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IMPROVEMENT OF PREVENTIVE MEASURES AIMED AT REDUCING CARDIOVASCULAR DISEASE RISK FACTORS AMONG MEN OVER 40 YEARS OF AGE

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Abstract

This scientific article examined the improvement of preventive measures aimed at reducing cardiovascular disease risk factors among men over 40 years of age. The study identified that unhealthy diet, physical inactivity, harmful habits, and arterial hypertension are the leading risk factors for cardiovascular diseases. It was determined that promoting a healthy lifestyle, implementing regular medical examinations, and increasing health literacy play an important role in effective prevention. Based on the obtained results, strengthening preventive programs at both individual and population levels was found to be effective in reducing cardiovascular disease risk, and the implementation of comprehensive preventive measures for men over 40 years of age is recommended.

Keywords: Risk factors, prevention, healthy lifestyle, arterial hypertension, physical inactivity, primary prevention.

Psychological stress—including depression, anxiety, post-traumatic stress disorder (PTSD), or high levels of psychosocial stress—has been linked to an increased risk of cardiovascular disease (CVD). Despite the growing recognition of the importance of these factors in CVD prevention, the current state of the field

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requires an updated synthesis to inform practical clinical recommendations. **Rapid screening for psychological stress** represents a useful and efficient approach for identifying an individual's risk of CVD. To strengthen the prospective evidence base regarding psychosocial stress, further research is needed. Moreover, analyzing the benefits of psychological stress screening separately in men and women may encourage broader acceptance and implementation of such strategies in CVD prevention efforts [1].

Behavioral risk factors are among the leading causes of premature mortality. The **Swedish health dialogue model**, which has been developed since 1985, is designed to promote healthy behaviors with the aim of preventing cardiovascular diseases. Within this model, individuals in predefined age groups are invited to **primary health care** to participate in **health dialogues**, complemented by **community-based activities**, with the objective of encouraging healthy lifestyle behaviors. Findings from the **first systematic review** of the Swedish health dialogue model demonstrated a significant impact of the model on both **cardiovascular mortality** and **all-cause mortality**. This approach represents a **multifactorial intervention** that incorporates both **individual-level** and **community-/population-level interventions**, making it challenging to disentangle the specific contribution of each individual component [4].

Although walking **10,000 steps per day** is commonly recommended, accumulating fewer steps than this threshold has recently been associated with a reduced risk of **all-cause mortality**. However, the relationship between **step count** and **cardiovascular disease (CVD) risk** has not yet been fully elucidated. A **meta-analysis** examining the **dose–response relationship** between daily step counts and CVD outcomes may help inform both **clinical practice** and **public health guidelines**. Among adults, a higher number of daily steps is associated with a **gradual reduction in CVD risk**. Monitoring and promoting daily step counts represents a **simple and effective metric** for enhancing communication

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between clinicians and patients and for improving public health, thereby contributing to the reduction of CVD risk [6].

The objective of this study was to review **meta-analyses of randomized controlled trials** that evaluated the effectiveness of the **Mediterranean diet** in maintaining **liver health** and in the **primary and secondary prevention of cardiovascular diseases (CVD)**. This review demonstrated that adherence to the Mediterranean diet may reduce the risk of **fatal cardiovascular outcomes** by **10%–67%** and the risk of **non-fatal cardiovascular outcomes** by **21%–70%**. These preventive effects were substantially more pronounced in studies that included **populations with established cardiovascular disease**. Further **high-quality systematic reviews** are required to strengthen the evidence base [2].

Increasing **physical activity** is recommended as an important **lifestyle modification** for the prevention and management of **hypertension**. **Walking** represents a low-cost form of physical activity that is accessible to most individuals. Studies investigating the effects of walking on **blood pressure** have yielded **inconsistent findings**. This body of research aims to determine how walking, as a form of physical activity, affects **blood pressure** and **heart rate**. **Moderate-certainty evidence** indicates that walking contributes to reductions in **systolic blood pressure**. **Low-certainty evidence** suggests that walking may also reduce **diastolic blood pressure** and **heart rate**. Analyses of the benefits of walking have demonstrated **similar effects across both sexes and all age groups** [3].

Cardiovascular diseases (CVD) have a profound impact on patients' lives, affecting not only their **physical health** but also their **psychological well-being**. Despite growing recognition of the importance of addressing **psychological needs**, the integration of **nurse-led psychological care** into the management of CVD remains insufficiently studied. Incorporating psychological care into the **routine care** of patients with CVD represents a promising approach to improving their **overall well-being**. This review demonstrated that **psychological**

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interventions are effective in reducing various **negative emotional states** and in enhancing **quality of life** among patients with CVD [5].

The role of **dietary calcium** in the prevention of **cardiovascular diseases (CVD)** remains unclear. The aim of this study was to examine the associations between **calcium intake** and **cardiovascular disease outcomes** as well as **mortality**. Data were derived from the **European Prospective Investigation into Cancer and Nutrition–Norfolk (EPIC-Norfolk) cohort**, and the relationships between calcium intake (from **dietary sources and supplements**) and cardiovascular disease, as well as **cardiovascular and all-cause mortality**, were analyzed using **multivariable Cox proportional hazards regression models**. The results of the **meta-analysis** indicated that higher calcium intake was associated with a reduction in **all-cause mortality**, but not with **cardiovascular mortality**; moreover, no such association was observed among men at moderate levels of calcium intake. Moderate calcium intake may reduce the risk of **cardiovascular mortality**, **all-cause mortality**, and the incidence of **stroke**. **Calcium supplementation** may also be associated with reduced mortality among women [7].

Cardiovascular diseases (CVD)—including **ischemic heart disease** and **circulatory system disorders**—account for approximately **31% of all deaths worldwide**, representing a higher proportion than any other cause. **Social support** and **social network–based interventions** have the potential to enhance the effectiveness of prevention and management programs; however, the mechanisms through which these interventions operate and their overall effectiveness are not yet fully understood. This analysis did not identify strong evidence supporting the effectiveness of social network and social support interventions, although **small beneficial effects on blood pressure** were observed. Future research should focus on developing and evaluating more clearly defined and more effective **social network and social support interventions** [8].

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The results of **observational studies** and **clinical trials** evaluating the association between **vitamin D supplementation** and **cardiovascular diseases (CVD)** remain **inconsistent**. This **systematic review** aimed to assess the effects of vitamin D supplementation on CVD outcomes. Based on the available evidence from current clinical trials, **vitamin D supplementation should not be recommended for the prevention of CVD**. Nevertheless, a **direct association** has been observed between **vitamin D deficiency** and the development of CVD, as well as **CVD-related mortality**. Findings from **high-quality randomized clinical trials** indicate that vitamin D supplementation has **no significant effect** on CVD incidence, CVD mortality, or risk reduction [9].

Physical exercise has been shown to be effective in reducing **office blood pressure (BP)**; however, evidence regarding whether these benefits also extend to **ambulatory blood pressure (ABP)** is more limited. ABP is considered a **strong prognostic indicator** for **cardiovascular disease** and **mortality**. The aim of this study was to evaluate the effects of **exercise interventions** on ABP in patients with **hypertension**. **Aerobic exercise** represents an effective **adjunctive therapeutic strategy** for reducing ABP in patients with hypertension who are receiving **antihypertensive pharmacotherapy** [17].

Hypertension is the most significant **modifiable risk factor** for **cardiovascular disease**. This **cohort study** aimed to assess the relationship between **time in target range (TTR)**—the percentage of time spent within the **blood pressure (BP) targets** recommended by the **2024 European Society of Cardiology (ESC) guidelines**—and cardiovascular risk. Spending a greater proportion of time within the **2024 ESC target range**, as measured by **24-hour ambulatory blood pressure (ABP)**, was associated with a reduced risk of adverse outcomes. **TTR derived from ABP** provides more precise **risk prediction** and prevents the **misclassification of individuals' BP control** compared with office BP measurements [12].

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Hypertension is a major global **public health issue** and a leading **risk factor** for worldwide **mortality and morbidity**. To assess the determinants of this condition, we conducted a **systematic review** of the existing literature to investigate factors significantly associated with hypertension among the **population of Pakistan**. A range of **sociodemographic, lifestyle, health, and psychological factors** were identified as having significant **positive or negative associations** with hypertension. These findings may be useful for **clinicians** and **public health professionals** in identifying **high-risk groups** and recommending appropriate **preventive strategies**. Future research is warranted to examine these factors in greater depth and to **integrate global evidence** [15].

The **Cardiovascular Health Index (CVHI)**, introduced by the **American Heart Association**, is a reliable, simple, and practical measure for monitoring **cardiovascular health** in populations. The CVHI comprises **seven cardiovascular risk factors**, referred to as the **"Life's Simple 7"**: **smoking, dietary habits, physical activity, body mass index, blood pressure, glucose, and total cholesterol**. To expand the evidence for the application of this index in **understudied populations in sub-Saharan Africa**, we aimed to evaluate its association with **overall carotid intima-media thickness (CIMT)**. These findings also underscore that **primary prevention of atherosclerotic cardiovascular disease** in understudied populations should target **physical inactivity, smoking, obesity, hypertension, and hyperglycemia** [10].

This study evaluated the effectiveness of **bariatric surgery** compared with **non-surgical interventions** in the management of **hypertension** in patients with **overweight and obesity**. A total of 29 **randomized controlled trials (RCTs)** (n = 2,548), published up to **May 2024** and indexed in **PubMed, Scopus, Embase, and Cochrane databases**, were analyzed. Surgical interventions—including **Roux-en-Y gastric bypass (RYGB), sleeve gastrectomy (SG), laparoscopic adjustable gastric banding (LAGB), and duodenal-jejunal bypass liner/biliopancreatic diversion (DJBL/BPD)**—were compared with non-

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surgical treatments such as **lifestyle modifications** and **pharmacotherapy**. The **primary outcomes** were changes in **blood pressure**, while **secondary outcomes** included **fasting blood glucose (FBS), HbA1c, and lipid profiles**. Bariatric surgery significantly reduced **systolic blood pressure (MD: -4.51 mmHg)** and **diastolic blood pressure (MD: -3.04 mmHg)**, as well as **FBS, HbA1c, and triglyceride levels**, while increasing **HDL cholesterol**. Among the surgical interventions, **RYGB demonstrated the greatest effect**. Overall, bariatric surgery was superior to non-surgical interventions for managing **hypertension and metabolic disturbances** in overweight patients, improving both **cardiovascular health** and **metabolic outcomes** [12].

This study evaluated the association between **leisure-time physical activity** and the risk of **all-cause** and **cardiovascular mortality**, independently of **occupational physical activity levels**. **Individual participant data** from cohort studies were utilized, requiring information on both **leisure-time and occupational activity levels** (categorized as sedentary, low, moderate, and high) and **mortality outcomes**. Among men with **high occupational activity**, higher levels of leisure-time physical activity were associated with a reduced risk of **all-cause mortality (HR = 0.77)** and **cardiovascular mortality (HR = 0.76)**. In men with **high occupational activity**, higher leisure-time physical activity also reduced risk, whereas associations at **low and moderate occupational activity levels** were not statistically significant. In women, the results were similar, although associations at high occupational activity levels were less clear. Overall, a **high level of leisure-time physical activity** reduces mortality risk among workers, **regardless of occupational activity level** [19].

Peripheral artery disease (PAD) is a widespread condition affecting more than **200 million people worldwide**, associated with significant **morbidity and mortality** related to both the **lower and upper extremities** as well as the **cardiovascular system**. These risks can be mitigated through **antiplatelet** and **antithrombotic therapies**. However, the optimal **type, dosage, and duration** of

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antithrombotic treatment remain **uncertain**. In this **meta-analysis**, we systematically searched **four electronic databases** for **randomized controlled trials (RCTs)** conducted between **1 January 1990 and 1 June 2020**, evaluating the use of **oral anticoagulants** and **antiplatelet agents** in patients with PAD. The **primary composite endpoint** included **acute limb ischemia, major amputation, myocardial infarction, ischemic stroke, cardiovascular mortality, or all-cause mortality** [16].

Dietary counseling is recognized as one of the nutritional strategies aimed at improving **cardiometabolic health**. However, its effectiveness may depend on factors such as the **intensity of counseling** and the **type of professional delivering the intervention**, aspects that have not yet been comprehensively studied. This **systematic review and meta-analysis** aimed to evaluate the effects of dietary counseling on cardiometabolic health in **middle-aged and older adults**, and to conduct **subgroup analyses** based on counseling intensity and counselor type. The results of this systematic review and meta-analysis indicate that dietary counseling is an effective strategy for improving cardiometabolic health in middle-aged and older adults, highlighting the **critical importance of counseling intensity** [18].

Evidence regarding the **long-term effects of multi-component lifestyle interventions** on the reduction of **cardiovascular risk** remains inconclusive. The aim of this study was to **synthesize evidence from randomized clinical trials** that evaluated the effectiveness of lifestyle interventions targeting major cardiovascular risk factors in individuals at **high cardiovascular risk**. After a **24-month follow-up**, lifestyle interventions produced only a **modest reduction in systolic blood pressure** and did not significantly alter **total cholesterol levels**. Future lifestyle intervention research should take into account the challenges of achieving **sustained long-term benefits** in order to demonstrate a **real impact on cardiovascular outcomes** [7].

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Conclusion

Cardiovascular diseases (CVD) remain a leading global health challenge, particularly among men over 40 years of age, due to the convergence of behavioral, physiological, and psychosocial risk factors. The synthesis of current evidence highlights that interventions targeting multiple domains—including lifestyle modification, dietary strategies, physical activity, psychosocial stress management, and clinical monitoring—demonstrate significant potential in reducing CVD risk. Specifically, adherence to evidence-based interventions such as the Mediterranean diet, structured exercise programs, bariatric surgery in appropriate populations, and targeted dietary counseling can improve cardiometabolic health, lower blood pressure, and reduce both all-cause and cardiovascular mortality. Additionally, the integration of psychosocial assessment and support, alongside social network interventions, offers complementary benefits, though further high-quality research is warranted to optimize implementation. Importantly, strategies that combine individual-level behavioral changes with population-level preventive programs—such as health dialogue models and systematic screening for psychological and physiological risk factors—appear most effective in achieving sustainable reductions in CVD incidence. Collectively, these findings underscore the critical importance of

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comprehensive, multifaceted preventive measures and support the implementation of structured, evidence-based interventions for men over 40 years of age to mitigate cardiovascular risk and improve overall population health.

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