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Knowledge and Practices for Prevention of Myocardial Infarction among Adults with Hypertension: A Narrative Review

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Abstract **Review Article**

Hypertension is a major modifiable risk factor for coronary artery disease, myocardial infarction (MI), stroke, heart failure and chronic kidney disease. Preventing MI among adults with hypertension requires sustained clinical management, patient understanding and the adoption of cardiovascular-protective behaviours. Adults living with hypertension should understand their overall cardiovascular risk, recognize possible symptoms of an acute coronary event, use prescribed medicines consistently, attend follow-up appointments, monitor blood pressure appropriately and adopt healthier behaviours related to diet, physical activity, weight and tobacco use. This narrative review examines the biological relationship between hypertension and coronary events, knowledge of MI warning symptoms and risk factors, medication adherence, blood-pressure monitoring, lifestyle practices, sociodemographic influences and opportunities for integrated prevention. It highlights the importance of patient-centred counselling, standardized blood-pressure assessment, accessible follow-up, team-based care and comprehensive cardiovascular risk assessment. Effective prevention requires an approach that addresses both individual behaviour and the social and healthcare conditions that influence the ability to maintain recommended practices.

Keywords: hypertension; myocardial infarction; cardiovascular prevention; patient awareness; medication adherence; blood-pressure monitoring; lifestyle modification; tobacco cessation.

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1. INTRODUCTION

Cardiovascular diseases remain a major cause of premature mortality and long-term disability worldwide. Myocardial infarction is an acute manifestation of coronary artery disease in which myocardial injury occurs because blood supply to a region of the heart is insufficient in relation to its oxygen requirements. In many cases, an acute coronary event follows disruption or erosion of an atherosclerotic plaque and the formation of an intravascular thrombus. The resulting reduction or interruption of coronary blood flow can cause myocardial ischaemia and, if prolonged, irreversible tissue injury. The clinical consequences depend on the location and extent of the affected myocardium, the time taken to restore blood flow and the presence of other cardiovascular conditions [1].

Hypertension contributes to this disease process through several interrelated pathways. Persistently elevated arterial pressure increases mechanical stress on the vascular wall, promotes endothelial dysfunction and arterial remodelling, and contributes to left ventricular hypertrophy. It also frequently coexists with dyslipidaemia, diabetes mellitus, obesity, chronic kidney disease, tobacco exposure and physical inactivity. These conditions can interact to increase an individual's overall cardiovascular risk [2]. Consequently, prevention should not be restricted to achieving a satisfactory blood-pressure reading; it should include identification and management of the person's wider risk profile.

A central challenge in hypertension care is that the condition is often asymptomatic. A person may feel well despite persistently elevated blood pressure and may therefore underestimate the importance of long-term treatment. The World Health Organization (WHO) estimates that a substantial proportion of adults with hypertension remain undiagnosed, untreated or inadequately controlled, with the greatest burden occurring in low- and middle-income countries [3]. This highlights the importance of routine screening, reliable diagnosis, continuity of care and accessible treatment [4-6].

The prevention of MI among hypertensive adults is also dependent on knowledge and everyday practices [7-9]. Patients should be able to recognize warning symptoms, understand the need for urgent assessment, take medicines as prescribed, attend follow-up visits and make realistic changes to diet, activity and tobacco use. Knowledge alone, however, does not guarantee behaviour change. Financial constraints, medication availability and adverse effects can influence adherence [10-11]. Health literacy, family responsibilities, work patterns and access to healthcare can also influence preventive practices [12-14].

The prevention of MI among adults with hypertension is influenced by the interaction of clinical care, health literacy, personal circumstances and healthcare access. This review therefore considers both the knowledge required to make informed decisions and the everyday practices that support cardiovascular risk reduction. It also discusses how healthcare professionals and health systems can help translate knowledge into sustained preventive action [12,15,9].

2. REVIEW APPROACH AND SCOPE

This article presents a narrative review of knowledge and practices relevant to the prevention of MI among adults with hypertension. It considers hypertension-related cardiovascular risk, awareness of warning symptoms, understanding of modifiable risk factors, medication adherence, blood-pressure monitoring, diet, physical activity, tobacco exposure, sociodemographic influences and health-service strategies. The discussion draws on the clinical guidance and public-health sources cited in the article. A narrative approach is suitable for bringing together the clinical, behavioural and health-system dimensions of this topic. It provides an integrated discussion rather than a formal systematic assessment of every available study; accordingly, this article should be interpreted as a focused narrative overview and not as a systematic review or an exhaustive synthesis of the evidence.

The literature relevant to this topic spans hypertension management, coronary heart disease prevention, patient knowledge, medication adherence, blood-pressure monitoring and lifestyle modification. For a journal submission, the authors should verify the cited publications and consider updating the reference base through searches of databases such as PubMed/MEDLINE, Scopus and Web of Science, where available. Any search undertaken for the final submission should be documented transparently, including the databases, search date, search terms and principles used to identify relevant publications. References should be checked against the original publications and formatted according to the target journal. The review focuses on established clinical and public-health considerations relevant to adults with hypertension. Recommendations are discussed at a general level; individual treatment decisions should remain guided by current clinical guidelines and the patient's circumstances.

3. HYPERTENSION AND THE RISK OF MYOCARDIAL INFARCTION

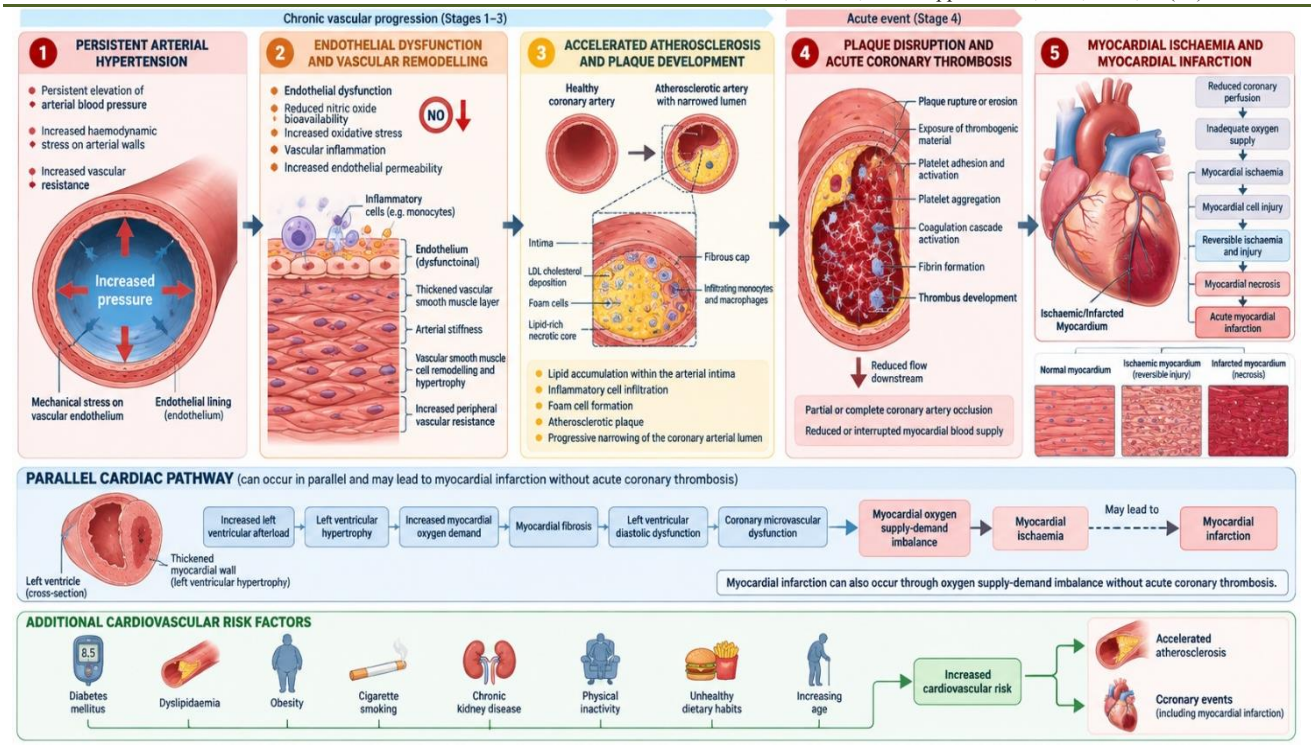


Fig.1: Pathophysiological Mechanisms Linking Hypertension to Myocardial Infarction: From Vascular Dysfunction to Coronary Occlusion

3.1 Biological pathways linking hypertension with coronary events

Blood pressure reflects the force exerted by circulating blood on arterial walls. When pressure remains elevated over time, the vascular system is exposed to sustained mechanical stress. Endothelial dysfunction may reduce the normal ability of blood vessels to regulate vascular tone, inflammation and thrombosis [2]. Changes in arterial structure, including increased stiffness and remodelling, can further contribute to elevated pressure and impaired vascular function. These processes may accelerate atherosclerotic disease, particularly when hypertension occurs alongside high concentrations of atherogenic lipoproteins, hyperglycaemia or tobacco exposure.

Hypertension also increases the workload of the left ventricle. The heart must generate greater pressure to eject blood into the systemic circulation, which may lead to left ventricular hypertrophy. Although initially adaptive, hypertrophy can increase myocardial oxygen demand and may be accompanied by changes in coronary microcirculation and myocardial relaxation. In the presence of coronary artery narrowing, the balance between oxygen supply and demand may become less favourable. Thus, hypertension can contribute both to the development of coronary atherosclerosis and to the physiological burden placed on the heart [2].

3.2 Cumulative and combined cardiovascular risk

The cardiovascular consequences of hypertension are influenced by the degree and duration of blood-pressure elevation. Risk also depends on age, smoking status, lipid profile, glycaemic status, kidney function, family history and evidence of established cardiovascular disease. Diabetes and chronic kidney disease are particularly important because they are associated with increased vascular risk and may complicate blood-pressure management. A comprehensive assessment should therefore identify coexisting conditions rather than considering blood pressure in isolation [2,6-7].

Contemporary guidance emphasizes an overall-risk approach. The 2024 European Society of Cardiology guideline discusses blood pressure as a continuous cardiovascular risk factor and recommends considering associated conditions and total cardiovascular risk when making management decisions [2]. Treatment targets and decisions should nevertheless be individualized according to the applicable national guideline, clinical status, age, frailty, comorbidities and treatment tolerance. A single numerical target should not be applied indiscriminately to every patient.

3.3 Detection, diagnosis and continuity of treatment

Accurate diagnosis requires standardized measurement and, where feasible, confirmation with out-of-office measurements. Blood pressure can vary with recent activity, stress, pain, caffeine intake, cuff size and measurement technique. Repeated measurements reduce the likelihood that clinical decisions will be based on an isolated or unrepresentative reading [2]. Home or ambulatory monitoring can also help identify white-coat

hypertension and masked hypertension when clinically appropriate.

Once hypertension is diagnosed, patients should understand that treatment is generally long term. A normal reading during treatment does not necessarily mean that the underlying tendency to hypertension has resolved. Patients should not stop, reduce or change prescribed medication without consulting a qualified healthcare professional. Treatment interruption may lead to loss of blood-pressure control and can undermine long-term cardiovascular risk reduction [4-6]. Evidence on antihypertensive medication use and cardiovascular outcomes also supports the importance of awareness and continuity of prescribed treatment [11,16].

4. KNOWLEDGE OF MI WARNING SYMPTOMS AND CARDIOVASCULAR RISK FACTORS

4.1 Recognizing warning symptoms

Recognition of possible MI symptoms is an essential component of secondary emergency prevention: although it does not prevent the initial coronary event, it can reduce delays in seeking care and may improve the opportunity for timely treatment. Typical symptoms include pressure, tightness, heaviness or discomfort in the centre of the chest [17-18]. Discomfort may spread to one or both arms, the shoulders, back, neck, jaw or upper abdomen. Breathlessness, cold sweating, nausea, vomiting, light-headedness, unusual fatigue or palpitations may also occur [19-20]. Symptoms may be persistent or may resolve and recur.

Not every patient experiences the same symptom pattern. Some individuals, including older adults and people with diabetes, may present with less typical symptoms or may not report prominent chest pain [19-20]. Women may also experience associated symptoms such as unusual tiredness, nausea, breathlessness or back and shoulder discomfort, although chest discomfort remains a common presentation [18,1]. Educational materials should avoid implying that a heart attack always presents as severe crushing chest pain.

Patients should be advised to seek emergency medical assistance immediately when symptoms suggest an acute coronary event. They should not wait for symptoms to disappear, attempt to confirm the diagnosis at home or travel alone if emergency transport is available. Local emergency instructions should be adapted to the healthcare system and communicated clearly. The American Heart Association emphasizes that prompt action is important and that emergency medical services can begin assessment and care during transport [17].

4.2 Understanding risk factors

Education should distinguish between non-modifiable and modifiable risk factors. Age, biological sex and family history cannot be changed, but they can inform risk assessment. Modifiable factors include hypertension, tobacco use, dyslipidaemia, diabetes, excess body weight, physical inactivity and unhealthy dietary patterns [21-24]. Patients should understand that risk factors frequently cluster. For example, a person with hypertension and diabetes who also smokes may have a substantially greater cardiovascular risk than someone with hypertension alone [2,25-26].

Risk communication is most useful when it is specific and actionable. Rather than simply telling patients that they are at risk, clinicians can explain which factors are present, which can be modified and what practical steps are available. Visual aids, locally relevant examples and teach-back techniques can help determine whether the patient has understood the information [15,27].

4.3 From awareness to appropriate action

Awareness of the term heart attack does not necessarily mean that a person can recognize the range of possible symptoms or respond appropriately when they occur [18-20,28]. Effective education should assess both knowledge and intended action. Adults with hypertension should be able to identify common and less typical warning symptoms, understand that symptoms may differ between individuals and recognize the need for immediate emergency assessment. Education should also clarify that blood-pressure monitoring and routine medication use do not replace urgent assessment when symptoms suggest an acute coronary event [17].

Future surveys should use a broader, validated or carefully piloted instrument that assesses recognition of multiple symptoms, understanding of risk factors and intended responses to a suspected MI. Questions should distinguish spontaneous recall from recognition after prompting [19-20]. This distinction is important because a participant may select a symptom from a list without being able to identify it independently in a real-life situation.

5. PREVENTIVE PRACTICES AMONG PEOPLE WITH HYPERTENSION

5.1 Medication adherence and continuity of care

Antihypertensive medication is a major component of cardiovascular risk reduction for people in whom pharmacological treatment is indicated. The benefit of treatment depends not only on selecting an appropriate medicine but also on sustained use, regular review and timely adjustment when blood pressure remains above the individualized target [2,16]. Common barriers to adherence include medication cost, stock-outs, complex dosing schedules, adverse effects, forgetfulness, poor understanding of the purpose of treatment and the belief that medicines are unnecessary when symptoms are absent [4,7].

Adherence should be discussed as a shared clinical responsibility rather than a moral judgement about the patient. Healthcare professionals can ask open questions about missed doses, affordability and side effects; explain the purpose and expected duration of treatment; and simplify regimens when clinically appropriate. Fixed-dose combinations, once-daily schedules, refill reminders and longer dispensing intervals may help selected patients, depending on clinical suitability and local availability [29-30]. Any change in therapy must be made by the treating clinician.

Medication adherence is an ongoing behaviour that should be reviewed during routine care. Self-reported adherence may not always reflect actual medicine-taking patterns, so clinicians should ask about missed doses in a non-judgemental manner and explore practical barriers. Where appropriate, adherence can also be assessed using validated questionnaires, prescription-refill information or other suitable measures [4,7-8,11]. Continuity of access to prescribed medicines and regular follow-up are essential components of long-term blood-pressure management.

5.2 Blood-pressure monitoring and patient participation

Regular blood-pressure monitoring allows clinicians to assess treatment response and helps patients understand that hypertension requires ongoing attention even when they feel well. Measurement quality is essential [2]. The patient should rest before measurement, sit with the back supported and feet on the floor, keep the legs uncrossed, and have the arm supported at heart level. The cuff should be placed on a bare arm and should be appropriate for the arm circumference. Talking during measurement should be avoided. When possible, validated automated upper-arm devices should be used [2].

Home blood-pressure monitoring can provide information across different days and settings, potentially reducing reliance on occasional clinic readings [2]. It may support patient engagement and help clinicians identify inadequate control, but it should complement rather than replace professional assessment. Patients need instruction on device use, measurement timing, recording results and when to contact their healthcare provider. Readings should be interpreted in the context of the individual's clinical plan rather than prompting unsupervised medication changes.

Access to home blood-pressure monitoring varies according to affordability, availability of validated devices, confidence in their use and the support provided by healthcare professionals. Where individual ownership is not feasible, community facilities, primary-care centres and other accessible measurement services may help patients obtain regular readings [12,31]. The key priorities are reliable measurement, clear record-keeping, appropriate interpretation and communication with the treating healthcare team.

5.3 Physical activity and weight management

Regular physical activity contributes to blood-pressure control, cardiorespiratory fitness, metabolic health and general well-being. It may also help reduce excess body weight and improve insulin sensitivity. For many adults, a combination of moderate-intensity aerobic activity and muscle-strengthening activity is beneficial [32,31,33]. The precise activity plan should be adapted to age, mobility, baseline fitness, symptoms and coexisting disease. People with unstable cardiac symptoms or other significant clinical limitations require assessment before starting or substantially increasing exercise [2].

Advice should be practical and achievable. Walking, cycling, active household tasks and other locally accessible activities may be more sustainable than recommending expensive facilities or highly structured exercise programmes [31,33]. Patients who have been inactive can be encouraged to begin gradually and increase duration and frequency according to tolerance. Advice should also address prolonged sitting and opportunities to incorporate movement into daily routines.

A gap may arise between knowing that physical activity is beneficial and incorporating it into daily life. Potential barriers include long working hours, caregiving responsibilities, fatigue, joint or mobility problems, unsafe outdoor environments, limited social support and uncertainty about what level of activity is appropriate [12,15,34]. Healthcare professionals should explore these barriers rather than assume that a lack of activity reflects unwillingness. Practical, gradual and individually suitable goals may make behaviour change more achievable.

Weight management should be discussed sensitively and in the context of overall cardiovascular health. Assessment may include body mass index and waist circumference, interpreted with appropriate clinical context. Sustainable dietary and activity changes are preferable to short-term restrictive approaches [34-35]. Weight reduction, where indicated, should complement rather than replace prescribed antihypertensive therapy.

5.4 Diet, sodium intake and dietary patterns

Dietary habits influence blood pressure and cardiovascular risk through sodium intake, potassium intake, overall energy balance, dietary fibre, fat quality and the degree of food processing [2,32]. A heart-healthy dietary pattern generally emphasizes vegetables, fruits, pulses, whole grains, nuts and appropriate sources of protein while limiting excess salt, highly processed foods, sugar-sweetened beverages and foods rich in

saturated and trans fats [32,34-35]. Dietary advice should be culturally appropriate, affordable and compatible with individual medical needs.

Excess sodium intake can contribute to higher blood pressure, particularly among people who are salt-sensitive. WHO recommends that adults consume less than 2,000 mg of sodium per day, equivalent to less than 5 g of salt per day [36]. Sodium intake is not limited to salt added during cooking. It may also be present in packaged snacks, processed foods, preserved products, condiments and some ready-to-eat foods. In the Indian context, counselling may use familiar examples such as papad, pickles, salted snacks and commercially prepared foods, while recognizing that sodium content varies with recipe, preparation and portion size.

Patients can be encouraged to reduce the amount of salt added during cooking and at the table, compare food labels where available and use herbs, spices, lemon or other flavouring alternatives [36]. Potassium-rich foods may be useful within a balanced dietary pattern, but potassium intake and potassium-containing salt substitutes require caution in people with kidney disease or those taking medicines that can increase serum potassium. Individual clinical advice is therefore important.

Dietary counselling should consider the person's overall eating pattern rather than relying on a small number of individual foods as indicators of cardiovascular health. Assessment and advice should address salt added during cooking and at the table, packaged and processed foods, portion sizes, dietary diversity and the affordability of recommended alternatives [32,34-35]. Where feasible, dietary assessment tools can help identify patterns and monitor changes over time.

5.5 Tobacco, nicotine and alcohol

Tobacco exposure is a major preventable cardiovascular risk factor [2,29]. Smoking contributes to endothelial dysfunction, inflammation, oxidative stress, platelet activation and adverse changes in vascular function [34]. It can increase the likelihood of coronary events and compounds the risk associated with hypertension [2,29]. Smokeless tobacco and other nicotine-containing products should also be assessed because they may carry health risks and can sustain nicotine dependence. Patients should be asked about current and previous use in a non-judgemental manner.

Brief cessation advice can be incorporated into routine hypertension consultations [29,32]. Effective support may include asking about tobacco use, advising cessation, assessing readiness to quit, assisting with a quit plan and arranging follow-up or referral to cessation services. Family support and culturally appropriate counselling may improve engagement. A lapse should be treated as an opportunity to reassess support rather than as a reason to discontinue counselling.

Tobacco and nicotine use should be assessed systematically, distinguishing current use from former use and identifying the type of product, frequency and duration of exposure. This distinction is important because smoking, smokeless tobacco and other nicotine-containing products may require different counselling and cessation-support approaches. Recording these details consistently can also improve clinical risk assessment and the evaluation of cessation interventions [32,7].

Alcohol use should also be assessed sensitively and without stigma. Patients should receive advice consistent with current clinical guidance and their individual health profile. Alcohol should not be recommended as a cardiovascular preventive measure [2]. Where use is associated with raised blood pressure, medication interactions or other health and social harms, appropriate counselling and referral should be offered.

6. SOCIODEMOGRAPHIC AND HEALTHCARE FACTORS INFLUENCING PREVENTIVE BEHAVIOUR

Preventive behaviour is shaped by an interaction between individual knowledge, social circumstances and the organization of healthcare services. Educational attainment and health literacy can influence the ability to understand prescriptions, interpret blood-pressure readings and recognize warning symptoms [12,15,9]. However, limited formal education should not be equated with an inability to participate in care. Clear communication, pictorial materials and teach-back can support understanding across literacy levels [32,15].

Economic circumstances may influence the ability to purchase medicines, attend follow-up appointments, obtain a validated home blood-pressure device or access healthier food options. Population studies have documented differences in hypertension awareness, treatment and control across communities and socioeconomic settings [4-6]. Social determinants can also influence cardiovascular health and the ability to maintain preventive care [12]. Travel distance, transport availability, employment conditions and caregiving responsibilities can make regular clinic attendance difficult. These barriers may be particularly important for patients who depend on tertiary-care facilities located far from their homes. Community-based follow-up and decentralized services may help reduce the burden of repeated travel [31].

Family members can support medication routines, dietary changes, clinic attendance and emergency decision-making [15,9]. With the patient's consent, family-oriented education may be useful,

particularly when household food preparation and health decisions are shared. At the same time, counselling should preserve patient autonomy and avoid assuming that family support is available or positive in every household.

Knowledge and preventive practices may differ across age groups and residential settings. Studies of hypertension awareness and control have reported variation across populations and settings [4-7]. Differences related to age and blood-pressure management have also been described in older adults [10-11]. Research on health literacy and cardiovascular risk perceptions further indicates that patients' understanding and beliefs can vary [8-9]. Findings from any single healthcare facility or population should therefore be interpreted in context. Research and service planning should include people who may face barriers to accessing tertiary-care services, including rural residents, older adults, women and economically disadvantaged groups [12,15,13-14].

When studies examine relationships between sociodemographic characteristics and knowledge or preventive practices, the analysis should clearly define outcome variables and scoring rules. Appropriate statistical tests should be selected according to the study design and type of data [32,15]. Analyses should describe missing data, check relevant assumptions and consider potential confounding variables. Effect estimates and confidence intervals should accompany p-values, and cross-sectional associations should not be interpreted as evidence of causation.

7. IMPLICATIONS FOR CLINICAL PRACTICE AND PUBLIC HEALTH

7.1 Patient-centred counselling

A structured counselling approach can help ensure that essential preventive messages are communicated consistently. During consultations, healthcare professionals should explain the relationship between hypertension and cardiovascular events in language that patients can understand. Counselling should cover the purpose of prescribed medicines, the importance of continuing treatment, common barriers to adherence, the need for follow-up and the role of lifestyle modification. Patients should also be taught to recognize possible MI symptoms and understand the need for immediate emergency assessment [17-20].

The teach-back method can be used to assess understanding. Instead of asking only whether the patient has understood, the clinician can invite the patient to explain how medicines will be taken, how blood pressure will be recorded or what action would be taken if chest discomfort develops. Misunderstandings can then be corrected immediately. Written information should be available in locally understood languages and use clear wording, large print and illustrations where appropriate [32,15].

7.2 Integrated risk-factor management

Blood-pressure control should be incorporated into comprehensive cardiovascular prevention. Clinical assessment may include smoking status, lipid profile, glycaemic status, kidney function, body weight, physical activity and personal or family history of cardiovascular disease. The frequency and scope of investigations should follow applicable guidelines and individual clinical needs. Identifying coexisting diabetes, dyslipidaemia or chronic kidney disease is important because these conditions can alter overall risk and management decisions [2,37-39].

7.3 Team-based and community-based care

Nurses, pharmacists, physicians, dietitians, community health workers and other trained personnel can reinforce consistent preventive messages. Team-based care may support blood-pressure measurement, medication refill reminders, adherence counselling, tobacco cessation and follow-up of patients who miss appointments. The WHO HEARTS technical package promotes standardized treatment protocols, access to essential medicines, risk-based management, team-based care and monitoring systems in primary healthcare [29]

The India Hypertension Control Initiative provides a relevant example of a health-system approach adapted to the Indian context [30]. Its implementation strategies include standardized treatment protocols, reliable medicine supply, team-based care, patient-centred services and monitoring of treatment and control. Such approaches can complement hospital-based counselling by strengthening continuity of care closer to patients' homes.

7.4 Practical service priorities

At the facility level, services can improve prevention by ensuring that blood pressure is measured using standardized techniques, treatment plans are documented, medicines are available and follow-up appointments are arranged. At the community level, health workers can support screening, referral, counselling and follow-up [29-31]. Where home devices are unaffordable, community measurement points and periodic outreach may provide alternatives. Programmes should monitor not only the number of patients screened but also treatment initiation, retention in care and sustained blood-pressure control.

8. RESEARCH GAPS AND RECOMMENDATIONS

Further research should use clearly defined and psychometrically appropriate instruments to assess knowledge, attitudes and preventive practices. Previous population studies have assessed awareness, treatment and control of hypertension [4-7]. Other studies have

examined knowledge of cardiovascular risk factors and recognition of heart-attack symptoms [18,1,19-20]. Research has also assessed knowledge of coronary risk factors [21-22] and professional and public responses to cardiovascular risk [23-24,28]. Questionnaire development should include expert review, pilot testing and, where feasible, assessment of internal consistency and test–retest reliability. Scoring systems and thresholds for adequate knowledge or practice should be specified before analysis rather than selected after results are known.

Studies should recruit participants from different healthcare settings and include rural and urban populations. Community and population studies from different settings provide a basis for examining variation in hypertension awareness and control [4-6]. Research should also include varied socioeconomic groups and a broader representation of women and older adults, because age and social determinants may influence cardiovascular health [12,7,10-11]. Community-based sampling may help address the selection bias inherent in tertiary-care hospital studies [31]. Qualitative interviews or focus-group discussions could provide additional insight into why patients do not follow recommended practices, including barriers related to cost, access, beliefs, family roles and treatment experience [15,9].

Analytical plans should be developed before examining associations. Depending on the outcome scale and study design, appropriate methods may include chi-square tests, t-tests or non-parametric alternatives, correlation or regression models. Assumptions should be checked, missing data described and potential confounding variables considered. Effect sizes and confidence intervals should accompany p-values. Cross-sectional findings should be reported as associations and not as evidence that a particular demographic factor or behaviour caused an outcome. Published population and community studies provide examples of examining cardiovascular knowledge, health literacy and social determinants in different groups [12,15,22].

Longitudinal studies could examine whether knowledge and practices change over time and whether improvements are sustained. Interventional studies could evaluate structured education and community-based hypertension control approaches, including strategies used in the India Hypertension Control Initiative [30]. Physical-activity programmes for older adults with hypertension have also been evaluated [33], while community cardiovascular health programmes provide another model for outreach and risk-factor management [31]. Further studies could assess home blood-pressure monitoring support, medication adherence interventions, community health-worker follow-up or combined lifestyle programmes. Outcomes may include blood-pressure control, treatment persistence, changes in tobacco use, physical activity and patient understanding. Where feasible, studies should include implementation outcomes such as reach, acceptability, feasibility and cost.

Future studies should report their methods and findings transparently, including participant selection, questionnaire development, variable definitions, denominators, missing data and statistical procedures. Previous studies assessing heart-attack knowledge and cardiovascular risk awareness illustrate the range of populations and measures that future research should describe clearly [19-20,22]. Clear reporting will allow readers to assess the reliability, applicability and limitations of the findings.

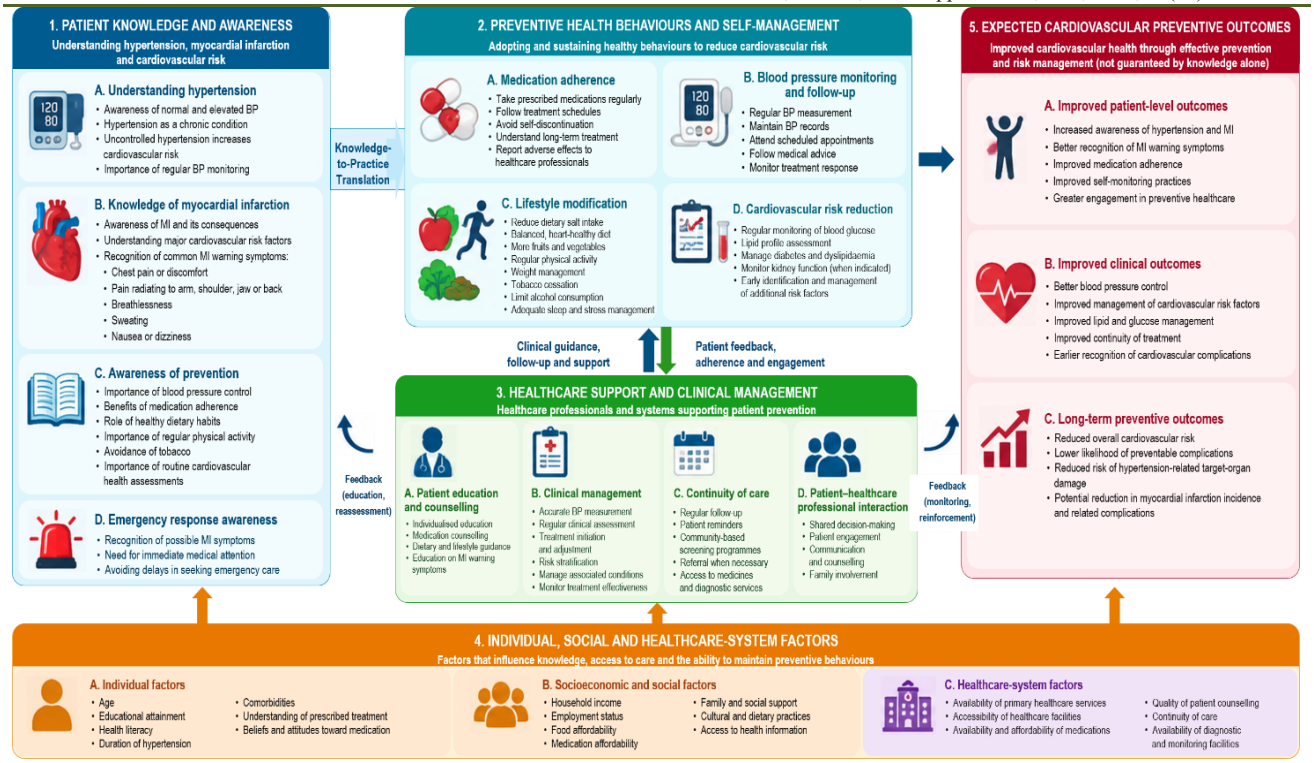


Fig. 2: An Integrated Patient-Centered Framework for Myocardial Infarction Prevention Among Adults with Hypertension

9. LIMITATIONS OF THIS REVIEW

This article is a focused narrative review and does not claim to identify or appraise every publication relevant to hypertension and MI prevention. It does not follow a systematic-review protocol with comprehensive database searching, predefined study-selection procedures or formal risk-of-bias assessment. The cited clinical guidance and public health sources provide a focused basis for the discussion, but they do not represent an exhaustive assessment of all available evidence [2-3,29]. The cited literature and guidance should be verified and supplemented through an updated, documented literature search before submission to a journal.

The strength and applicability of the evidence discussed may vary across populations and healthcare settings. Knowledge and self-reported preventive practices can be influenced by differences in study design, measurement tools, recall, social desirability and access to healthcare [15,9,19-20]. The review does not include a new analysis of participant-level data, pooled estimates or a formal comparison of intervention effects. Its conclusions should therefore be understood as a narrative synthesis rather than quantitative estimates of the effectiveness of specific strategies.

The review also focuses on knowledge and preventive practices rather than detailed clinical management of acute MI. It does not provide patient-specific medical advice or replace national or international clinical guidelines [2,17]. Recommendations should be adapted to current local protocols and individual clinical circumstances.

10. CONCLUSION

Prevention of myocardial infarction among adults with hypertension requires sustained blood-pressure management alongside comprehensive reduction of cardiovascular risk. Hypertension contributes to coronary disease through vascular injury, arterial remodelling and increased cardiac workload [2], while its frequent coexistence with diabetes, dyslipidaemia, kidney disease, tobacco exposure and physical inactivity can further increase risk [2,29]. Because hypertension may remain asymptomatic, patients need to understand the importance of long-term treatment and regular assessment even when they feel well [3,7].

Improving prevention requires attention not only to whether adults have heard about heart attack but also to whether they can recognize warning symptoms [17-18,1] and understand how to respond appropriately when symptoms occur [19-20]. Adults should also understand their personal cardiovascular risk [21-24] and translate knowledge into sustainable preventive practices. Additional studies have examined professional and public understanding of cardiovascular risk [25-27]. Health literacy and patients' beliefs influence this process [15,9], while affordability, social determinants and access to reliable healthcare services can affect the ability to maintain preventive care [12,4-6]. Prevention programmes should therefore combine clear patient

education with practical support for long-term behaviour change.

Patient-centred education, consistent medication access and coordinated follow-up should be integrated into routine hypertension care [29-30]. Standardized blood-pressure measurement should be supported by appropriate clinical guidance [2]. Individualized dietary and physical-activity counselling and tobacco cessation should form part of lifestyle support [32-34]. Primary-care and community-based approaches can improve continuity and reduce barriers to monitoring and treatment [30-31]. Future research should use validated instruments, representative sampling, transparent statistical methods and longitudinal or interventional designs to determine which strategies produce durable improvements in cardiovascular risk reduction [19-20,22].

Data Availability

The authors confirm that the data supporting the findings of this study are available within the article.

Conflicts Of Interest

The authors declare that there are no financial, personal, or professional conflicts of interest that could have influenced the conduct of this study or the presentation of the results.

Declaration of AI Use

This manuscript was prepared through the intellectual contributions of the author(s) to the study design, data analysis, interpretation of results, and scholarly content. Grammarly and ChatGPT were used solely to assist with grammatical refinement and reference formatting during manuscript revision. The author(s) accept full responsibility for the accuracy, integrity, and final content of the manuscript.

Ethical Approval: Not Applicable.

REFERENCES

1. Migliaresi P, Celentano A, Palmieri V, Pezzullo S, Martino S, Bonito M, *et al.,* Knowledge of cardiovascular risk factors and awareness of non-pharmacological approach for risk prevention in young survivors of acute myocardial infarction. The cardiovascular risk prevention project "Help Your Heart Stay Young." Nutrition Metabolism and Cardiovascular Diseases. 2007 Mar 27;17(6):468–72. https://doi.org/10.1016/j.numecd.2006.01.010
2. McEvoy JW, McCarthy CP, Bruno RM, Brouwers S, Canavan MD, Ceconi C, *et al.,* 2024 ESC Guidelines for the management of elevated blood pressure and hypertension. European Heart Journal. 2024 Aug 30;45(38):3912–4018. https://doi.org/10.1093/eurheartj/ehae178
3. World Health Organization: WHO, World Health Organization: WHO. Hypertension. 2025. https://www.who.int/news-room/fact-sheets/detail/hypertension
4. Yan XF, Yang JW, Bai XK, Wang HR, Feng F, Hou LL, *et al.,* Awareness, treatment and control of hypertension in 640 000 adults in eastern China. 2020 Jan 10;41(1):68–73. https://pubmed.ncbi.nlm.nih.gov/32062945
5. Yan R, Wang Y, Bo J, Li W. Healthy lifestyle behaviors among individuals with chronic obstructive pulmonary disease in urban and rural communities in China: a large community-based epidemiological study. International Journal of COPD. 2017 Nov 1;Volume 12:3311–21. https://doi.org/10.2147/copd.s144978
6. Majid NLA, Omar MA, Khoo YY, Naidu BM, Yn JLM, Hasani WSR, *et al.,* Prevalence, Awareness, Treatment and Control of hypertension in the Malaysian population: findings from the National Health and Morbidity Survey 2006–2015. Journal of Human Hypertension. 2018 Jun 13;32(8–9):617–24. https://doi.org/10.1038/s41371-018-0082-x
7. Tailakh A, Mentes JC, Morisky DE, Pike NA, Phillips LR, Evangelista LS. Prevalence, awareness, treatment, and control of hypertension among Arab Americans. The Journal of Cardiovascular Nursing. 2013 Jul 1;28(4):330–7. https://doi.org/10.1097/jcn.0b013e31825638ae
8. Piwońska A, Piotrowski W, Broda G. Knowledge about arterial hypertension in the Polish population: the WOBASZ study. 2012 Jan 1;70(2):140–6. https://pubmed.ncbi.nlm.nih.gov/22427078
9. Frijling BD, Lobo CM, Keus IM, Jenks KM, Akkermans RP, Hulscher MEJL, *et al.,* Perceptions of cardiovascular risk among patients with hypertension or diabetes. Patient Education and Counseling. 2003 May 1;52(1):47–53. https://doi.org/10.1016/s0738-3991(02)00248-3
10. Duggan S. Management of older patients with hypertension in primary care: improvement on the rule of halves. Age And Ageing. 2001 Jan 1;30(1):73–6. https://doi.org/10.1093/ageing/30.1.73
11. Psaty BM, Manolio TA, Smith NL, Heckbert SR, Gottdiener JS, Burke GL, *et al.,* Time trends in high blood pressure control and the use of antihypertensive medications in older adults. Archives of Internal Medicine. 2002 Nov 11;162(20):2325. https://doi.org/10.1001/archinte.162.20.2325
12. Lee SH, Ock M, Moon S, Song EK. The impact of clusters with distinct social determinants by a Two-Step Cluster Analysis on Cardiovascular health. The Journal of Cardiovascular Nursing. 2025 Jul 7;41(2):E77–84. https://doi.org/10.1097/jcn.0000000000001238
13. Danon-Hersch N, Marques-Vidal P, Bovet P, Chiolero A, Paccaud F, Pécoud A, *et al.,* Prevalence, awareness, treatment and control of high blood pressure in a Swiss city general population: the

CoLaus study. European Journal of Cardiovascular Prevention & Rehabilitation. 2009 Feb 1;16(1):66–72. https://doi.org/10.1097/hjr.0b013e32831e9511
14. Steiner S, Dorner TE, Fodor JG, Kunze M, Rieder A. Blood pressure awareness in Austria: lessons from a 30 years horizon. American Journal of Hypertension. 2011 Feb 3;24(4):408–14. https://doi.org/10.1038/ajh.2010.257
15. Moore K, Smith BJ, Reilly K. Community understanding of the preventability of major health conditions as a measure of health literacy. Australian Journal of Rural Health . 2013 Feb 1;21(1):35–40. https://doi.org/10.1111/ajr.12005
16. Suzuki Y, Kaneko H, Okada A, Komuro J, Mizuno A, Fujiu K, *et al.,* Awareness of being prescribed antihypertensive medications and cardiovascular outcomes. Circulation Journal . 2024 Apr 3;88(10):1639–46. https://doi.org/10.1253/circj.cj-24-0039
17. American Heart Association. Warning Signs of a Heart Attack. www.heart.org. 2024. https://www.heart.org/health-topics/heart-attack/warning-signs-of-a-heart-attack
18. Greenlund KJ, Keenan NL, Giles WH, Zheng ZJ, Neff LJ, Croft JB, *et al.,* Public recognition of major signs and symptoms of heart attack: seventeen states and the US Virgin Islands, 2001. American Heart Journal. 2004 Jun 1;147(6):1010–6. https://doi.org/10.1016/j.ahj.2003.12.036
19. Han CH, Kim H, Lee S, Chung JH. Knowledge and poor understanding factors of stroke and heart attack symptoms. International Journal of Environmental Research and Public Health. 2019 Sep 29;16(19):3665. http://dx.doi.org/10.3390/ijerph16193665
20. Duber HC, McNellan CR, Wollum A, Phillips B, Allen K, Brown JC, *et al.,* Public knowledge of cardiovascular disease and response to acute cardiac events in three cities in China and India. Heart. 2017 Jun 29;104(1):67–72. https://doi.org/10.1136/heartjnl-2017-311388
21. Ansa V, Oyo-Ita A, Essien OE. Perception of ischaemic heart diease, knowledge of and attitude to reduction of its risk factors. East African Medical Journal. 2008 May 13;84(7):318–23. https://doi.org/10.4314/eamj.v84i7.9586
22. Attarchi M, Mohammadi S, Nojomi M, Labbafinejad Y. Knowledge and practice assessment of workers in a pharmaceutical company about prevention of coronary artery disease. 2012 Jan 1;50(10):697–703. https://pubmed.ncbi.nlm.nih.gov/23275286
23. Celentano A, Panico S, Palmieri V, Guillaro B, Brancati C, Esposito NDP, *et al.,* Citizens and family doctors facing awareness and management of traditional cardiovascular risk factors: Results from the Global Cardiovascular Risk Reduction Project (Help Your Heart Stay Young Study). Nutrition Metabolism and Cardiovascular Diseases. 2003 Aug 1;13(4):211–7. https://doi.org/10.1016/s0939-4753(03)80013-3
24. Celentano A, Palmieri V, Arezzi E, Sabatella M, Guillaro B, Brancati C, *et al.,* Cardiovascular secondary prevention: patients' knowledge of cardiovascular risk factors and their attitude to reduce the risk burden, and the practice of family doctors. The "Help Your Heart Stay Young" study. 2004 Oct 1;5(10):767–73. https://pubmed.ncbi.nlm.nih.gov/15626274
25. Roncaglioni MC, Avanzini F, Roccatagliata D, Monesi L, Tamayo-Benitez D, Tombesi M, *et al.,* How general practitioners perceive and grade the cardiovascular risk of their patients. European Journal of Cardiovascular Prevention & Rehabilitation. 2004 Jun 1;11(3):233–8. https://doi.org/10.1097/01.hjr.0000129737.84851.99
26. Steffenino G, Galliano E, Roatta M. Risk factors, life habits and personal beliefs of nurses and nurse-students about cardiovascular prevention. 2005 Mar 1;6(3):172–7. https://pubmed.ncbi.nlm.nih.gov/15875503
27. Olszewski R, Nowak A, Adamus J. Knowledge of coronary heart disease risk factors among students of Warsaw universities. 2002 Dec 1;13(78):487–9. https://pubmed.ncbi.nlm.nih.gov/12666448
28. Al-Safi SA, Alkofahi AS, El-Eid HS. Public response to chest pain in Jordan. European Journal of Cardiovascular Nursing. 2005 Apr 28;4(2):139–44. https://doi.org/10.1016/j.ejcnurse.2005.03.001
29. World Health Organization. HEARTS: Technical package for cardiovascular disease management in primary health care: Risk-based CVD management. 2020. https://www.who.int/publications/i/item/9789240001367
30. Kaur P, Kunwar A, Sharma M, Durgad K, Gupta S, Bangar SD, *et al.,* The India Hypertension Control Initiative–early outcomes in 26 districts across five states of India, 2018–2020. Journal of Human Hypertension. 2022 Aug 9;37(7):560–7. https://doi.org/10.1038/s41371-022-00742-5
31. Kaczorowski J, Chambers LW, Karwalajtys T, Dolovich L, Farrell B, McDonough B, *et al.,* Cardiovascular Health Awareness Program (CHAP): A community cluster-randomised trial among elderly Canadians. Preventive Medicine. 2008 Mar 3;46(6):537–44. https://doi.org/10.1016/j.ypmed.2008.02.005
32. World Health Organization. HEARTS: Technical package for cardiovascular disease management in primary health care: Healthy-lifestyle counselling. World Health Organization. 2018. https://iris.who.int/bitstream/handle/10665/260422/WHO-NMH-NVI-18.1-eng.pdf
33. Gong J, Chen X, Li S. Efficacy of a Community-Based Physical Activity Program KM2H2 for Stroke and Heart Attack Prevention among Senior

Hypertensive Patients: A Cluster Randomized Controlled Phase-II Trial. PLoS ONE. 2015 Oct 1;10(10):e0139442. https://doi.org/10.1371/journal.pone.0139442

34. Borzecki A, Zółkowska D, Sieklucka-Dziuba M. Life style and the risk of development of circulatory system diseases. 2002 Jan 1;57(1):426–32. https://pubmed.ncbi.nlm.nih.gov/12898955
35. Murphy BM, Worcester MUC, Elliott PC, Grande MRL, Higgins RO, Goble AJ. Change in Women's Dietary Fat Intake Following an Acute Cardiac Event: Extent, Predictors and Comparison with Non-Cardiac Australian Women and Older Adults. European Journal of Cardiovascular Nursing. 2006 Feb 15;5(3):206–13. https://doi.org/10.1016/j.ejcnurse.2006.01.002
36. World Health Organization: WHO. Sodium reduction. 2026. https://www.who.int/news-room/fact-sheets/detail/sodium-reduction
37. Duan-Porter W, Hastings SN, Neelon B, Van Houtven CH. Control Beliefs and risk for death, stroke and myocardial infarction in middle-aged and older adults: an observational study. Journal of General Internal Medicine. 2015 Mar 19;30(8):1156–63. https://doi.org/10.1007/s11606-015-3275-9
38. Ayanian JZ, Landon BE, Landrum MB, Grana JR, McNeil BJ. Use of cholesterol-lowering therapy and related beliefs among middle-aged adults after myocardial infarction. Journal of General Internal Medicine. 2002 Feb 1;17(2):95–102. https://doi.org/10.1046/j.1525-1497.2002.10438.x
39. Muntner P, DeSalvo KB, Wildman RP, Raggi P, He J, Whelton PK. Trends in the Prevalence, Awareness, Treatment, and Control of Cardiovascular Disease Risk Factors among Noninstitutionalized Patients with a History of Myocardial Infarction and Stroke. American Journal of Epidemiology. 2006 Apr 5;163(10):913–20. https://doi.org/10.1093/aje/kwj124