Outside of Traditional Interventions

The purpose of this IR was to identify lifestyle interventions that NPs could effectively implement into their practice; unfortunately, the findings from the literature did not strongly identify certain options for implementation. As a result, other potential options should be considered and researched, even if they may appear unconventional from a Western medicine standpoint. For example, Transcendental Meditation was the only intervention that yielded positive results compared to traditional cardiac care (Schneider et al., 2012). However, there are barriers to implementing this approach, such as the requirement for an instructor trained in Transcendental Meditation and the availability of resources for this specific type of meditation (Schneider et al., 2012). Similarly, specific CVD support groups may not be available in a

particular community and the associated costs of training facilitators and establishing and maintaining such a program may pose a significant hurdle.

In such cases, innovative lifestyle program delivery methods should be considered. For example, rather than relying on in-person meditation programs, finding a reputable online resource that provides a similar experience at a lower cost, could provide similar benefits to the patient. Additionally, since behavioral modification is heavily dependent upon patient participation, it will be important for the provider to encourage patients to identify their own knowledge gaps so that interventions can be appropriately tailored to their needs. In this regard, an NP's role in facilitating lifestyle modifications may, for some patients, be appropriately limited to the provision of online resources and educational programs. Ultimately, the onus is on the patient to decide to participate and engage with those resources.

Normalize Discussion of Stress

In contrast, the responsibility for normalizing the understanding of stress as a risk factor for CVD and normalizing open discussions about stress in the context of one's CVD risk, rests primarily with a practitioner. As noted by Goodrick et al. (2005), patients and practitioners recognize that stress is a risk factor, and yet, often, neither will feel confident in initiating discussions about it during an appointment. If practitioners were to invite conversation about life stressors, promote stress-reduction practices, and highlight the risks associated with unmanaged stress it could help raise the patient's awareness and encourage the patient to be mindful of their daily stressors.

Significant challenges in this process of normalization are that stress can be defined in many ways and no measurable amount of stress is directly linked to an increased risk of CVD (Dar et al., 2019; Goodrick et al., 2005; Rippe, 2018). Additionally, an individual's resiliency can

considerably influence the level of stress they are able to tolerate before experiencing physiological sequelae emerge (Dar et al., 2019). Nevertheless, fostering open communication about stress-reduction interventions to lower cardiovascular risks carries very little potential harm but can have significant potential benefits.

Ware (2008) notes that traditional cardiac risk assessment tools, such as the Framingham Model, grossly underestimates individual CVD risk, as they do not account for psychological stress or depression. Heijmans et al. (2017), Moser et al. (1993), Goodrick et al. (2005), and Lönnberg et al. (2019) all recommend that practitioners include a baseline stress assessment for patients who are newly diagnosed with CVD. However, the persistent issue is that there are no validated cardiac risk assessment tools that incorporate a specific measure of stress (Goodrick et al., 2005; Heijmans et al., 2017; Ware, 2008).

The inconsistency between research and practice regarding stress and CVD assessments indicates a need for cultural and systemic changes. First, psychosocial stress needs to be acknowledged as a significant risk factor, which will encourage the research needed to develop a standardized assessment tool that practitioners can use in their primary care practice. A discussion of the necessary cultural and systemic changes that would be needed is beyond the scope of this paper but does highlight the need for future research in this area.

Gaps in the Literature

Through the IR process, a significant gap was uncovered in the literature; it became clear early in the process that the existing research on this topic focused almost exclusively on barriers to implementing lifestyle interventions for CVD rather than facilitators. It is possible that an "individualized approach" could be viewed as a facilitator of lifestyle interventions. However, the literature lacked structured guidance on how practitioners can effectively utilize this strategy.

This absence of facilitators adversely affects the effectiveness of interventional planning, as the current focus is on protecting against program failure rather than ensuring patient success. This suggests that a broader paradigm shift is actually necessary and, until that occurs, it will be difficult for primary care providers to effectively identify and implement lifestyle interventions for the secondary prevention of CVD.

Moreover, none of the studies in this IR included a cost analysis of their programs. As healthcare can arguably be viewed as a business, economic responsibility will be fundamental in program funding and support. Without a “return on investment”, healthcare authorities or governments may find it financially irresponsible to endorse such programs. A return on investment could be measured in the number of emergency room visits, hospitalizations, or cardiovascular surgeries that are needed. The only study in this review that included such an outcome measure was Schneider et al.'s (2012) Transcendental Meditation intervention. While they found a 48% reduction in the risk of mortality, nonfatal myocardial infarction, or nonfatal stroke compared to standard cardiac rehabilitation programs, they unfortunately did not extend their analysis to include an estimate of costs and thus, a comprehensive program evaluation can not be completed.

Another literature gap pertains to the methodologies of the included studies, particularly the length of time covered by the study and the large attrition in follow-up. Most interventional programs in the literature lasted six weeks or less, with follow-up appointments scheduled at three-month intervals for a year afterward. One could argue that six weeks is insufficient to introduce, learn, and maintain a new lifestyle habit with the intention of dramatically impacting and measuring that individual’s cardiovascular risk. A year is a relatively short time in which to measure the lifetime impact of a program. The average loss to follow-up in the IR studies was

50%, and while some studies did use intention-to-treat analysis to mitigate the impact of this loss, losing half of the enrolled participants is very likely to significantly affect the strength of the findings.

Recommendation For Future Research

Based on the identifies gaps and limitations, this IR proposes several directions for future research. First, additional research that focuses on psychological stress as a risk factor for CVD is essential. Understanding the pathological effects of stress can help to promote stress-reduction techniques as a mainstay component of CVD treatment. As acceptance of stress as a risk factor grows, it will pave the way for structured guidelines and resource allocation for developing lifestyle programs. Furthermore, creating assessment tools that explicitly incorporate stress as a risk factor will provide healthcare practitioners with validated tools to effectively monitor a patient's CVD risk.

Second, future research should include a cost analysis of lifestyle intervention programs. This analysis will enable practitioners, healthcare authorities, and government agencies to assess the effectiveness of such programs. Since CVD disproportionately affects individuals of lower socioeconomic status (Dar et al., 2019; Goodrick et al., 2005; Karlsson et al., 2007; Walton et al., 2002), it is essential that future research focuses on these populations and explore affordable lifestyle intervention options.

Finally, research is needed to determine how practitioners can effectively assess patients progress while they are participating in lifestyle programs. This evaluation process should be similar to prescribing lipid-lowering medication and monitoring serum lipid levels to target treatment outcomes. Practitioners need standardized methods for implementing and evaluating lifestyle interventions. This evaluation could utilize the earlier-mentioned assessment tool that

would measure stress levels and be administered before and after treatment. Regardless of the specific tools used, future research must investigate the effects of stress on cardiovascular health and identify proactive measures that primary care practitioners can take to help their patients mitigate their risk.

Chapter Five: Conclusion

This review synthesized research on psychological stress-reduction interventions for CVD that primary care NPs can effectively implement in practice. The review identified several intervention options such as support groups, structured in-office programs, MI, and meditation. Unfortunately, it was revealed that Transcendental Meditation was the only intervention that proved statistically significant, yet none of the interventions were readily available for implementation. Additionally, there are significant gaps within the literature, primarily resulting from an unfortunate focus on barriers to implementation rather than the facilitators that would enable it.

The insights gained from this review highlight the complexity of lifestyle interventions and the multifaceted nature of CVD. To find effective interventions for practitioners, it is essential to acknowledge stress as a risk factor for CVD. This acknowledgment requires a systematic and cultural shift in current cardiac risk assessments and treatment methods. LM aims to bridge this gap. However, as this field evolves, collaboration between researchers and practitioners is crucial to ensure that the evidence informs real-world applications and improves outcomes for all CVD patients.

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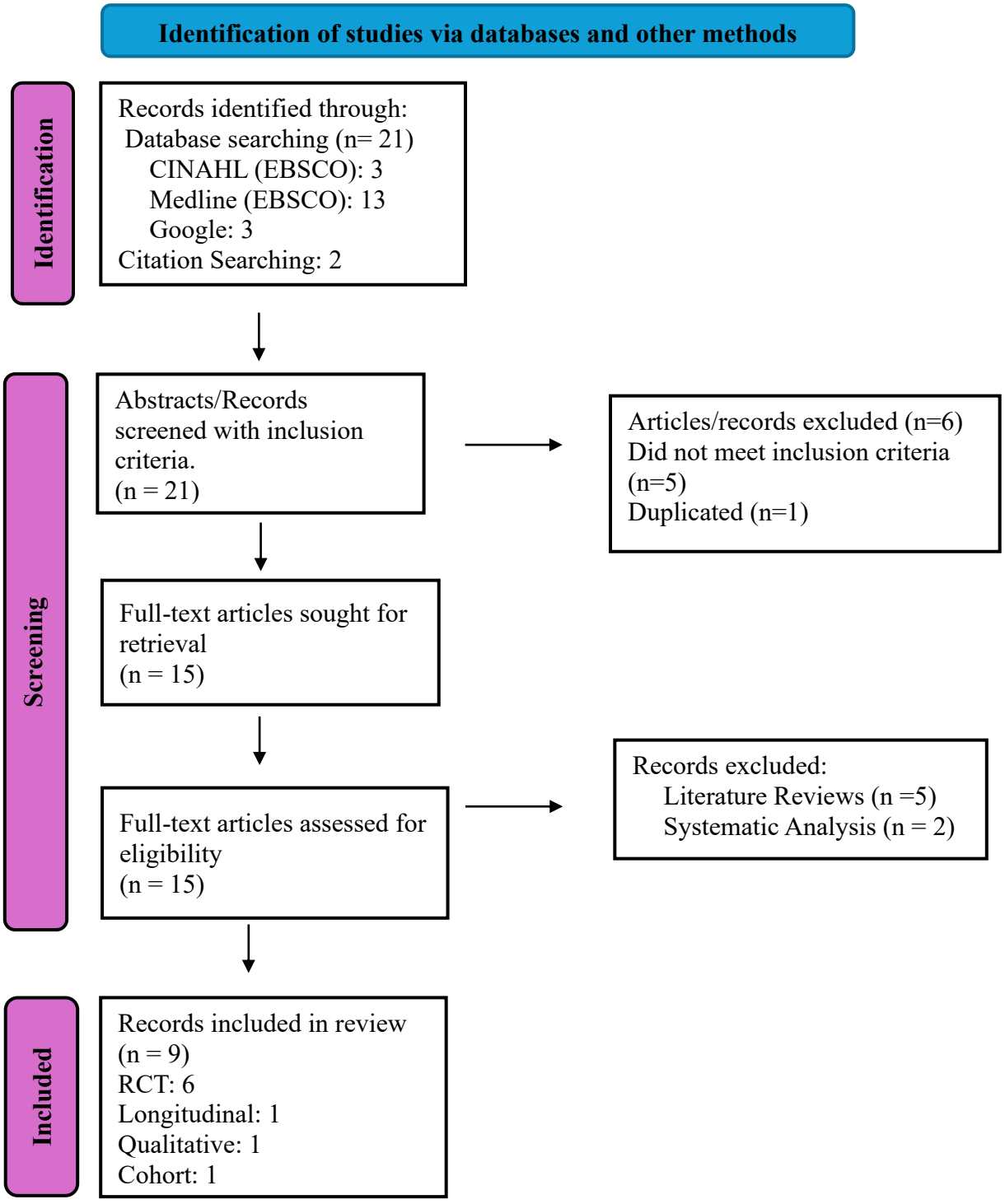
Appendix A
PRISM Diagram



Note. The PRISM flow diagram is adapted from Page et al., (2021)

Appendix B

Study Search Table

Search Date	Database	Search terms	Articles Retrieved
11/06/24	MEDLINE	(Cardiovascular disease or heart disease or Coronary Disease) AND (Primary Health Care or Physicians, primary care) AND (Stress, physiological or stress, psychological)	9
11/06/24	CINAHL	(Cardiovascular disease or heart disease or Coronary Disease) AND (Primary Health Care or Physicians, primary care) AND (Stress, physiological or stress, psychological)	1
11/06/24	Google Scholar	Allintitle: Cardiovascular disease stress prevention Total: 5 Filter: Title review and English only (2)	2
11/06/24	MEDLINE	(Cardiovascular disease or heart disease or Coronary Disease) AND (Primary Health Care or Physicians, primary care) AND (social supports or family supports or community support or life support system or support group or peer group or social group)	4
11/06/24	CINAHL	(Cardiovascular disease or heart disease or Coronary Disease) AND (Primary Health Care or Physicians, primary care) AND (social supports or family supports or community support or life support system or support group or peer group or social group)	2
11/06/24	Google Scholar	allintitle: cardiovascular disease support -systematic -review Total: 16. Filter: Title review and English only (1)	1
12/08/24	Reference Review		2
Total			21

Appendix C

Literature Matrix Table

Study	Methods	Findings	Limitations	Implications	Grading Scale
1.(Karlsson MR et al., 2007) https://doi.org/10.1007/s10865-007-9096-5	• Sweden • Inclusion: <75 who suffered an AMI/CABG • Type D personality characteristics • Exclusion: >75, significant psych disease, ETOH abuse, language difficulties, participation in another RCT, other severe comorbidity • 224 sample • Randomisation by data selection in blocks of 6 • Participation was voluntary but strongly encouraged • Followed for 1 year • Ethics committee **Usual care Rehab (control)** • Physical training (physio) • Information/counselling (pt and spouse with a cardiologist 1 hr/1week) • Heart school: two 90min education sessions	Effects of intervention at 1 year f/u • Perceived QOL increased significantly • Reduction in social inhibition component • Negative affectivity did not change Compliance • Higher compliance with intervention group compared to control • 69% participated in stress mgmt programs • 45% stayed at hotel • 74% participated in cooking sessions Effects in all pts at 1 year f/u	Small study Lack of CAD severity or MI severity Did not use Cardiac markers to measure impact on CVD or reduction of CVS events. (recognize as a need in future studies)	Structured lifestyle programmes Type D personalities--- = greater risk of CVS events Individualised care/ not one size fits all • Considering individual characteristics and personalities to direct treatment plans • Those who have low coherence may have type d personalities and need different approach • Trained in cognitive restructuring and CBT ○ May have impacts on social interaction	**CASP: High** **QATQA: strong** **Relevance: low**

Study	Methods	Findings	Limitations	Implications	Grading Scale
	• Incl. nurse, dietician, physio, social work • Outpt clinic: cardiac nurse, cardiologist (3 visits in total) • Individual counselling **Expanded cardiac rehab (intervention)** • All the above • Stress mgmt program (20 group sessions 2 hr long) • 5-day stay at the patient hotel located within hospital area • Pt participated in physical training 2x/day • Cardiologist led counselling hour • Cooking sessions and counselling regarding diet • With dietician • Smoking cessation programs QOL assessed by cantril ladder of life	• QOL increased significantly in both groups • Anxiety and depression decreased in both groups Type D personalities • Low coherence • ? d/t less educated, perceive low QOL, perceive high levels of depression/anxiety		• Socio-economic factors can impact compliance o Family income o Levels of education	

Study	Methods	Findings	Limitations	Implications	Grading Scale
	Anxiety and depression evaluated with hospital anxiety and depression scale Coping ability evaluated by sense of coherence scale Statistical analyses: used software Statistica' 99				

2. (Lönnberg et al., 2019)
 	
https://doi.org/10.1080/03009734.2019.1602088
	• Sweden
	• Single-group study with 1 year f/u with pre/post measures
	• 18-75. Dx of HTN, T2DM, IDT
	  • Metabolic syndrome
	  • Previous CVD
	• On antihypertensive or cholesterol-lowering medications I needed
	• Exclusion: dementia or sever psych disease
	• 316 pt followed for 12-month interventions
	• Ethics approval
	Structured lifestyle programme at primary care clinic
		Change in physical activity/sedentary time
		• Daily activity, exercise, overall, PA increased, and sedentary time decreased
		Dietary habits
		• Improved healthy habits
		ETOH/Tobacco/stress/ sleeping
		• # Smokers decreased
		• Level of stress/sleeping difficulties decreases
		  ○ Women were twice as high as men at
			Natural course of lifestyle changes for individuals after dx of HTN or T2dm
			
			Not randomized
			
			Looked at those with low care needs
			
			All habits were self-reported (misreporting, recall bias-answering in perceived socially acceptable manner, Hawthorne effect)
				Structured lifestyle programme
				
				Multifactorial, structured approach in CVS risk prevention for change in unhealthy lifestyle habits in a PC setting
				
				Office based PHN
				Motivational interviewing
					CASP: mod
					
					QATQS: weak
					
					Relevance: mod

Study	Methods	Findings	Limitations	Implications	Grading Scale

	• 5 apt with nurse. Baseline, 3, 6, 9, 12 months
	• Fasting blood samples
	  • Total cholesterol, LDL, HDL, triglycerides, FBG
	• Anthropometric variables were measured
	  • Wt/Ht/BMI at baseline and 1 year
	  • BP
	• Questionnaire completed at baseline and 1 year f/u
	  • Physical activity, dietary habits, alcohol, tobacco use, stress, and sleeping habits
	  • Not validated
	  • Dichotomized by "healthy" or "unhealthy"
	• BP and waist circumference measured at every apt
	• Focuses on lifestyle habits and motivational interviewing
	• Rx for physical activity
		baseline and 1 year
		Change in unhealthy lifestyle habit index
		• Mean value decreased over the year
		• Men and higher index at baseline and 1 year
		Unhealthy lifestyle habits
		• 1 or 0 increased over the year from 51.5% to 69.4%
		• Clustered habits by a nine-factor unhealthy lifestyle habits index
		  ○ PA, Diet, ETOH, smoking, stress, sleeping difficulties
		• Is it effective to address more than one lifestyle habit at a time??
		  ○ Structured programme			

Study	Methods	Findings	Limitations	Implications	Grading Scale

	• Dietary counselling
	• Individualized extended counselling (physio or smoking cessation)
	• Group sessions (3 over the 12 month)
	  • CVS risk factors and physical activity
	  • Healthy food/EtOH/tobacco
	  • Stress/sleeping habits/behavioural changes
	• The care need index
	  • Evaluated socio-economic factors that indicates increased need for health care
		has been successful in CVD prevention
		  ○ Results are consistent with previous research that individual counselling and support from specialized nurse led to improved lifestyle habits
		Motivational interviewing
		• Person-centred care and make it possible for participants to change one or more habit
		• Well-suited for clinical practice and feasible for implementing in PC			

Study	Methods	Findings	Limitations	Implications	Grading Scale

3. (Schneider et al., 2012)
 	
https://doi.org/10.1161/CIRCOUTCOMES.112.967406
	• Trial over 9 years in 2 phases
	• 201 Black men and women
	• 1 coronary artery with >50% stenosis
	• Exclusion: AMI, stroke, coronary revascularization within previous 3 months, CHF with EF<20%, cognitive impairment, noncardiac life-threatening illness
	• Randomly assigned to TM or health education
	• Blinded to group assignment
	• Assessed at baseline, 3, and every 6 months after baseline
	  • Clinical events
	  • BP
	  • BMI
	  • Adherence
	• Assessed annually
	  • Lifestyle behaviours and psychosocial distress factors
		48% risk reduction in mortality, nonfatal MI and nonfatal stroke during an average of 5.4 years
		
		Improvement in BP and psychosocial distress factors particularly anger
		
		Regular adherence saw greater risk reduction (66% compared to 48%)
			Small sample size
			Secondary end point (CVD mortality, MI, Stroke, coronary revascularization, and hospitalization) did not reach statistical significance
			
			Reduction in depression was not significant
			
			No significant difference in BMI, exercise, ETOH consumption
			
			Collecting cause of death from death certificates may not be accurate
				TM
				
				Community based
					CASP: high
					
					QATQS: strong
					
					Relevance: mod

Study	Methods	Findings	Limitations	Implications	Grading Scale

	• Outcomes: primary end point
	  • Time-to-first event of composite of all-cause mortality, nonfatal MI, or nonfatal stroke
	• Outcomes: secondary end point
	  • Time-to-first event for CVS mortality, nonfatal MI, nonfatal stroke, coronary revascularization or hospitalization for ischemic heart disease
	• Matched intervention/control group
	  • Format of instructional time
	  • Instructor attention
	  • Participant expectancy
	  • Social support				

4. (Everett et al., 2021).	RCT in Australia	Primary outcome: no statistical significant	• Sample age was higher than	MI no more likely to promote maintenance of	**CASP: High**

Study	Methods	Findings	Limitations	Implications	Grading Scale
https://doi.org/10.1080/10376178.2021.1927774	Intervention group-MI supplemental to a standard 6-week cardiac rehab program. Followed for 6 weeks- 12 months. Primary outcome measure- 6-minute walk test Secondary outcomes- modifiable coronary risk factors, anthropometric measurements 110 participants. With 81% for f/u. mean age 60, 72% male Sample collected from pts already starting a 6-week outpt CR program Inclusion: fluency in English, ability to complete instruments with minimal assistance, and able to participate in MI sessions. Excluded: not cleared by cardiologist to exercise, uncontrolled arrhythmias, or cognitive impairments	difference btwn groups for 6MWT, both groups demonstrated an increase in distance walked Secondary outcomes: no statistically significant difference btwn groups on coronary risk profile and psychological status at baseline, 6 weeks, and 12 months Only stat. sig. diff. was on physical fn at 6 weeks, pt in control group reported stat. higher mean physical function scores as compared to intervention group Both groups had improved all secondary outcomes Overall participants maintained the gains achieved during the CR program at 12 mth f/u. Most participants who adhered to the study where older (62 + 9.6 years) where younger	district average age • Only 2- 1hr sessions delivered within the first 2 weeks of the participants outpt CR program. • (not recognized as a likely explanation for lack of effect---**others may disagree) • Timing of MI in the early acute phase, perhaps doing it later around 6 months when motivation is lost. Could have been done through telephone f/u • MI must be delivered with fidelity and skill. • MI approach has typically been used to address	cardiac risk factor modification than a standard CR program alone. No effect of cardiac risk factor modification Failed to substantiate MI as an effective strategy in incremental behaviour change in CR attendees Need to prioritize and focus upon one clear objective MI	**QATQS: mod** **Relevance: high**

Study	Methods	Findings	Limitations	Implications	Grading Scale
	Assessed at baseline, 6 weeks (completion of CR program) and 12 mths after baseline assessment. Blinded assessment Self-reported physical activity, medication adherence, depression, anxiety, and stress scale, perceived cardiac control, perceived social support, exercise self-efficacy, and QoL. Analysis- Statistical Package for Social Sciences. Ethical approval.	participants dropped out (54 + 10.9 years)	single behaviours- drug/EtOH use. Ppl with CHD have several risk factors (often) and require changing multiple behaviours. Ppl are at different stages of readiness to change over different issues no possible to negotiate a "healthier lifestyle in general". • Primary measure- 6MWT not directly r/t MI. future studies should focus on behaviours most important to participants • High drop out rate (19%)		

Study	Methods	Findings	Limitations	Implications	Grading Scale
			• Small sample size • Self-selection biases (waned to participate, intrinsic motivation to change)		
5. (Goodrick, et al., 2005) https://doi.org/10.1007/s10900-004-1091-y	Cohort study - survey Patients and physicians recruited 64% female 103 pt Patients ---waiting room of one family practice clinic, middle-to-upper socioeconomic urban neighborhood, most have 3rd party insurance Staffed by 10 physicians, 1 NP, 12 resident physicians Approached while in waiting room (unless otherwise involved with personal business like sitting with an infant) to fill out questionnaire	**Results:** 103 pt (94%, 7 declined) all completed the survey 17/19 physician returned the questionnaires **Patients** 45% moderate to extreme bothered by emotional problem in past 4 weeks 33% indicate that above interfered within doing usual work/school Chief sources of stress: employment, finances, future, health, family SXS: headache, sleep disturbances, eating disturbances, wt gain, GI upset	• Survey-bias. Sitting in physician office may skew pt answers on physician's help. • Middle-upper socioeconomic class most with 3rd part insurance, where others have said that low to middle socioeconomic is where most CVD is and where higher rates of stress are.	Need for better communication btwn pt and physicians re: stress. Both are reluctant to broach the topic. Perhaps because misunderstanding the role of primary care medicine in helping pt with stress. Inadequate training and lack of readily available stress mgmt resources may hinder physician action Pt self managing stress with harmful substances. May be too much reliance on medications (25% used Rx meds)	**CASP Rating: low** **Relevance: mod**

Study	Methods	Findings	Limitations	Implications	Grading Scale
	Reward 15 pg stress management manual Physicians sent an anonymous questionnaire by main and email **Patient Questionnaire** Perception of stress sources, problems, previous stress-mgmt training, coping methods used, childhood and family-of-origin stress, history of traumatic experiences, current social support, physician help with stress and perceived ability to relax mind/body, be organized, develop a plan of action. **Physician questionnaire** Assessed perceptions of frequency of stress-related problems amount patients, how stress-related problems affected office visits, whether they asked their pt	Patient coping: 42% alcohol 10% used RDU 86% talking to someone 82% exercise or walking 81% problem solving 72% prayer 58% meditation Breathing 50% Psychotherapy 10% Yoga 18% Most indicated a desire to learn about stress coping skills, with mind-body relaxation and mgmt of job-related stress ranking the highest Books, group classes, videotapes were most popular learning modalities Help from physician-38% said they had told their physician about	• Excluding patients with children may have biased the results significantly • Only from one clinic albeit was a large clinic, but mostly of same demos not generalizable • Physicians rarely ask d/t time constraint or comfort level • Lack of precise definition of stress • Questionnaires lack reliability or validity data	Intervention on initial brief screening method to determine which pt need referral to psychotherapy and which might benefit from stress-mgmt training. Self-help kit that consists of home-based self-training skills. Pt progress could be monitored by virtual or in-person follow-up visits Stress-assessment IN office	

Study	Methods	Findings	Limitations	Implications	Grading Scale
	about stress or evaluated them, and what they did to help patients identified as having a stress problem	stress, of these, >50% moderately/very helpful. Most got brief, informal counseling from physician, 1/3 recommended relaxation practices. 1/4 referred to psychotherapist **Physicians** High variability in responses (how many patients complain of too much stress, what percentage experience stress) possibly indicating a wide variability of physician perceptions and interpretations 77% physicians report dealing with stress poses a moderate or very big problem dealing with pt stress. several mentioning that asking about pt stress was asking for trouble in			

Study	Methods	Findings	Limitations	Implications	Grading Scale
		terms of time and comfort level for the pt visit What factors tell you that stress is excessive in pt life? Wide variability (anxiety, depression, insomnia, fatigue, change in appetite/wt/eating). 42% report routinely asking about stress 29% ask only if symptoms suggest stress and 29% report not inquiring. None of the physicians reported feeling adequate in dealing with pt stress. 87% reported somewhat able to help pt. what medications do you prescribe? About 12% report they do not prescribe any. 29% SSRI, 35% said anxiolytics. Ways in addressing talking with pt, discussing coping strategies,			

Study	Methods	Findings	Limitations	Implications	Grading Scale
		physical effects of stress, providing comfort, encouraging exercise, guided imagery, relaxation, meditation, tai chi. Identified wanted stress-management material and extended visit times to deal with stress related issues. They all wished insurance coverage would allow for better referral opportunities for psychological care.			
6. (Riddell MA et al., 2016) https://doi.org/10.1186/s12889-016-3538-3	Cluster RCT of group-based peer support program Participants from diabetes registry Ethical approval Age 25-75 Exclusion: any current medical or related conditions likely to prevent participation over 12 months	-self-care behaviours and key lifestyle behaviours to promote healthy LS - no significant change in anthropometric outcomes -Minimal improvement in self-reported med. Adherence after 12 months	• On pt's with T2DM • Participants' baseline hba1c were well controlled, good knowledge, and were in frequent contact with their PCP with reg HbgA1C monitoring	Future research needs to address how to enhance community-based programs so that they reach and benefit those most in need of resources and supports to improve metabolic control and associated clinical outcomes.	**CASP: High** **QTAQS: strong** **Relevance: mod**

Study	Methods	Findings	Limitations	Implications	Grading Scale
	or poor comprehension in English 24 groups of 10-15 participants with 2 peer supporters for each group Attend a 7-hr educational course that was delivered by accredited educators and dieticians focused on self-management practices • PA, diet, prevention and mgmt and medications • Provided with a manual Intervention program 4 inter-related components: • Assistance with the HOW of daily self-M • Provision of social and emotional support • Promotion and support for regular linkage to clinical care	-greater improvement in # of days undertaking self-care behaviours compared with usual care • Increased fruits/veggies • Participating in exercise sessions • Testing blood sugar • Not statistically significant increase in PA • Not "" in MH or depression • Very or extremely satisfied with the education sessions • Dietary information most helpful • Group discussion focused more on diet, PA, goal setting, problem solving and less on MH Positive change in self-management behaviours	• 2 groups did not provide regular updates or information	Community based program Volunteer led	

Study	Methods	Findings	Limitations	Implications	Grading Scale
	• Provision of ongoing and sustained support • Volunteers led 90-minute monthly community-based group meeting for participants • Volunteers' rec'd education from accredited educators • Guideline based information • Participate in activities with each other outside the group (walks, tai-chi etc.) • Bi-monthly newsletter from team leaders contained information, recipes etc. Control group • "Usual care" did not receive further support Anthropometric measurements by trained staff	Not sufficient to reduce CVD risk Behavioural interventions programs should be provided by health professionals for those with lower med. Adherence and self-mgmt lvl More comprehensive interventions are generally more effective in disease mgmt than single behaviour-focused interventions Long-term and sustain f/u critical to enhance maintenance of change Support groups continued on after study			

Study	Methods	Findings	Limitations	Implications	Grading Scale
	Self-administered survey at baseline, 6, and 12 months • Clinical, behavioural, QOL, distress, depression, self-care, and satisfaction with support • BW (HbA1C, lipids) Data analysis • Primary outcome measure (CVD risk at 12 months)	Feasible and acceptable at the community level			
7. (Latina et al., 2020) https://doi.org/10.1016/j.ahj.2019.08.022	• RCT- Cohort study • 402 adults mean age 51 with at least 2 CV risks • Recruited from parishes • Randomized into peer-group intervention group and self-management control group for 12 months. • Primary outcome measures BP, exercise, wt., alimentation and tobacco	Mean FBS was higher in intervention group compared to the control. Baseline health profile was 0.31 points (95% CI, P=.154) Peer-support lifestyle intervention program was feasible, however, did not demonstrate a significant improvement in FBS as compared to control groups	• Higher FBS baseline, which could underpower the differences in FBS. • Participants did not have a chronic disease or symptoms which could decrease the motivation to participate in peer-support groups • All participants were taking from	The GHP-CHANGE trial showed that a peer-support lifestyle intervention program was feasible; however, it did not demonstrate a significant improvement in the FBS as compared to the control group. Further studies should assess the effects of low-cost lifestyle interventions in LMICs	**CASP: high** **QTAQS: Mod** **Relevance: High**

Study	Methods	Findings	Limitations	Implications	Grading Scale
	• Educational workshops: physical activity, diet, smoking cessation, BP, and stress mgmt- interested participants signed a contract and were provided with educational materials. • Randomized into groups • Control group: series of educational lectures at the time of enrollment, followed by self-management for 1 year • Intervention group was organized into 8 groups- 12 individuals in their local parish. • Peer leader-community layperson willing to undergo additional training on leadership and healthy behaviour promotion. Topics were	Further studies should assess effects of low-cost lifestyle interventions in Low- and Middle-Income Countries Smoking cessation was main driver for improvement	parishes where they knew of one another. This could have increased the "buy-in" of attending and participating. • Self-reported health conditions dependent on health literacy	Needing more long-term studies to assess retention and sustainability More frequent meetings could reinforce positive lifestyle modifications. Cost-effective solution Main cost is the human capital to organize and execute the intervention. Requires infrastructure, organizational and local resources as well as community engagement and involvement of stakeholders. Volunteer peer leaders still require training and some level of supervision. Community based program Volunteer led	

Study	Methods	Findings	Limitations	Implications	Grading Scale
	provided to discuss at each mtg • Meet monthly for 1 year. • Data was collected at baseline, 6 months and 12 months (anthropometric measures and detailed questionnaire, BP, lipids, ht/wt.				
8.(Heijmans et al., 2017) https://doi.org/10.1186/s13012-016-0532-1	• Longitudinal observational study • Part of Tailored Implementation for Chronic Diseases • Parallel to a two-arm RCT • Measure characteristics of social networks of HCP and Pt at the start of the intervention program and after completion of it. • Social networks will be constructed on info	Evidence based CVRM associated with homophily of clinical attitudes and presence of opinion leaders in primary care teams High homophily (is the tendency of individuals with similar characteristics to associate and bond with each other.) may enhance uptake of information	• Observational design does not allow for casual inferences. • Hypotheses were tested repeatedly, increase risk of type I error rate. • No validation of the questionnaires for mapping the networks • May be only generalizable to PC networks.	Motivational interviewing Network structure characteristics (density, frequency of contact, coordinator centrality) has little effect. While network member's views (homophily or clinical attitudes and presence of opinion leader were r/t performance. "culture"	**JBI: High** **Relevance: low**

Study	Methods	Findings	Limitations	Implications	Grading Scale
	exchange on CVRM purposes. • Data on professional performance of HCP and self-mgmt and CVRM tx targets of pt is collected by pt's medical file extraction. • Self-reported questionnaires and telephone interviews • Pt- >18, with high risk of CVD or est. CVD. Use of ICPC codes will be used to extract eligible pt from EMR • Exclusion criteria-DM, pregnancy/BF, terminal illness, cognitive impairments, poor language skills	physicians were more likely to exchange information and to provide advice during patient treatment if their attitudes towards evidence-based medicine were similar, if they had the same specialty, worked in the same organization, and had co-authored peer-reviewed papers. Homophily has been related to medical advice seeking of clinical staff and prescribing behavior of general practitioners. O.L. represents a person who influences opinions, attitudes, beliefs, motivations, and behaviors of others.		Opinion leaders- a person who has significant influence on their current practice of CVRM (GP or practice nurse. Inconclusive if beneficial in disseminating new knowledge and assisting in adhering to guidelines for providing optimal care. Need further research. Clarifying the role and importance of pts' social environments for handling disease and maintaining or altering self-mgmt. which is consistent with the notion that CVRM is a team effort--importance of common views towards tx goals. Shifting away from a treatment target goal towards a reciprocal relationship btwn provider	

Study	Methods	Findings	Limitations	Implications	Grading Scale
		The role is informal, because it is not necessarily linked to a position in a formalized organization. Opinion leaders may be beneficial for promoting evidence-based practice (speeding adoption of clinical guidelines and adherence to guidelines for unstable angina). professional views in a practice team have impact on its performance. No effect of network density, frequency of contact, and centrality of CVRM coordinators. This may indicate that network structure may have limited impact in general practices.		and patient in tackling CVRM from a variety of angles. Such as learning as a continuous and joint give-and-take process. MI PHN/HCP led. Office based program.	

Study	Methods	Findings	Limitations	Implications	Grading Scale
		Density and frequency of contact are theorized to have its effects as higher levels of information sharing and provide more momentums for collaboration.			
9. (Moser et al., 1993)	• Cohort study • 55 cardiac pt-spouse pairs selected from out-pt cardia care clinics. • Inclusion: cardiac pt was 3-6mth post MI/CAD revascularization. No other significant medical hx, living with spouse/SI, spouse or SI had no cardiac or other significant medical hx, literate in English. 49 pairs agreed. • Needs assessment developed after a lit review. 28 items listed.	**Pt needs:** Informational highest ranked items • Specific facts about their condition • About their care • About the expected physical course after the event • General course of disease process • Life-style changes and how to go about making those changes. • Wanted it in understandable terms. Emergency 2nd highest	• 3 types of cardiac pt (MI, CABG, and angioplasty) were studied as a single group-perhaps need to separate these groups in future studies. • Need to study interventions on meeting pt and spouses' needs and their impact on physical and psychosocial recovery.	Both pt and spouse identifies the need for information as being most important. Spouses: high priority of receiving info about pt's feelings during the recovery period, time alone, talking with pt about concerns and receiving info about expected psychological recovery Pt: need for info about their condition, honest explanations, talking with	**CASP: mod** **Relevance: mod**

Study	Methods	Findings	Limitations	Implications	Grading Scale
	Also rated if need was met. • Mailed questionnaire, not asked to consult with spouse and return	(what to do in an emergency) Talking with an HCP was also ranked high. Intermediate needs • Receiving info on return to sexual activity Lowest ranked needs: • Spending time away from family member and talking with others going through the same experience. **Spouse needs:** Highest ranked needs • What to do in emergency • Similar info as pts • Receive info about feelings/emotions they may have had during the pt's recovery.	• support groups may be more beneficial for spouses than patients	an HCP about their problems. Unmet needs >70% not receiving info about dealing with an emergency. 40-70% unmet needs (lifestyle changes, knowing specific facts about care, expected physical and psychological course and sexual activity) Found that information becomes most acute following hospital discharge. (suggesting that this responsibility lands on the PCP to provide this information) Spousal support and personal needs should also be considered. Attending to the family as a unit rather than separate identities.	

Study	Methods	Findings	Limitations	Implications	Grading Scale
		• And to have time away from pt without worrying Intermediate needs: • Need to feel as if others have the spouse's welfare in mind. • To talk to someone about fears/feelings Lowest needs: • Return to sexual activity. • Rec'ing help with household errands/financial concerns. **Unmet needs** • A lot of the highly ranked info were unmet. (>70% did not receive info on what to do in an emergency		Education needs Peer-supports for spouses Community based programs Office based program	