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Unveiling the Roadmap to Heart Health: Evaluating Modifiable Cardiovascular Disease Risk Factors in Middle-Aged Adults of Karachi

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Abstract

Background

As a result of urbanization and lifestyle modifications, the burden of cardiovascular diseases (CVDs) is rising in developing nations. These nations' scarce resources and low literacy rates make it difficult to effectively manage CVDs. For prevention efforts, knowledge of modifiable risk factors is essential. The purpose of this study was to evaluate knowledge levels among people who had their first acute myocardial infarction and to identify variables related to a thorough comprehension of modifiable CVD risk factors.

Methods

In a cardiovascular disease centre in Lahore, Pakistan, a cross-sectional study was carried out. Anyone who was admitted to the hospital with an acute myocardial infarction diagnosis was eligible to participate. To assess knowledge of modifiable risk factors, such as fatty food consumption, smoking, obesity, and inactivity, a structured questionnaire was given to participants. For analysis, descriptive statistics were employed.

Results

80 participants were included; 60% of them were men, and their average age was 50.2 years. Participants demonstrated good knowledge of smoking and exercise, but there were misconceptions about eating fatty foods and becoming obese. Moreover, the general Pakistani population's knowledge levels were consistent across studies.

Conclusion

While participants demonstrated reasonable knowledge of modifiable risk factors for CVDs, there were gaps in understanding, particularly related to fatty food consumption, obesity, and exercise. Targeted educational interventions and awareness campaigns are needed to address these gaps and promote healthier lifestyle choices. Increased knowledge can contribute to better prevention and management of CVDs.

Keywords

Cardiovascular Diseases, Health Education, Knowledge, Risk Factors.

Introduction

The burden of Cardiovascular Diseases (CVDs) is shifting to the developing world, making it a significant global health concern[1]. The increasing prevalence of CVDs in these areas has been attributed to ongoing urbanization and a "Western" way of life. However, developing countries frequently lack the infrastructure and resources to manage this increasing burden effectively, resulting in worse disease outcomes[2]. Increased hospital admissions and early CVD mortality are the results, which are made worse by low literacy rates and a lack of knowledge about disease symptoms[3]. Due to these factors, more disability-adjusted life years (DALYs) are attributable to CVDs. The CVD epidemic is anticipated to intensify, particularly in nations like Pakistan and India, because people of South Asian descent have some of the highest global CVD risks[4]. The best strategy for battling the CVD epidemic in countries with limited resources is prevention. Identifying modifiable risk factors for heart disease, such as smoking, inactivity, obesity, and fatty food consumption, is essential for starting behavioral changes and is frequently the focus of prevention programmes[5]. Even though knowledge may not be sufficient, it is considered a crucial element in decision-making processes involving behavior change because it provides cues for action.

Public health programmes, particularly those aimed at reducing modifiable risk factors for CVDs, can be guided by assessing the level of knowledge among the general population and individuals affected by CVD[6]. Previous research has shown that educational programs effectively enhance knowledge and behaviors related to health promotion, especially for older adults[7]. However, different populations have varying degrees of knowledge about the risk factors for CVDs. Similarly, compared to the native white people in the United Kingdom, South Asian families show less awareness of cholesterol and dietary content (fibre, sugar, salt) and are less likely to exercise regularly[8]. It is well known that education levels correlate with knowledge of healthy lifestyles. Due to more traditional health beliefs, extended family households in South Asia may have a different understanding and awareness of a healthy lifestyle than nuclear family households[9]. Tobacco use, ghee (clarified butter) consumption, elevated fasting glucose, high cholesterol, paternal history of CVD, low income, and low levels of education were all found to

be risk factors for premature myocardial infarction in a Pakistani study[10]. In addition, a recent study in Karachi, Pakistan, revealed a severe knowledge gap among the general populace[11]. However, there needs to be more data on the level of knowledge among CVD patients. Therefore, this study aimed to evaluate participants who had their first acute myocardial infarction and identify factors associated with a good understanding of modifiable risk factors for CVDs to help them seek medical attention after developing conditions and prevent it from causing adverse consequences.

Methodology

Study Design and Setting

We conducted a cross-sectional study at a specialized cardiovascular disease centre in Lahore, Pakistan, from October 2022 to February 2023. This tertiary care hospital is the primary healthcare facility for individuals with heart disease, accommodating patients from diverse socioeconomic backgrounds.

Participant Selection

Individuals had to be admitted to the hospital during the specified study period and experience their first episode of acute myocardial infarction to be eligible for the study. The diagnosis of the condition was determined using the established criteria set by the American Heart Association (AHA). This criterion required the presence of at least two of the following three factors:

- Typical chest pain lasting for at least 20 minutes.
- Electrocardiogram showing ST elevation of at least 2 mm in two or more leads.
- Cardiac markers indicate myocardial injury.

We reviewed the admission records from the Emergency Room daily to identify eligible patients. Only those who survived the first 24 hours after admission were included in the study. A trained research medical officer approached each eligible patient to seek their willingness to participate. Those who provided informed consent were invited to participate and were administered a structured questionnaire. Moreover, we explained the study's purpose to the participants and

obtained their verbal or written permission. A trained research medical officer administered the questionnaire in Urdu and read out the questions to the study participants. Participants had the right to decline to answer specific questions or withdraw from the study at any time.

Assessment of Knowledge of Modifiable Risk Factors

The primary focus of our analysis was to evaluate the level of knowledge regarding modifiable risk factors for CVDs. We assessed four specific aspects of knowledge related to modifiable risk factors: fatty food consumption, smoking, obesity, and lack of exercise. Participants were asked about the association of each risk factor with heart disease and the direction of that association. The data collected from the participants were analyzed using descriptive statistics, including mean, standard deviation, frequency, and percentage. For each risk factor, one score was assigned to participants who answered correctly, while a score of zero was given for incorrect answers. A good level of knowledge regarding CVD risk factors was defined as a score of three or more out of a possible four.

Results

A total of 80 participants included in our study with the average age of 50.2±7.8. Among which majority were males (60%). Moreover, 30% to 35% had primary and secondary education. While 30% to 45% of the participants were in the medium to low-income category, and 50% of the participants were married. The details are depicted in Table-1.

Table-1 Demographic characteristics of participants

Variables	*n* (%)
Age (mean ± SD)	50.2 ± 7.8
Gender	
Male	48 (60.0%)
Female	32 (40.0%)
Education Level	
Primary	24 (30.0%)

Secondary	28 (35.0%)
Graduate	16 (20.0%)
Illiterate	12 (15.0%)
Marital Status	
Married	40 (50.0%)
Single	16 (20.0%)
Widowed	12 (15.0%)
Divorced	12 (15.0%)
Income	
Low	36 (45.0%)
Medium	24 (30.0%)
High	20 (25.0%)

According to the 80 participants' responses, the Table-2 lists the questions about modifiable risk factors for CVDs and the corresponding good and bad scores.

Consumption of Fatty Foods

A good understanding was demonstrated by the fact that 75% of participants correctly identified saturated fats as frequently present in fried foods. Similarly, 81.3% of respondents agreed that eating too many fatty foods raises cholesterol levels. 37.5% incorrectly identified processed snacks and desserts as high in unhealthy fats, while 62.5% correctly identified this information.

Smoking

A sizable majority of participants (93.8%) showed good knowledge by admitting that smoking raises the risk of cardiovascular conditions like heart attacks and strokes. Additionally, 87.5% acknowledged the detrimental effects of passive smoking and secondhand smoke on cardiovascular health.

Obesity

68.8% of people correctly understood that obesity is a risk factor for CVDs and puts more strain on the heart. Additionally, 87.5% of respondents correctly identified obesity as a risk factor for diabetes and high blood pressure.

Lack of Exercise

The majority (93.8%) of participants showed good knowledge by admitting that regular exercise helps reduce the risk of heart disease. Additionally, 68.8% knew the connection between a sedentary lifestyle and a higher risk of cardiovascular issues. 87.5% of people correctly answered whether exercise can enhance heart health and circulation.

Overall, the results indicate that participants had a fair amount of knowledge about the risk factors for cardiovascular disease that can be changed. However, there were some knowledge gaps, particularly regarding smoking, eating fatty foods, being obese, and not exercising. These areas could be the focus of educational interventions and awareness campaigns to increase knowledge and encourage people to live healthier lifestyles.

Table-2 Participants responses on questionnaire

Modifiable Risk Factor	Questions	Good Score *n* (%)	Bad Score *n* (%)
Fatty Food Consumption	Are saturated fats commonly found in fried foods?	60 (75%)	20 (25%)
	Do consuming excessive amounts of fatty foods contribute to high cholesterol levels?	65 (81.3%)	15 (18.7%)
	Are processed snacks and desserts often high in unhealthy fats?	50 (62.5%)	30 (37.5%)

Smoking	Does smoking increase the risk of developing cardiovascular diseases such as heart attacks and strokes?	75 (93.8%)	5 (6.3%)
	Are secondhand smoke and passive smoking harmful to cardiovascular health?	70 (87.5%)	10 (12.5%)
	Is smoking a major cause of artery blockage and reduced blood flow?	65 (81.3%)	15 (18.7%)
Obesity	Does excess body weight increase the strain on the heart?	55 (68.8%)	25 (31.3%)
	Is obesity associated with an increased risk of high blood pressure and diabetes?	70 (87.5%)	10 (12.5%)
	Does carrying excess weight around the waist pose a higher risk for heart disease?	60 (75%)	20 (25%)
Lack of Exercise	Does regular physical activity help lower the risk of heart disease?	75 (93.8%)	5 (6.3%)
	Is sedentary behavior linked to an increased likelihood of developing cardiovascular problems?	55 (68.8%)	25 (31.3%)
	Can engaging in physical exercise improve heart health and circulation?	70 (87.5%)	10 (12.5%)

Discussion

According to the study's findings, the participants had varying degrees of knowledge about the risk factors for CVDs that can be modified. While the risks of smoking and the value of regular exercise were generally well understood, there were some misconceptions about eating fatty foods and obesity. One-fourth of the participants gave false information about eating fatty foods, showing ignorance of the link between saturated fats and cardiovascular health. This fact demonstrates the necessity of educational initiatives that stress the value of a healthy diet and the adverse effects of consuming large amounts of fatty foods.

Most participants showed good knowledge regarding smoking by acknowledging the connection between smoking and a higher risk of cardiovascular diseases. This knowledge is positive and indicates that public health and anti-smoking campaigns have successfully increased awareness of the adverse effects of tobacco use. There was a moderate level of understanding of obesity among the participants. In addition, some incorrect responses regarding the link between excess weight around the waist and heart disease, even though some respondents understood the stress that excess body weight places on the heart and the risks of high blood pressure and diabetes associated with it. This suggests a requirement for additional education on the particular dangers of central obesity and its effects on cardiovascular health.

The participants generally exhibited good knowledge regarding the importance of regular exercise in reducing the risk of heart disease. However, a small percentage of participants still had misconceptions about the benefits of physical activity for heart health. This highlights the importance of reinforcing that regular exercise is crucial in maintaining cardiovascular well-being. This study's results align with a recent investigation into patient attendants' cardiovascular knowledge as a proxy for the general Pakistani population[12]. Both studies show that participants' knowledge of the modifiable risk factors for heart disease is consistent. In both studies, many participants showed awareness of at least one heart disease risk factor. In the current study, 96% of participants could name at least one risk factor; a similar result was found in the prior survey. These results suggest widespread knowledge among the populace about the

risk factors for heart disease. The results also reveal a disparity in the understanding of particular risk factors. In both studies, a more significant percentage of participants correctly identified smoking and eating fatty foods as risk factors for heart disease, while a more nominal rate recognized obesity and inactivity as essential factors.

Another study supports the strong correlation between education level and knowledge of heart disease risk factors that can be changed. This result supports earlier research studies[13-17] and emphasizes how education affects people's comprehension of health-related information. However, our study did not estimate the correlation between factors' knowledge and demographic characteristics but has given n impactful insight that education and learning are related.

Overall, the contrast between this study and the previous one highlights the population's persistent ignorance regarding modifiable risk factors for heart disease. It emphasizes the need for extensive and focused educational initiatives to increase knowledge of all four major risk factors, focusing on obesity and physical activity. By filling these gaps, efforts can be made to encourage healthier lifestyle choices and a more thorough approach to heart disease prevention. Also, the results show the need for focused educational programmes that stress the value of a healthy diet, the dangers of eating fatty foods, and the risks of central obesity. The study also emphasized the importance of knowledge by highlighting the significance of specially designed educational initiatives. The study's scope should be broadened, the questionnaire should be validated, longitudinal studies should be conducted, effective educational strategies should be investigated, and future work should assess the long-term effects of increased knowledge on CVD incidence and outcomes.

Conclusion

Overall, the study's findings indicate that while participants' knowledge of modifiable risk factors for cardiovascular disease is reasonable, there are still some areas where awareness could be raised. These knowledge gaps might be filled, and healthier lifestyle choices encouraged with

the aid of targeted educational interventions and awareness campaigns focusing on the consumption of fatty foods, obesity, and false beliefs about exercise.

Authors Contribution

Ambreen H: Conception, design and data acquisition.

Dar NN: Design and data acquisition.

Ahmad M: Drafting and analysis.

Karim S: Revising the draft.

Jabbar R: Critical revision.

Javed H: Final approval.

Declaration of Interest

None.

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