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RISING HEART ATTACKS IN ADULTS UNDER 60: CAUSES, RISKS & PREVENTION

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ABSTRACT

Most adults under the age of 60 in Southeast Asia, including Malaysia is suffering from cardiovascular diseases, which is very concerning. This might largely be contributed by lifestyle changes, unhealthy eating habits, and growing social and environmental pressures that are unavoidable due to rapid urbanization. Nonetheless, many people are still unaware of the cardiovascular risk factors, which lead to delay in diagnosis and missed opportunities for early prevention. Hence, understanding the interplay between behavioral, metabolic, and social factors is significant to prevent heart disease among youngsters. To examine the risk factors and preventive steps holistically, this review particularly integrates evidence from population surveys, national registries, and prospective research to examine the causes of cardiovascular diseases, heart risk factors, and prevention strategies for early-onset heart disease among individuals aged 60 and below. As a result, the evidence consistently shows that high blood pressure, diabetes, abnormal cholesterol levels, smoking, lack of exercise, and stimulant consumption are the main factors that cause heart disease within the targeted community. Nonetheless, cardiovascular risk levels can vary depending on region and ethical practices, reflecting differences in genetics, culture, and socioeconomic conditions may lead to different results. These variations highlight the need for targeted and culturally appropriate prevention strategies. As an illustration, targeted community health screenings, customized public education programs, and personalized risk prediction models can support early detection of cardiovascular symptoms and reduce heart risks factors, which can reduce the emerging number of youngsters having cardiovascular diseases. This review is particularly useful in guiding policymakers, healthcare providers, and educators who want to design prevention strategies that fit into Malaysian or Southeast Asia contexts. However, several research gaps like differences in study populations and reliance on self-reported data should be addressed. Therefore, future research should focus on longitudinal studies to keep track on how effective different interventions with different targeted populations are over time and explore the use of AI-based prediction tools through structured and reliable experiments to strengthen public health and healthcare systems in Malaysia and the wider Southeast Asian region.

KEYWORDS: Heart Attack, Cardiovascular Diseases, Sudden Cardiac Death; Early Mortality, Preventive Strategies.

1. INTRODUCTION

Due to rapid urbanization, death and illness across the world are mostly caused by cardiovascular disease (CVD). Surprisingly, this is also happening among younger and middle-aged people. CodeBlue Blogs (2024) report that more than one-third of heart disease-related deaths involves Malaysians aged 60 and below. To support the statement above, Ismail and Md Yasin's (2024) note that there are more young adults who have myocardial infarction. This rising incident is caused by unhealthy lifestyles, poor dietary habits, and genetic predispositions (Azzani et al., 2024; Johar et al., 2024). These emphasize the urgent need to raise Malaysians' awareness about the risk factors of getting cardiovascular-related issues and possible prevention strategies to avoid heart disease. By doing so, people will have sufficient knowledge to avoid themselves from premature cardiovascular-related death and improve long-term population health outcomes before the condition is getting worse, as prevention is better than cure.

1.1. Issues and Gaps

As mentioned above, awareness and education are the key to prevent such incident. Unluckily, lacking proper knowledge about heart attacks is one of the primary constraints among young adults nowadays, especially those from Southern Malaysia. They often optimism bias, thinking that heart attacks are not common or not serious in their communities (Abdalqader et al., 2024), taking their cardiovascular health lightly. Surprisingly, their awareness about recognizing symptoms, acting quickly during emergencies, and practising preventive behaviours are still weak, even among educated groups (Abdelkhalik et al., 2024).

Not only that, but there is also limited research being done about how lifestyle habits can affect heart problems among younger adults. As an illustration, the effects of stimulant drinks like Kopi Jantan on cardiovascular disease are not thoroughly studied in previous research (Khairi et al., 2024). Meanwhile, current prediction models for sudden cardiac events are not well tested among younger and ethnically diverse populations in Malaysia (Mashood et al., 2024). Thus, it is challenging to design targeted interventions, which is a factor that largely contribute to the risk of getting heart attacks among young adults.

1.2. Scope and Objectives

The objective of this study is to investigate the rising incident of heart attacks among Malaysians under the age of 60, with particular attention to

multiethnic and semi-rural communities. It examines how behaviour, environment, and genetics interact, while also incorporating community awareness, knowledge, and current prevention efforts (Azzani et al., 2024; Lim et al., 2024). By exploring all these perspectives, the study will be able to identify the main constraints to awareness and early detection in order to suggest practical prevention strategies that can strengthen both clinical care services and community health support.

1.3. Novelty Contributions

Most studies on heart disease focused on older adults and hospital records. This study, however, examines health awareness levels and factors of having heart disease among younger adults only. It studies their daily lifestyle patterns, levels of cardiovascular health knowledge, and heart attacks symptoms awareness levels (Abdalqader et al., 2024; Rochmawati et al., 2024). Cultural aspects, such as local diets and healthcare-seeking habits common in this community, are also considered (Wan Ahmad et al., 2024).

2. METHODS

To ensure the accuracy and relevance of the evidence, this review excluded studies about older adults, animal-based experiments, and isolated case reports, even if the research field is the same. Instead, it emphasizes on research with data on prevalence of cardiovascular disease among adults aged 10-59, factors that caused heart attacks among this targeted population, and practical preventive strategies to resolve the root cause that causes cardiovascular-related premature death among this community. This focused selection is to provide a comprehensive yet targeted study of early-onset heart disease in the context of Southeast Asia, specifically Malaysia.

After careful screening of the retrieved empirical studies, several studies met this inclusion criteria as mentioned above. Abdalqader et al. (2024) and Azzani et al. (2024) provide valuable insights into cardiovascular risk patterns and levels of health awareness among younger adults, specifically within Malaysian context. These helped to clarify locally relevant risk patterns and preventive patterns that are unique in this community and might not be examined in the previous literature.

2.1. Review Selection

After a systematic selection process, Johar et al. (2024) state that geographical settings can significantly influence the risk of getting cardiovascular disease. In response, this review

applied strict inclusion criteria, systematically screening titles, abstracts, and full texts to ensure that only studies in Malaysia and the wider Southeast Asian region were considered. With a specific study population, this review can effectively avoid overgeneralization of data, making the findings more accurate and reliable.

To further strengthen this review's reliability and accuracy, duplicate records and studies with insufficient methodological detail or incomplete data were removed. Besides, only articles that are published from 2024 onwards were used to reflect current cardiovascular risk patterns, community's behavioural trends, and lifestyle-related consumption habits (Khairi et al., 2024), ensuring the timeliness of this review by excluding outdated

evidence.

Initial database search first identified 82 records, as illustrated in Figure 1 below. After removing unnecessary duplicates, 38 studies were screened carefully. Among the remaining literature, 21 were excluded for not meeting the inclusion criteria, leaving 17 articles for full-text review. Then, a further five were excluded due to methodological weaknesses or limited relevance to the context of this review paper. Ultimately, only 12 empirical studies were used for final analysis to support the comprehensiveness of this study, which provide insightful perspectives and strategies to overcome this crisis.

Identification

Records identified through database searching (n = 75)

Additional records identified through other sources (n = 7)



Screening

Records after duplicates removed (n = 38)

Records screened (n = 38)

Records excluded (n = 21)



Eligibility

Full-text articles assessed for eligibility (n = 17)

Full-text articles excluded, with reasons (n = 5)



Included

Studies included in qualitative and quantitative synthesis (n = 12)

Figure 1: PRISMA Flowchart: Systematic Review Selection of Heart Attack Studies.

2.2. Data Extraction

Research design in the areas of cardiovascular research, sample sizes in the articles, participant demographics within the community, levels of symptom awareness reported from participants, trends in rising cardiovascular risk factors, and various reported preventative and clinical

intervention outcomes were the primary variables collected in this review. By drawing different perspectives from various dimensions, it allows deeper analysis and more nuanced comparison of the emerging trends in increasing cardiovascular risk among youngsters, ensuring a non-biased perspective presented in this review.

Lim et al. (2024), for example, which focused on

healthcare-seeking behavior and ischemic time of its participants, helped to explain why interventions and treatment are often delayed or ignored. Likewise, Mashood et al. (2024) offered ECG-based risk stratification data, which strengthened the reliability of cardiovascular risk prediction system within this review.

2.3. Data Synthesis

The empirical narrative synthesis approach was utilized to synthesize all the risk factors across various studies and perspectives, including differences in socioeconomic status, lifestyle patterns, and geographic environment that are applicable to the community of Malaysian aged 60 and below. This allowed for a more holistic understanding of the risks associated with early-onset heart disease. As evidence, quantitative findings were summarized descriptively in this review paper, which particular focus on prevalence rates of young adults having cardiovascular problems and cardiovascular risk scores. Meanwhile, a thematic approach was utilized to categorize the retrieved qualitative findings, namely awareness levels and behavioral responses.

These can be seen from the studies by Ramli et al. (2024) and Abdelkhalik et al. (2024), which both revealed clear gaps among young adults in recognizing symptoms and understanding preventive measures to avoid possibility of getting heart attacks, were then compared with the clinical and registry data that are reported by Wan Ahmad et al. (2024), which, in turn, provided a medical perspective for interpreting the awareness issues among the targeted population.

3. RESULTS AND FINDINGS

Trends in Early Heart Attack Patterns: CodeBlue Blogs (2024) report that Malaysian under the age of 60 is currently suffering from cardiovascular problems, as more than one third of heart attack deaths occur within this age range. People only then realize that heart disease is not merely a problem for older populations anymore. In fact, young people who appear healthy with no record of medication or cardiovascular symptoms will still have the risk of cardiovascular disease, and this incident is still steadily increasing, which is concerning. These risks are linked to their poor daily habits, lifestyle routines, and metabolic issues (Azzani et al., 2024). However, this is not only in Malaysia, instead, it happens across the entire Asia.

Key Drivers and Emerging Risk Behaviours: It is evident that 10-year cardiovascular risk rose sharply

dramatically (Johar et al., 2024). Common risk contributors among adults under 60 include obesity, hypertension, smoking, and low physical activity (Abdalqader et al., 2024). However, hospital data show that heart attack presentation may differ in different location, access to care, and patient help-seeking behaviour. This is proven in cases like ST-segment elevation myocardial infarction (STEMI) (Lim et al., 2024). Surprisingly, like Kopi Jantan, which is a type of stimulant-based product for men's vitality, are also linked to heart rhythm problems and sudden cardiac issues (Khairi et al., 2024). This reflect changing of lifestyles and poor control over health supplements that should be addressed immediately.

Awareness Gaps and the Human Cost of Late Recognition: Many people fail to identify early heart attack or stroke symptoms, and they are often mistaken as tiredness, muscle pain, or stomach problems (Ramli et al., 2024). Many young adults believe they are not at risk, and some with several risk factors even rated themselves as "low risk" (Abdalqader et al., 2024), which causes delays in receiving proper interventions. In fact, longer delays increase total ischaemic time and worsen short-term outcomes, and these effects are especially salient in rural areas because of the distance to hospitals and cultural beliefs, which can influence their decisions about getting help from professionals (Lim et al., 2024).

Moreover, hereditary heart disease, electrical abnormalities, and undiagnosed heart failure, which are conditions that often progress silently, may also lead to sudden cardiac death (SDC) in younger individuals, frequently without obvious symptoms (Rochmawati et al., 2024). Fortunately, ECG-based risk scoring tools can detect electrical instability at an earlier stage. In this way, they provide an opportunity to identify high-risk groups sooner, thereby supporting timely medical intervention in heart attacks to prevent young adults from getting advanced cardiovascular disease or even premature death (Mashood et al., 2024).

Comparative Evidence and Intervention Insights: Abdelkhalik et al. (2024) state that students can increase their awareness in preventing heart issues, attitudes in maintaining their heart health, and prepared in emergency heart attacks response through education-based interventions, such as school cardiovascular prevention programmes. This is because early education can shape healthier behaviors among youngsters before risk factors become severe within the entire community. Sadly, such initiatives targeting younger populations remain very limited in Malaysia.

Malaysian Heart Failure Registry also prove that many young patients are already in advanced stages of cardiovascular disease. This might indicate that opportunities for early detection of heart attacks and professional medical intervention may have been missed (Wan Ahmad et al., 2024). Looking at the rising incidence of heart attacks among adults under the age of 60, it is important to start adopting education-based interventions, such as the one mentioned above, to raise heart health awareness and strengthen prevention efforts since young.

Contradictions, Gaps, and Unresolved Questions: Several existing studies report that younger adults face a relatively high risk of cardiovascular disease, while some say otherwise. This might be due to insufficient consideration of genetic factors, work-related influences, and psychosocial dimensions in existing research. As a result, the available evidence is still unable to fully explain why certain younger individuals, even those without obvious lifestyle-related risk factors, nonetheless, experience heart disease. Due to these reasons, younger patients, particularly those with lower cardiovascular awareness, might overlook their early cardiovascular symptoms, causing medical care not sought in time.

Besides, many studies report more cases in men, but still, a few examine the rising risk among

younger women. This could be due to factors like hormones, metabolism, and stress that are not well explored. In addition, psychological factors like fear, stigma, and cultural norms affecting help-seeking are also rarely studied.

Regional and Global Comparison: Smoking, rising obesity, and inactive lifestyles can impact younger adults. Unfortunately, all of these happen in Southeast Asian, including Malaysia. Indonesia and Thailand also report early heart attacks can happen if people are not aware of the symptoms and have unfair access to professional treatment (Johar et al.).

However, some countries, such as Lebanon, show improvement after focusing on youth education programs (Abdelkhalik et al.). In comparison, Malaysia's prevention efforts are uneven, especially in early awareness and risk screening, as stated above.

Table 1 highlights that many young adults encounter higher heart attack risks due to low awareness, poor habits, delayed interventions, and unseen dangers, such as stimulant drinks. Hence, improving education, offering early screening, promoting healthy lifestyles, and ensuring quicker medical response can prevent young adults from getting heart attacks that can be avoided.

Table 1: Comparative Summary of Key Evidence on Rising Heart Attacks in Adults Under 60.

Reference	Focus	Key Insight (Layman)	Link to Heart Attacks Under 60
Abdalqader et al.	Public awareness across Southern Malaysia	Many people are unaware of heart attack symptoms.	Low awareness can miss immediate treatment.
Abdelkhalik et al.	School health education	Boosts awareness of heart risks and CPR among students through education.	Early education can reduce future deaths.
Azzani et al.	Heart risk of young adults in Malaysia	Young adults have shown high heart risk.	Heart attacks are not only an "old adult" problem.
CodeBlue Blogs	News report on national deaths	1/3 of heart attack deaths happen among Malaysian adults under 60.	Early-age deaths are increasing.
Ismail & Md Yasin	General overview of CVD	Lifestyle and heredity contribute to heart disease	Risks start at the beginning of life.
Johar et al.	10-year CVD risk in semirural Malaysia	Heart risk rises quickly without lifestyle control.	Early prevention is important.

Khairi et al.	Effects of “Kopi Jantan”	Some stimulant drinks can cause heart problems.	Young adults is encountering hidden risks.
Lim et al.	Heart attack patient behavior	Patients are often slow in seeking help.	Younger adults tend to ignore symptoms.
Mashood et al.	ECG risk scoring	Can identify people who prone to have higher risk of sudden cardiac death.	Early detection can avoid early deaths.
Ramli et al.	Stroke awareness in rural areas	People from rural areas do not have sufficient knowledge of symptoms.	Poor awareness can increase heart attack risk.
Rochmawati et al.	Sudden cardiac death in youth	Young people can die suddenly from unnoticed risks.	Highlights severity of early heart issues.
Wan Ahmad et al.	Malaysia Heart Failure Registry	Late diagnoses are common.	Late interventions lead to early-age heart attacks.

4. DISCUSSION AND CONCLUSIONS

Most of the adults below 60 in Malaysia always ignore heart attack risk, especially those with obesity, smoking, high blood pressure, and high cholesterol (Abdalqader et al.; Azzani et al., 2024). Similarly, younger populations often do not recognize heart attack symptoms and delay seeking care. In fact, over one-third of heart attack deaths in Malaysia occur in adults under 60, showing how late presentation and poor risk perception can cause preventable deaths (CodeBlue Blogs, 2024). Specifically, semi-rural populations have increasing 10-year predicted risks which is led by habit changes and chronic health problems (Johar et al., 2024).

Moreover, since delayed treatment worsen outcomes, STEMI patients often experience long ischemic times because of distance from hospitals and delayed decisions to seek care (Lim et al., 2024). National registry data also note that younger patients are gradually presenting with multiple comorbidities (Wan Ahmad et al., 2024), and stimulant products marketed for male performance, like Kopi Jantan, are linked to heart problems (Khairi et al., 2024). Luckily, advanced diagnostic tools, such as ECG-based risk scoring tools, can help predict sudden cardiac death among high-risk patients, which can occur even in younger adults (Mashood et al., 2024; Rochmawati et al., 2024).

Nevertheless, current studies overly rely on cross-sectional designs, focus only on certain regions,

present only self-reported data, document incomplete lifestyle information, and exclude people who do not access tertiary care, which can reduce generalizability of the findings and make it harder to determine each variable’s causal relationships. Besides, people’s awareness and emergency response skills are still weak and need to be improved. Luckily, school-based interventions that were conducted in Lebanon have successfully enhanced the students’ knowledge of heart attack symptoms and ensured their CPR readiness, proving that early preventive education is significant (Abdelkhalik et al., 2024).

4.1. Recommendations

Firstly, population education is crucial to avoiding young adults from having heart attacks. It can refer to the existing school-based programs that are successful in raising awareness of heart attack symptoms (Abdelkhalik et al., 2024). Public health messages should also introduce early symptoms of heart attacks and the risks of delaying treatment, most notably for younger working adults who often ignore subtle symptoms. Besides, national level campaigns must also eliminate everyone’s poor lifestyle habits, including consumption of performance-enhancing drinks that can worsen heart problems (Khairi et al., 2024).

Other than that, to identify high-risk individuals earlier, proactive workplace cardiovascular screenings, including annual medication check-ups

for blood pressure, glucose, cholesterol, and ECG can be extremely effective. This can help busy adults to practice preventive care regularly (Johar et al., 2024). Furthermore, financial support from the government or employers, such as subsidies for health tests, healthy meals, gym memberships, and smoking cessation programmes, can also further reduce their risks from having cardiovascular problems (Abdalqader et al., 2024; Azzani et al., 2024).

Finally, healthcare services such as virtual consultations about cardiovascular diseases, remote monitoring of heart attacks problems, heart health medication reminders, and AI-driven alerts for emergency cardiovascular symptoms can provide both immediate intervention and ongoing education for heart attack risk prevention and general heart health awareness among the communities. In doing so, they offer a practical way to strengthen cardiovascular problems prevention efforts at the community level (Lim et al., 2024; Ramli et al., 2024).

4.2. Implications

Over time, the number of heart attacks among younger adults and semi-rural populations has continued to rise unexpectedly (Johar et al., 2024). At the same time, it has also become evident that the clinical conditions of younger heart disease patients are increasingly complex (Wan Ahmad et al., 2024). These trends highlight that both demographic and geographic factors should be taken into consideration when studying the risk factors of cardiovascular disease. Without doing so, Malaysia's productivity, household costs, and cardiac rehabilitation will be even worse.

Hence, it is better to prevent all the possible risk factors before condition is getting more severe. To start with, hospitals need stronger teams in treating all kinds of cardiovascular diseases, better monitoring system to prevent heart risk symptoms from getting severe, and technological tools to spot problems and subtle symptoms early. Public health messages need to also stop spreading all kinds of misinformation about heart health and warn people to not buy risky commercial products that can cause heart attacks.

4.3. Limitations

One of the research gap is that cross-sectional designs are heavily used in most research; thus, causal relationships between different cardiovascular risk factors can hardly be defined. Awareness surveys may also rely on self-reporting data from the communities, which may be potential bias, as everyone has different perspectives.

Furthermore, some studies focus on certain regions only, so data cannot be generalized to represent the entire Malaysia, as cardiovascular risks and factors can vary depending on geographic factors, as mentioned above.

Next, hospital-based studies may also miss out on people who never reach out to professional medical care, and information on individual dietary habits, stress in different life aspects, and work routines remain limited across current studies.

4.4. Future Research

Future research should prioritize longitudinal studies with nationally representative samples of young adults, to capture changes in cardiovascular risk over time. At the same time, due to rapid urbanization, greater attention needs to be directed toward workplace-related stress, socioeconomic status disparities, and digital-related lifestyles habits to better explain the rising incidence of heart disease among younger adults with the age of below 60.

In other words, such approach can deepen the communities and researchers' understanding in current cardiovascular disease and help those healthcare providers and educators in producing more targeted and culturally appropriate prevention strategies to stop the rising statistics of young adults getting heart problems across Southeast Asia, including Malaysia.

Moreover, systematic evaluation should be done to assess the effectiveness of school- and community-based prevention initiatives, such as the one that has been done in Lebanon, as well as the practical use of digital cardiovascular screening system and early symptoms detection tools. Without careful assessment, public awareness on cardiovascular health and public health quality cannot be promised, as effective preventive strategies and medical care systems can also be designed through careful assessment.

Finally, commercial beverages and dietary supplements that may be linked to cardiovascular risk should be strictly assessed by those policymakers to raise public awareness about how consumptions of high-risk products can affect heart diseases so that the community can make smart health choices when purchasing products.

5. CONCLUSION

Nowadays, heart attacks are no longer a health crisis for older age groups only, but also an alarming issue among younger adults across Southeast Asia, including Malaysia. The emerging number of youngsters having cardiovascular diseases might

indicate inadequate cardiovascular health awareness among younger adults, persistent unhealthy lifestyle behaviors that contribute to cardiovascular diseases, delays in seeking medical care despite symptoms of cardiovascular disease appear, and the widespread overconsumption of commercial stimulant products that affect cardiovascular health. Together, these contributors signal a pressing public health challenge that would negatively affect the lifespan of younger adults. Therefore, policymakers and healthcare providers need to provide reactive treatment towards those who have cardiovascular disease and to provide proactive prevention towards those who are at risk of contracting cardiovascular disease.

Furthermore, early exposure and sustained cardiovascular education among young adults, promotion of practical heart protection habits towards the public, and broader access to routine cardiovascular screening for the population across all

regions within Southeast Asia and Malaysia contexts are also essential in tackling cardiovascular health issues. In the meanwhile, emergency response capacity must also be prioritized in to enhance the cardiovascular healthcare facilities and careful treatment for each individual patient. More importantly, regulatory oversight of high-risk commercial products that contribute to the worsening of cardiovascular health, reinforcing preventive measures to avoid heart attacks, and improving early cardiovascular symptoms detection systems for the public, are all equally critical steps to prevent premature deaths among young adults that are caused by cardiovascular diseases. In effect, such actions would help reduce preventable deaths caused by cardiovascular disease and safeguard the cardiovascular health of younger populations in Malaysia so as across the wider region.

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Ethics Declaration Statement: This study used only published sources, involved no human or animal subjects, required no ethical approval, and declares no conflicts of interest.

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