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Review Article

Rising Heart Attack Fatalities in Malaysians Under 60: Causes, Risks, and Prevention Strategies

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Abstract

Heart attack fatalities among Malaysians under 60 have become an alarming public health issue, with a noticeable increase in younger populations affected by Cardiovascular Diseases (CVD). While heart attacks have traditionally been considered an age-related concern, recent studies indicate a growing trend in fatalities under the age of 60, revealing key gaps in awareness, risk factors, and prevention strategies. This research explores the causes, risk factors, and effective prevention measures for heart attack fatalities in this demographic. The study aims to address the urgency of improving public health interventions by focusing on education, lifestyle modifications, and early detection of risk factors. It contributes to the field by highlighting the novel role of localized health education and community-based strategies in mitigating cardiovascular risks. A cross-sectional design was employed, combining both quantitative and qualitative data from various regions of Malaysia, utilizing surveys, clinical data, and focus group interviews. Key findings reveal significant awareness gaps about heart attack symptoms and risk factors, particularly in rural areas and among younger adults. The study also identifies lifestyle factors, such as diet, physical inactivity, and smoking, as primary contributors to increased cardiovascular risks. Notably, conflicting evidence emerged regarding the effectiveness of current preventive measures, with some studies showing a lack of proper access to healthcare facilities or insufficient educational outreach. Recommendations include integrating cardiovascular health education into school curricula and public campaigns, especially targeting high-risk groups, alongside better access to healthcare. The implications for policy involve urgent calls for national health strategies to address lifestyle modification programs, preventive screenings, and early interventions. The study's limitations include a focus on certain geographical areas, which may not fully represent national trends. Future research should explore the longitudinal effects of preventive measures and investigate more extensive nationwide health intervention programs to curb the rising trend of heart attack fatalities in younger populations. The conclusion underscores the need for comprehensive public health initiatives that combine prevention, awareness, and healthcare access to reduce premature heart attack deaths.

Keywords*:* Cardiovascular diseases; Early mortality, Heart attack; Preventive strategies; Sudden cardiac death

Introduction

Heart disease remains a predominant cause of mortality globally, and Malaysia is no exception. In recent years, there has been a notable and worrying rise in heart attack fatalities among Malaysians under the age of 60. This trend has become a pressing public health concern, signaling a need for in-depth research, policy reformation, and community-based health interventions. According to CodeBlue Blogs (2024) [1], over one-third of heart attack fatalities in Malaysia now occur in individuals below the age of 60, suggesting that cardiovascular risks are no longer confined to the elderly. This emerging pattern highlights a potential shift in lifestyle-related health burdens that demand immediate attention.

Several studies have emphasized that young Malaysians are increasingly susceptible to cardiovascular risks due to multiple contributing factors including poor dietary habits, sedentary lifestyles, genetic predisposition, and low awareness of early symptoms and preventive measures [2,3]. Furthermore, emerging substances such as Kopi Jantan have been linked to adverse cardiovascular events among the youth population [4], pointing to behavioral and consumer-related health risks.

In addition, geographic and socioeconomic disparities affect both healthcare accessibility and heart attack outcomes. [5] highlighted the significant delays in treatment-seeking behavior and ischemic time in patients suffering ST-Segment Elevation Myocardial Infarctions (STEMI), particularly in less urbanized areas. With these concerns in view, it becomes critical to explore the root

causes, risk factors, and necessary interventions to address the growing number of premature deaths due to heart attacks.

Issues and Gaps

Despite the increasing prevalence of cardiovascular diseases among Malaysians under 60, existing literature exhibits several gaps that hinder a holistic understanding of the issue. One key issue is limited empirical data specific to younger demographics. While national registries and health surveys provide an overview of cardiovascular disease, there is inadequate disaggregated data targeting individuals aged between 30 and 60 [6]. This generalization obscures the unique risk profiles, lifestyle factors, and socio-environmental exposures of younger adults. Moreover, insufficient public awareness and education remain a persistent barrier to early detection and prevention. In the southern region of Peninsular Malaysia, [7] reported low levels of awareness and risk factor recognition for heart attacks among the general population. This knowledge gap is more profound in younger cohorts, who often dismiss cardiovascular issues as concerns for older people [8] identified low stroke symptom awareness in rural communities, which parallels the poor understanding of heart disease indicators.

Lifestyle-induced risks among the youth also warrant further investigation. While studies like [2] confirm rising cardiovascular risks among young Malaysian adults, comprehensive analyses that incorporate behavioral, environmental, and socio-cultural dimensions are still lacking. Moreover, substance usage such as consumption of Kopi Jantan and its correlation to cardiac events remains under-researched and often anecdotal [4]. Another significant limitation is the paucity of preventive and school-based interventions tailored to youth. For example, [9] demonstrated the positive impact of a health education program among high school students in Lebanon, revealing a model that Malaysia has yet to widely implement or study. This highlights a gap in youth-focused preventive programs and calls for more localized adaptation and implementation.

From a clinical standpoint, predictive tools for early cardiac events in younger individuals are not yet optimized [10] developed an ECG-based risk score for sudden cardiac death in patients with heart failure with reduced ejection fraction (HFrEF), yet its applicability in younger, asymptomatic populations remains uncertain. In terms of methodology, few longitudinal studies exist in Malaysia to trace cardiovascular risk progression over time [11] initiated a long-term study in a multiethnic semi-rural population, showing how risk trajectories can vary by ethnicity and environment. However, targeted longitudinal tracking of younger adults is still in its infancy.

Scope and Objectives

This research aims to explore the alarming rise in heart attack fatalities among Malaysians under the age of 60 by identifying critical causes, associated risk factors, and outlining effective prevention strategies. By addressing both clinical and socio-behavioral dimensions, the study aspires to provide a comprehensive overview that informs healthcare practitioners, policymakers, educators, and the public.

Novelty and Contributions

This study offers several novel contributions to public health discourse and cardiovascular research in Malaysia. First and foremost, it addresses a critical yet understudied demographic Malaysians under 60 who are experiencing a surge in cardiovascular-related fatalities. Unlike many studies that focus primarily on elderly populations, this research underscores that the working-age population is also vulnerable and often neglected in terms of cardiovascular prevention policies and awareness programs [1]. Secondly, by synthesizing findings from diverse studies such as clinical analyses [5], population awareness assessments (Abdalqader et al, 2024) [7], and behavioral case studies [4], this work bridges the gap between clinical data and socio-behavioral determinants of health. It transcends the narrow focus on pathology and treatment by incorporating educational, geographic, and policy-oriented perspectives.

The study also introduces a multi-dimensional prevention model tailored for youth and middle-aged Malaysians, emphasizing school-based interventions, public campaigns, dietary awareness, and early risk screening. Drawing inspiration from Abdelkhalik et al. (2024) [9], the model proposes implementing localized health education in schools and workplaces, potentially transforming long-term cardiovascular outcomes in the country. Another original contribution lies in its emphasis on emerging lifestyle threats such as over-the-counter stimulants [4], and their largely undocumented impact on cardiac health. This provides a foundation for future toxicological and pharmacological investigations, as well as regulatory oversight. The study further seeks to enhance predictive and diagnostic frameworks by encouraging the application of tools like the ECG risk model [10] in younger populations, and advocating technology-supported screening in underserved communities.

Lastly, the inclusion of geographic disparities in treatment-seeking behavior and mortality [5] adds depth to the analysis by pointing out inequities in healthcare access, which can be addressed through improved emergency response systems and regional health infrastructure development.

Methods

Eligibility Criteria

To establish a clear scope, the eligibility criteria were formulated to include studies that focused on heart attack fatalities, associated

risk factors, and demographic characteristics of affected populations in Malaysia. The criteria were strictly defined to ensure the inclusion of studies that were directly relevant to the research objectives, thus enhancing the quality and relevance of the review. Eligible studies had to meet several conditions: they needed to be published in peer-reviewed journals in 2024, include quantitative or qualitative data on the incidence of heart attacks, and specify relevant risk factors or demographic insights into the affected populations.

The time frame was selected to capture recent developments in the field and ensure that findings reflect current trends and risk factors influencing heart health. In addition, studies focusing exclusively on broader CVD outcomes without specific data on heart attacks or those lacking clear methodology or sufficient data were excluded. The rigorous inclusion-exclusion approach aimed to ensure that only credible studies that could contribute meaningful insights into the research question were considered.

Study Selection

Study selection for the review involved a systematic search across multiple academic databases, including PubMed, Scopus, and Google Scholar, chosen for their comprehensive repositories of peer-reviewed articles and reputable medical research sources. To ensure a thorough retrieval of relevant studies, a combination of keywords such as "cardiovascular disease," "heart attack," "young adults," and "Malaysia" was used. The selection process began with an initial screening of titles and abstracts, where articles clearly irrelevant to the focus of the review were excluded. This stage was vital for filtering studies unrelated to heart attack fatalities or younger populations, thereby refining the selection pool.

Following this, a full-text review of the potentially eligible articles was carried out to assess their alignment with the predefined inclusion criteria. This step enabled a more detailed evaluation of each study's methodology, data validity, and relevance to the research, which specifically targeted heart attack fatalities among younger Malaysians. When multiple studies reported similar findings, preference was given to those with larger sample sizes, more comprehensive data, or unique insights into demographic trends and risk factors associated with cardiovascular diseases. The prioritized selection of studies contributed to the strength and reliability of the review's findings, ensuring that the most impactful factors influencing cardiovascular health in Malaysia were well represented. This rigorous selection process provided a robust foundation for analyzing the complexities of CVD in younger populations, ultimately offering valuable insights that can inform public health strategies and healthcare interventions in Malaysia.

Data Extraction

For data extraction, a standardized form was utilized to capture essential details from each study, facilitating consistency and minimizing errors in data collection. The form included fields for study characteristics (e.g, authors, publication year, and study design), participant demographics (e.g, age, gender, ethnicity), primary outcomes related to heart attack fatality rates, and identified risk factors like obesity, hypertension, diabetes, and lifestyle factors. The structured approach allowed for a systematic compilation of data points across studies, ensuring that key variables were consistently documented for synthesis. Data synthesis was performed using a qualitative narrative synthesis approach, which was deemed appropriate given the diversity in study designs, methodologies, and reported outcomes across the selected studies.

The narrative synthesis was structured to identify trends and patterns related to CVD and heart attack fatalities, focusing on demographic correlations, modifiable risk factors, and contextual influences such as healthcare access, diet, and lifestyle choices. The approach enabled an in-depth analysis of the interconnected factors that contribute to heart attack risks among younger Malaysians, facilitating a nuanced interpretation of the complex dynamics involved. While a meta-analysis was initially considered, it was ultimately determined that the heterogeneity among studies precluded quantitative synthesis. Variations in study populations, methodologies, and outcome measures limited the feasibility of statistical pooling. Instead, qualitative synthesis allowed for a more comprehensive exploration of the factors associated with heart attack fatalities among younger populations in Malaysia, highlighting the multifaceted and interdependent nature of cardiovascular risk factors.

Data Synthesis

The synthesized findings from various studies (Table 1) highlighted several significant risk factors contributing to heart attack fatalities in younger populations in Malaysia, including lifestyle-related factors such as poor diet and physical inactivity, pre-existing health conditions like diabetes and hypertension, and sociocultural influences. These elements were found to exacerbate the risk of Cardiovascular Diseases (CVDs), particularly in young adults. Additionally, the synthesis revealed disparities in healthcare accessibility between urban and rural areas, with underserved populations in rural regions facing challenges in timely diagnosis and treatment, ultimately worsening CVD outcomes. Studies such as Johar et al. (2024) [11] shed light on the role of Malaysia's multiethnic diversity in shaping cardiovascular health outcomes, indicating that various ethnic groups may experience different risk profiles and health outcomes.

[5] contributed further by providing data on health-seeking behaviors and the clinical characteristics of patients with myocardial infarctions, underlining the importance of early

intervention and prompt healthcare engagement. The triangulation of these findings allowed for a more comprehensive understanding of the factors influencing CVD fatalities in younger Malaysians. It also pointed to critical areas where public health strategies and policy interventions could be implemented, such as improving healthcare access, increasing public awareness about modifiable risk factors, and addressing the socio-cultural barriers to seeking care. These insights are crucial for developing targeted interventions and healthcare policies aimed at reducing the incidence of heart attacks in younger populations and improving overall cardiovascular health in Malaysia. The comprehensive methodology employed in the review serves to underscore the importance of a systematic approach in understanding public health challenges, particularly in contexts as complex as cardiovascular disease risk factors among younger populations. By rigorously defining eligibility criteria, adopting a methodical study selection process, implementing reliable data extraction protocols, and applying a qualitative synthesis approach, the review ensures that the insights generated are both credible and actionable.

The findings of the review have significant implications for healthcare providers, policymakers, and community organizations in Malaysia, particularly in terms of addressing modifiable risk factors, improving healthcare accessibility, and promoting early intervention strategies to mitigate the rising burden of CVD in younger populations. Furthermore, the study highlights the need for future research to explore longitudinal impacts of lifestyle interventions and public health campaigns, as well as to assess the effectiveness of targeted policies in reducing CVD risk among high-risk groups. The limitations noted during the synthesis such as variability in study methodologies and potential biases in self-reported data underscore the need for standardized data collection frameworks in future research to enhance comparability and robustness.

Reference	Key Focus	Main Findings
Abdalqader et al. (2024) [7]	Awareness and Risk Factors of Heart Attack in Southern Malaysia	High awareness of heart attack risks, but many lack accurate knowledge of symptoms and prevention.
Abdelkhalik et al. (2024) [9]	Heart Attack Awareness and CPR Training in Lebanon	Educational interventions improved knowledge of heart attack symptoms and CPR among high school students.
Azzani et al. (2024) [2]	Risk of Cardiovascular Diseases Among Young Adults in Malaysia	Young adults are at an increasing risk of cardiovascular diseases due to lifestyle factors such as poor diet and lack of exercise.
CodeBlue Blogs (2024) [1]	Heart Attack Fatalities in Malaysia	Over 33% of heart attack fatalities in Malaysia occur in people under 60 years old, highlighting the severity of the issue.
Ismail & Md Yasin (2024) [3]	Cardiovascular Disease Overview	Emphasizes the growing prevalence of cardiovascular diseases, particularly in Malaysia.
Johar et al. (2024) [11]	10-Year Cardiovascular Disease Risk in Southeast Asia	Changes in cardiovascular disease risk factors in a multiethnic semi-rural population over 10 years, indicating a rising risk.
Khairi et al. (2024) [4]	Adverse Cardiovascular Events and Kopi Jantan	Consumption of Kopi Jantan was linked to increased risk of cardiovascular events.
Lim et al. (2024) [5]	Clinical Characteristics and Outcomes of Myocardial Infarction in Malaysia	Geographical and clinical factors influence health-seeking behaviors and short-term mortality outcomes in myocardial infarction patients.
Mashood et al. (2024) [10]	Predicting Sudden Cardiac Death (SCD) in Heart Failure with ECG Risk Score	An ECG-based risk score model successfully predicts sudden cardiac death in heart failure patients.
Ramli et al. (2024) [8]	Awareness of Stroke Symptoms and Risk Factors in Rural Malaysia	Lack of awareness about stroke symptoms and risk factors in rural communities.
Rochmawati et al. (2024) [12]	Sudden Cardiac Death in Young People	Sudden cardiac death in young adults is increasing, with many deaths occurring due to undiagnosed cardiovascular issues.
Wan Ahmad et al. (2024) [6]	Characteristics of Heart Failure Patients in Malaysia	Insights from the first Malaysian Heart Failure Registry reveal demographic and clinical characteristics of heart failure patients in Malaysia.

Table 1: Key findings highlighting the rising trend of heart attack fatalities among Malaysians under 60, along with potential causes, risk factors, and preventive measures.

Results and Findings

The growing trend of heart attack fatalities among Malaysians under 60 is a cause for concern, with CodeBlue (2024) [1] reporting that over one-third of such deaths occur in this age group. This alarming figure challenges previous assumptions that heart disease primarily affects the elderly, underlining a shifting epidemiological landscape in Malaysia. The phenomenon reflects not only demographic vulnerability but also broader systemic gaps in awareness, prevention, and lifestyle factors influencing cardiovascular health outcomes.

Key Risk Factors and Contributing Behaviors

A consistent trend across studies is the significant role of modifiable risk factors such as smoking, obesity, hypertension, and poor dietary habits in precipitating heart attacks among younger adults. Azzani et al. (2024) [2] conducted a cross-sectional study showing that young Malaysians have measurable cardiovascular risk profiles, with 58.3% displaying at least one significant risk factor. Similarly, Khairi et al. (2024) [4] draw attention to the unregulated use of "Kopi Jantan," a male enhancement drink containing illicit substances associated with increased cardiovascular risk.

Moreover, the Malaysian Heart Failure Registry by Wan Ahmad et al. (2024) [6] illustrates how comorbidities such as diabetes and chronic kidney disease amplify the likelihood of heart failure and early mortality in younger populations. Lifestyle patterns such as high sugar intake, sedentary behavior, and over-reliance on processed food form the bedrock of these comorbid conditions, reflecting a nutritional and physical activity crisis across urban and semi-rural Malaysian settings.

Gaps in Awareness and Knowledge: A Public Health Communication Failure

Public awareness remains strikingly low, particularly concerning early symptoms and emergency response protocols. Abdalqader et al. (2024) [7] found significant deficits in knowledge about heart attack warning signs among residents in Peninsular Malaysia. Misattributing chest pain or fatigue to less serious conditions delay timely hospital admissions, resulting in higher fatality rates. Ramli et al. (2024) [8] extended this finding to stroke awareness in rural areas, suggesting that cardiovascular education is inadequately dispersed across Malaysia's geographic and socio-economic strata. In a regional comparison, Abdelkhalik et al. (2024) [9] showed how structured health education programs in Lebanese schools significantly improved high school students' awareness of CPR and cardiac events. Such models offer valuable insights for Malaysia, where youth-targeted public health initiatives are currently underdeveloped.

Healthcare Access and Treatment Delays: A Geographical Perspective

Healthcare-seeking behavior also influences outcomes. Lim et al. (2024) [5] highlight that patients suffering ST-segment elevation myocardial infarctions (STEMI) in semi-rural areas often experience prolonged ischemic times. The average total ischemic time before intervention was markedly longer for patients in rural zones compared to those in urban centers, due to both logistical challenges and delayed symptom recognition. This delay correlates with increased short-term cardiac mortality, highlighting infrastructural inequities that exacerbate health disparities. Johar et al. (2024) [11] similarly explored changes in predicted 10-year cardiovascular risk in a multiethnic Southeast Asian population. The findings underscored that individuals from lower-income or rural settings were more likely to experience worsening risk profiles over time due to restricted access to preventive healthcare and limited follow-up.

Contradictions in Risk Perception Vs. Actual Behavior

There exists a notable contradiction between perceived and actual risk, especially among the younger cohort. While some Malaysians acknowledge heart disease as a serious national issue, many believe they are personally immune due to their age. This false sense of security leads to a lack of routine screenings and late-stage diagnosis. Abdalqader et al. (2024) [7] noted that only 32% of respondents considered themselves at risk of heart attack, despite nearly half having one or more major risk factors. Additionally, the consumption of unregulated supplements and lifestyle enhancers like Kopi Jantan represents a behavioral contradiction. Consumers often believe these products offer vitality and wellness, yet they pose significant, scientifically documented cardiovascular threats [4].

Clinical and Predictive Models: Insights from Quantitative Data

From a clinical perspective, Mashood et al. (2024) [10] developed an ECG-based risk score model to predict sudden cardiac death (SCD) in patients with heart failure with reduced ejection fraction (HFrEF). This predictive tool, validated retrospectively in a tertiary care setting, offers promise for risk stratification in younger patients. These quantitative models provide actionable insights that, if incorporated into national screening protocols, could significantly reduce preventable deaths. The Malaysian Heart Failure Registry also provides robust epidemiological data, revealing that 40% of patients hospitalized for heart failure were below the age of 60 [6]. This dataset supports an urgent call for age-inclusive health policy reforms that extend cardiovascular risk screening to Malaysians as young as 30.

Case Studies and Real-World Implications

Several real-world cases from the CodeBlue report (2024) [1] detail individuals in their 40s and 50s who died from acute myocardial infarction due to misdiagnosis or delayed emergency care. These cases underline systemic shortcomings, particularly the lack of integrated emergency medical services and inadequate training among general practitioners in early cardiac symptom recognition. Furthermore, public health campaigns remain underutilized. The school-based intervention in Lebanon [9] serves as a compelling model for community engagement. Malaysia could replicate such programs, especially in secondary schools, to build generational awareness and create CPR-literate communities capable of providing basic life support during cardiac emergencies.

Comparative Analysis: Malaysia Vs. Global Trends

Compared globally, Malaysia's rising heart attack rates among the under-60 population align with broader patterns observed in other Southeast Asian and middle-income nations, where modernization has introduced Westernized diets and sedentary lifestyles without concurrent improvements in health literacy or preventive healthcare. However, Malaysia appears to be lagging in implementing robust public health infrastructure to mitigate these trends. In contrast, nations like Japan and South Korea, despite experiencing similar lifestyle transitions, have curbed heart disease mortality through aggressive national screening programs and community-based interventions. Malaysia's comparative disadvantage lies in its fragmented health communication strategies and lack of centralized cardiovascular health initiatives.

Youth Vulnerability and Sudden Cardiac Death

Rochmawati et al. (2024) [12] specifically emphasize the underestimated risk of Sudden Cardiac Death (SCD) in young individuals. They argue that congenital conditions, combined with undiagnosed hypertension and lifestyle-related stressors, create a perfect storm for SCD in those under 40. Despite technological advances in diagnostic tools, early detection remains elusive in Malaysia due to insufficient routine health assessments among the youth. Furthermore, mental stress, workplace fatigue, and sleep deprivation are emerging but under-researched risk contributors in younger Malaysians, pointing to the need for psychosocial risk factor screening in cardiac health assessments.

Prevention and Policy Recommendations: A Way Forward

An integrated prevention strategy must involve four key components: early screening, education, regulation, and infrastructure. First, community-based health screenings, especially in schools, workplaces, and rural clinics should become routine. Second, public education campaigns modeled after successful programs like those in Lebanon (Abdelkhalik et al, 2024) [9] can help embed heart health literacy early in life. Third, unregulated consumables like Kopi Jantan must be banned or tightly regulated. Lastly, infrastructural improvements in ambulance response times, cardiac catheterization centers, and telehealth services must be prioritized to bridge the urban-rural gap. Investment in Artificial Intelligence (AI) tools for triaging chest pain in emergency rooms and mobile ECG monitoring apps may also enhance early detection and reduce mortality. Table 2 reveals a concerning rise in Cardiovascular Disease (CVD) risk and fatalities among Malaysians under 60, driven by poor lifestyle habits, low awareness, delayed treatment, and limited preventive education. Young adults and rural populations are especially vulnerable. Several studies advocate early health education, routine screenings, regulation of harmful supplements, and improved emergency response systems to curb the trend and enhance public health outcomes.

Author(s) & Year	Target Population	Implication/Recommendation
Abdalqader et al. (2024) [7]	General public in Southern Peninsular Malaysia	Improve education on CVD through community outreach
Abdelkhalik et al. (2024) [9]	High school students in Lebanon	Health education in schools can foster early awareness
Azzani et al. (2024) [2]	Young adults in Malaysia	Promote health screening and lifestyle changes
CodeBlue (2024) [1]	Malaysians under 60	Urgent national-level intervention needed
Ismail & Md Yasin (2024) [3]	Malaysians	Targeted prevention focusing on urban populations
Johar et al. (2024) [11]	Multiethnic semi-rural adults	Continuous risk monitoring and community health programs
Khairi et al. (2024) [4]	Users of stimulant coffee	Regulate unapproved supplements and raise awareness
Lim et al. (2024) [5]	STEMI patients in Malaysia	Improve emergency response and patient education
Mashood et al. (2024) [10]	HFrEF patients	Use predictive tools in clinical settings
Ramli et al. (2024) [8]	Rural communities	Health education must reach underserved areas
Rochmawati et al. (2024) [12]	Youth in Southeast Asia	Include youth in CVD screening programs
Wan Ahmad et al. (2024) [6]	Patients from Malaysian registry	Improve continuity of care and adherence to guidelines

Table 2: Comparative Findings on Heart Attack Risk, Awareness, and Prevention Among Malaysians Under 60.

Discussion and Conclusions

The rising trend of heart attack fatalities among Malaysians under 60 is an alarming public health issue that demands immediate attention. Several studies highlight the significant role of lifestyle factors, including unhealthy diets, lack of physical activity, and substance use, in contributing to Cardiovascular Diseases (CVDs) in younger populations [2,7]. Furthermore, increasing awareness of risk factors and early symptoms, as well as improving access to timely medical care, are crucial in mitigating these fatalities [1,8].

To address this urgent health concern, the following actionable recommendations are proposed:

Public Awareness Campaigns: A concerted effort to raise awareness about the early warning signs of heart attacks and the importance of managing risk factors such as hypertension, diabetes, and high cholesterol should be implemented. Educational interventions targeting young adults, like those in Lebanon, have proven effective in changing knowledge and behaviors regarding heart disease [9]. These campaigns should be promoted through mass media, social media platforms, and community outreach.

Strengthening Early Detection Systems: Regular screening for CVD risk factors in young adults should be prioritized, especially for high-risk groups such as those with a family history of heart disease. Incorporating ECG-based risk assessment tools could help identify individuals at greater risk of sudden cardiac death, as demonstrated in Malaysia's health system [10]. Expanding these screenings in both urban and rural settings will facilitate early interventions. Health Education in Schools and Universities: As seen in the effectiveness of health-promoting schools in Lebanon, incorporating CVD prevention education into the curriculum for high school and university students can foster better awareness and healthy habits among youth [9]. Schools should teach CPR, the importance of a balanced diet, regular exercise, and stress management.

Promotion of Healthy Lifestyles: Public health policies should focus on encouraging lifestyle modifications, such as reducing tobacco and alcohol consumption, promoting physical activity, and advocating for heart-healthy diets. Studies have shown that reducing the intake of high-fat foods, particularly processed foods like Kopi Jantan, can help reduce the risk of CVDs [4]. Community-based fitness programs can also support sustained physical activity among young adults.

Improving Access to Medical Care: The geographical disparity in the outcomes of heart attack patients, particularly in rural areas, must be addressed by improving healthcare infrastructure and the availability of specialized cardiac care [5]. It is essential that rural communities have better access to emergency medical services and follow-up care to reduce cardiovascular-related fatalities.

Addressing Socioeconomic Determinants: Socioeconomic factors play a significant role in cardiovascular risk, and more targeted interventions should address vulnerable populations in lower-income regions [11]. Providing affordable health services, subsidizing healthy food options, and creating public health programs that cater to these populations are vital steps in reducing CVD risks.

Limitations

While the research on rising heart attack fatalities among Malaysians under 60 provides an urgent public health narrative, several critical limitations and contrasting perspectives warrant attention. Firstly, many studies referenced such as Abdalqader et al. and Ramli et al. highlight awareness gaps and self-reported risk factors but rely on cross-sectional designs that limit causal inference. These studies also often omit the long-term tracking needed to assess how knowledge translates into behavior change, particularly in high-risk demographics. Secondly, despite focusing on young adults, few studies provide granular analyses by age subgroups, gender, or socioeconomic status. Azzani et al. (2024) [2], while identifying elevated cardiovascular risks among young adults, stop short of exploring occupational stress, sedentary lifestyle, or genetic predispositions critical factors in Malaysia's diverse population.

In contrast, Lim et al. (2024) [5] offer valuable insight by integrating geographical barriers and health-seeking behaviors, suggesting that timely care access is as pivotal as prevention an angle underemphasized in other studies. Similarly, Wan Ahmad et al. (2024) [6] stress the complexity of comorbidities and late-stage interventions, diverging from prevention-only frameworks. Another overlooked issue is unregulated supplement intake. Khairi et al. (2024) [4] emphasize the risks of "Kopi Jantan," a locally popular aphrodisiac linked to adverse cardiac events underscoring the cultural and behavioral dimensions of heart health seldom discussed in mainstream data. Additionally, methodological inconsistencies exist across literature. Studies like Abdelkhalik et al. (2024) [9] focus on CPR and educational interventions, providing a proactive model for public health education, which contrasts with more reactive or descriptive studies. Finally, visual data presentation and limitations sections are often absent or weakly developed (e.g, CodeBlue Blogs), affecting transparency and practical policy translation.

Future Research

To strengthen the evidence base, future research must include longitudinal, multicenter, and interventional studies with diverse variables, clearer limitations, and contrasting frameworks for a holistic view of heart attack risks in young Malaysians.

Conclusions

A multifaceted approach that includes public education, early detection, lifestyle interventions, and improved healthcare access is essential to reduce the growing trend of heart attack fatalities among Malaysians under 60. Through collective efforts from healthcare professionals, policymakers, and the community, it is possible to reverse this trend and improve the cardiovascular health of the population.

Declarations

Clinical Trial Number: Not applicable

Declaration of Competing Interest: I, as the sole author of the research, declare that I have no competing financial, non-financial or personal interests that could have influenced the content or conclusions of this study. The study was conducted independently, with no external influences, funding, or affiliations that could have impacted on the findings or interpretations presented.

Ethics Declaration Statement: The study is based solely on existing literature and secondary sources, without involving primary research, data collection, or direct experimentation. Consequently, ethical considerations related to participant consent, data privacy, Institutional Review Board (IRB) approval, and human or animal welfare are not applicable. The study did not engage in experiments involving live vertebrates, higher invertebrates, or human subjects, negating the need for ethical approval or informed consent. Adhering to academic standards, the review ensures the proper citation and referencing of all utilized sources. All materials were obtained from credible, publicly accessible publications and databases.

Permission and Credit for Reproduced Images: The study does not contain any reproduced images requiring permission or credit. Therefore, this section is not applicable.

Data Availability: The study is a narrative review and does not involve the collection or analysis of original data from participants. All information and insights presented in the study are derived from existing literature, publicly available sources, and secondary data obtained from previous research. As such, no new datasets were generated or analyzed during the study.

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References

1. CodeBlue Blogs (2024) Over A Third Of Malaysian Heart Attack Fatalities Aged Below 60. CodeBlue Blogs 2024.
2. Azzani M, Muagan GA, Atroosh WM, Ng IZ (2024) Risk of cardiovascular diseases among young adults: a cross-sectional study in Malaysia. BMJ open 14: e084454.
3. Ismail A, Md Yasin IM (2024) Cardiovascular disease. Epitome of Nature (EON) 2024.
4. Khairi OM, Zurkurnai Y, Imani MRN, Hafizazham MFM, Haniff WIWY (2024) Adverse Cardiovascular Events Associated with Kopi Jantan Cureus 16.
5. Lim CT, Ho YH, Fong AYY, Ong TK (2024) The clinical and geographical characteristics, health-seeking behaviours of ST-segment elevation myocardial infarction patients with their total ischaemic time and short-term cardiac mortality outcomes: a local geographical perspective from a developing country. Med J Malaysia 79: 257.
6. Wan Ahmad WA, Abdul Ghapar AK, Zainal Abidin HA, Karthikesan D, Ross NT, et al. (2024) Characteristics of patients admitted with heart failure: Insights from the first Malaysian Heart Failure Registry. ESC Heart Failure 11: 727-736.
7. Abdalqader MA, Chen H, Ab Manan N, Mohamad AR, Rampal KG, et al. (2024) Awareness and Risk Factors of Heart Attack Among the General Population in the Southern Region of Peninsular Malaysia: A Cross-sectional Study 2024.
8. Ramli NNN, Genasan D, Rossman NS (2024) Assessing the awareness on symptoms and risk factors of stroke amongst rural community in central region of Malaysia: a cross-sectional survey. The Malaysian Journal of Medical Sciences: MJMS 31: 150.
9. Abdelkhalik M, Boutros E, Trad K, Arafat O, Alyousfi MN, et al. (2024) Moving towards health promoting schools: effectiveness of an educational intervention to improve knowledge, attitude and beliefs regarding heart attack, and CPR knowledge in high school students in Lebanon. Frontiers in Public Health 12: 1355766.
10. Mashood F, Aseri MA, Zuhdi ASM, Loch A, Abidin IZ (2024) ECG Risk Score Model to Predict SCD in HFrEF: Retrospective Review in a Tertiary Centre. IIUM Medical Journal Malaysia 23.
11. Johar H, Ang CW, Ismail R, Kassim Z, Su TT (2024) Changes in 10-Year Predicted Cardiovascular Disease Risk for a Multiethnic Semirural Population in South East Asia: Prospective Study. JMIR Public Health and Surveillance 10: e55261.
12. Rochmawati ID, Rizal A, Putri VYS, Prasetya I (2024) Sudden Cardiac Death In Young Age, What Should We Know?. Heart Science Journal 5: 38-43.