

Public awareness regarding early sign of myocardial infarction in urban community: A cross sectional descriptive study

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Abstract

Background: Cardiovascular disease is the leading cause of death globally, along with coronary artery diseases (CAD) contributing to the half of cases. The foremost complication of CAD is myocardial infarction (MI). The clinical results of the MI is time- dependent, therefore it is crucial for the general public to be familiar with the early symptom of MI. **Objective:** This study aimed to assess the knowledge of early signs of MI in urban community. **Methods:** A cross sectional descriptive study was conducted among the general population between 18 to 75 years of age at Karachi. By using OpenEpi software, the calculated minimum sample size was 384. Data collection was commenced from August, 2025 to October, 2025. A convenient sampling technique was used to gather the data. Written informed consent was provided along with the questionnaire in English and Urdu language. The data was analyzed by using SPSS version 27.0. **Results:** Among the 800 participants, most were young adults, predominantly female, and without chronic illness. Over half demonstrated low awareness of early (MI) symptoms, while only a small proportion showed high awareness. Overall, 51.5% had low awareness and 33.8% had moderate awareness, indicating substantial gaps in knowledge of early MI warning signs. **Conclusion:** The findings of the study highlighted a low level of awareness regarding early signs of MI among the urban Pakistani population. More than half of the study respondent displays low level of awareness and showed hesitancy in seeking medical services even if they know the alarming signs of MI.

Keywords: Public Awareness, Myocardial Infarction, Cardiac Health, Urban Community

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Submitted on 13-11-2025— Accepted on 20-12-2025 Published on 26-12-25

INTRODUCTION

Cardiovascular disease is the leading cause of death globally, along with coronary artery diseases (CAD) contributing to the half of cases. The foremost complication of CAD is myocardial infarction (MI). The clinical results of the MI is time- dependent, therefore it is crucial for the general public to be familiar with the early symptom of MI (Basham et al., 2021). Early identification of warning sign of CAD and acute MI will help in early diagnosis and good prognosis (Ali, Khan, Ali, Kumari, & Masih, 2025; Løvlien, Johansson, Hole, & Schei, 2009). The most common symptom in women and men with MI is chest pain. Nausea, pain in back, palpitation and dizziness reported significantly higher in women than men. While women have greater number of symptoms than men (Berg, Björck, Dudas, Lappas, & Rosengren, 2009). In this era of highly dependent on time treatment for MI such as thrombolytic therapy, and cardiopulmonary resuscitation (CPR) it is crucial to educate public and communities to reduce the time interval from the onset of an acute MI to arrival at a hospital for seeking treatment as this time interval showed different results in terms of patient reverses and prognosis. To make this time interval

understandable for the general public a theoretical model is drawn from self-regulation theory including information of sign and symptoms, behavioral information as what to do in the case of acute MI as well as to control the affective and emotional responses that may affect with coping strategies (Alonzo & Reynolds, 1997; Hamid et al., 2022). Lack of knowledge about the optimal window for myocardial infarction treatment may result in a delay in obtaining medical care, which may raise mortality and morbidity (E et al., 2023). Even though the door-to-balloon time for treating acute myocardial infarction (AMI) has decreased, patients' prehospital delays have remained a significant concern because the effectiveness of reperfusion treatments depend on time (Kolo et al., 2015). Efforts to improve patient response to AMI symptoms by community-wide education might not result in long-lasting adjustments to reperfusion procedures. Reperfusion therapy rates may be raised, nevertheless, as evidenced by the higher likelihood of early therapy use at the start of the intervention and the correlation between early therapy and ambulance use (Hedges et al., 2000). Acute myocardial infarction (AMI) patients frequently experience delayed access to medical care,

which raises the risk of cardiac damage and death (Luepker et al., 2000). Train community health workers and primary care clinicians to counsel high-risk patients (hypertension, diabetes) about MI signs and emergency actions. Prior personal or family experience with MI increases readiness to use these contacts for peer education (Ali, Khan, Mustafa, Hussain, & Akhter, 2025; Thirumurugan, Gomathi, Swathy, & Jishnu, 2023). In the emergency room, chest pain centers are widely recognized as a quick, safe, and economical method of evaluating, triaging, and treating patients who may have acute coronary syndromes. The original goal of these clinics was to improve patient care by quickly identifying patients with unstable angina and reducing the time to treatment for (AMI) (Storrow & Gibler, 2000). Additionally, they had educational and community outreach goals aimed at shortening the interval between the start of chest discomfort and ED presentation. The growth of chest pain centers has been further stimulated in the last ten years by financial restrictions in health care. Hospitalizations, lengths of stay, and needless treatments and procedures have all been reduced through cost-cutting measures (Lateef, Storrow, Malone, Liu, & Gibler, 2001). This study

aimed to assess the knowledge of early signs of MI in urban community.

MATERIALS AND METHODS

A cross sectional descriptive study was conducted among the general population of Pakistan at the locality of orange town Karachi, which is estimated to be 596,191 according to the 2023 Census of Pakistan to assess the public awareness regarding early signs of MI. In order to received proper response we added the individuals between 18 to 75 years of age. The sample size was calculated by using open epi Info software by considering 95% confidence interval and 50% anticipated population and 5% margin of error the minimum sample size was 384, and final data was collected from 800 participants. Data collection was commenced from August 2025, to October, 2025. A piloting study was conducted from involving the selected group of the study to assess the questionnaire understanding. Participants responses to that pilot study was used to improve the questionnaire. A convenient sampling technique was used to gather the data from the study subject. For ethical consideration written informed consent was provided along with the questionnaire in English and Urdu language. Anonymity and confidentiality was discussed with the

participants as well as approval was obtained from the local committee of the concerned area. The study questionnaire has three sections, the first section was demographic section, and the second section contains questions regarding early signs of MI and the third section including the action and responses. It is a 3-point Likert scale ranging from 0 to 3, likely received score of 2, unlikely was equal to 0 while neutral response was considered 1. Higher score denoted greater level of awareness. To make the categories of the level of awareness, those who scored 75% or more considered aware, the awareness of each subscale was computed by the same method. The continuous variables were analyzed with mean and standard deviation while categorical data was analyzed in frequencies and percentages.

RESULTS

Table 1 shows the demographic characteristics of the 800 participants. Most were aged 18–39 years and the majority were female. Most respondents were Pakistani and married. Over half had a bachelor's degree, and the largest employment groups were employed individuals and students. More than half reported having no chronic illness. More than half of the participants 62% reported no chronic illness, 16.3% DM,

14.9% HTN, whereas chronic kidney disease was rare 1.3%. Table 2 shows the awareness levels of MI early symptoms. More than half of the participants had low awareness, one-third had moderate awareness, and only a small proportion demonstrated high awareness. 33.8 % of the participants reported moderate level while 51.5 % were have low awareness.

Table 3 shows participants' likely actions during a suspected MI. Only one-third would seek immediate medical help, while many were unsure, and nearly one-third were unlikely to respond appropriately. Moreover, 29.4% reported that they were unlikely to take immediate action and might delay by relying on home remedies or waiting for symptoms to improve.

DISCUSSION

In the current cross sectional study total 800 participants were assessed for the awareness of early signs of MI among journal population, more than 51.5% exhibited low level of awareness only 14.8 % had higher level of awareness and roughly only one-third of participants 31.5% seek immediate medical attention if MI was suspected. Several studies reported mixed awareness level. Studies from the Middle East and

Southeast Asia showed higher proportions of respondents recognizing at least common symptoms of MI including chest pain, knowledge of atypical symptoms remain low. A review from Saudi Arabia reported relatively greater recognition of typically chest pain and higher readiness to seek medical attention compared with many developing countries (Ahmed, Al-Shami, Jamshed, & Fata Nahas, 2019). Conversely studies from Pakistan and Iran reports low level of symptoms recognitions and hesitancy for medical assistance (Shahmohamadi, Sedaghat, Rahmani, Larti, & Geraiely, 2023). There are several factors due to which results are vary even in a single region this factors can explain the similarity and contrast. Countries that runs mass-media communication and public awareness campaigns on heart attack recognition and emergency actions reported higher level of public awareness. Where such programs are limited the awareness remain low(Khan et al., 2025; Shahmohamadi et al., 2023). Population with easier excess to emergency medical services and a culture of using ambulance services are most likely to know the symptoms recognition and state intentions to medical services. In contrary the areas where ambulance services are limited,

or where the hospital cost are major barriers, showing most frequent delays. This system level factors behavior are more commonly cited factor (Sharma et al., 2021).Educational level and prior exposure to the MI influence highly the awareness level. Higher awareness level among those, who are highly educated and faced the MI in past even within the family members (Park, 2020). In certain cultures, women and older persons may put off getting care for chest discomfort by attributing it to non-cardiac causes (such as indigestion or exhaustion); in a similar vein, stigma or anxiety about hospitals and expenses might hinder timely action. If public messaging does not highlight those abnormal signals, differences in symptom presentation women are more likely to report atypical symptoms also lead to under-recognition (Ghafoor et al., 2022). Campaigns should link symptom recognition with concrete steps (call ambulance, chew aspirin if advised) and address barriers (cost concerns, ambulance availability). System improvement shorter ambulance response times and public trust in EMS encourage timely help-seeking (Ali et al., 2024; Fang, 2019).

Table 1: Socio-demographic Characteristics of Participants (n = 800)

Characteristic	n (%)
Age (years)	
18–39	442 (55.3)
40–61	296 (37.0)
More than 61	62 (7.7)
Gender	
Female	456(57.0)
Male	344(43.0)
Nationality	
Pakistani	800 (100)
Non-Pakistani	0(0)
Marital status	
Single	332(41.5)
Married	416(52.0)
Divorced	30(3.8)
Widowed	22(2.7)
Level of education	
Primary	72(9.0)
Secondary	246(30.8)
Bachelor	419(52.4)
Higher education	63(7.8)
Employment status	
Student	182(22.8)
Employed	254(31.8)
Freelancer	38(4.8)
Unemployed	205(25.6)
Retired	121(15.1)
Chronic diseases (multiple responses allowed)	
Hypertension	119(14.9)
Diabetes mellitus	102(16.3)
Dyslipidemia	102(12.7)
Chronic kidney disease	10(1.3)
Others	82(10.3)
None	500(62.5)

Table 2: Awareness Levels of Early MI Symptoms

Awareness Level	n (%)
High awareness	118(14.3)
Moderate awareness	270(33.8)
Low awareness	412(51.5)

Table 3: Action/ Response in Case of Suspected MI

Action / Response	n (%)
Likely to seek immediate medical help	251(31.5)
Neutral / unsure	313(39.1)
Unlikely (delay, home remedies, wait)	235(29.4)

CONCLUSION

The findings of the study highlighted a low level of awareness regarding early signs of MI among the urban Pakistani population. More than half of the study respondent displays low level of awareness and showed hesitancy in seeking medical services even if they know the alarming signs of MI. These gaps indicate a significant need for targeted public health education and community-based awareness programs. Strengthening emergency response literacy and promoting timely help-seeking behaviors are essential to reducing preventable cardiac complications.

Acknowledgment

Acknowledgment to the study participants and local committee for providing permission to collect the data.

Financial support and sponsorship

The author declared no financial support and sponsorship for publication

Conflict of Interest

Nil

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