

Knowledge of Acute Coronary Syndrome (ACS) among the ACS Diagnosed Patients in Bangladesh

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Abstract

Introduction: Acute coronary syndrome (ACS) is considered a dangerous cardiovascular condition. Patients of ACS who delayed seeking medical attention frequently believed their symptoms had nothing to do with their hearts. These symptoms and misinterpretations may influence the decision to seek therapy due to a lack of knowledge about ACS symptoms or the erroneous adoption of attitudes and concepts around symptoms.

Objective: To analyze the sociodemographic variables that were connected with knowledge and to describe ACS knowledge among ACS patients in Bangladesh who had been diagnosed with the condition.

Methods: At a hospital of secondary level, 288 ACS patients older than 18 years old participated in a cross-sectional study. Both the indoor and outdoor patients' data were gathered. Stata version 13 was used for data analysis. The scoring system was employed to gauge the respondents' degree of knowledge.

Results: Only 16.0 (46) percent of respondents had a low understanding of ACS, 20.8 (60) percent had normal knowledge, and 39.2 (113) percent had very good knowledge. The results also revealed a significant relationship between knowledge level and respondents' sex ($P=0.045$), age ($P=0.012$), and place of residence ($P=0.031$).

Conclusion: The results of this study suggest that to raise participants' knowledge regarding ACS symptoms, health awareness campaigns using a variety of media venues targeted at high-risk populations are required. A future extensive investigation is also necessary to fully comprehend the issue and fill up the gaps that have been found.

Keywords: Knowledge, belief, acute coronary syndrome, patients

Introduction

The heart is the physical part that works the hardest. Throughout a person's life, a network of arteries continuously pumps blood that is filled with oxygen and vital nutrients to all parts of the body's tissues. Coronary heart disease (CHD) is a significant health issue that incurs significant financial expenditures [1]. One of the leading causes of death worldwide, cardiovascular disease continues to have a considerable impact on morbidity, mortality, and healthcare expenditures [2]. Acute coronary syndrome (ACS) is a serious cardiovascular disease in which the heart's ability to receive oxygen-rich blood is blocked by atheroma, thrombosis, or coronary artery spasm [3]. The two kinds of ACS are ST-segment elevation ACS (STACS) and non-ST segment elevation ACS (NSTACS); both are fatal and the leading cause of death in both industrialized and developing nations [4]. Over three-quarters of all deaths from non-communicable diseases occur in low-and middle-income countries, where the burden of these diseases is greatest [5]. In Bangladesh, there has been a shift in the prevalence of non-communicable

diseases (NCDs). The rate of general mortality has sharply decreased over the last few decades. However, death from chronic illnesses is on the rise, particularly the "fatal four" of diabetes, cancer, chronic obstructive pulmonary disease, and cardiovascular disease (CVD) [6]. One of the four, CVD, is significantly impacted by CAD. Of all the South Asian nations, Bangladesh has the highest incidence of CVD yet is the least researched; Bangladesh is a nation that is absent from the global effort to combat CVD [7]. The etiopathogenesis of CAD in this population may be influenced by epidemiological change, pervasive environmental contaminants like arsenic in groundwater or particulate matter in the air, as well as certain genetic or metabolic vulnerabilities [8]. Unexpectedly, about half of all ACS patients pass away before getting to the hospital. Mortality might be reduced with the aid of quick reperfusion therapies like thrombolytic therapy or percutaneous coronary intervention. The best outcomes are obtained when definitive reperfusion is carried out within an hour of the onset of symptoms. People will look for another cause for their new

symptoms if they do not think they are susceptible to or at risk for AMI. As a result, many ACS patients have a prolonged delay because people are unaware of cardiac symptoms and believe they are not in danger. To determine whether Bangladeshis are willing to change their behavior and what kind of intervention is necessary to promote public knowledge of ACS, create novel preventative measures, run ACS awareness campaigns, and take precautions, it is essential that the general public is aware of ACS. This study's objectives were to characterize ACS knowledge among ACS patients in Bangladesh who had been diagnosed with the illness and to assess the sociodemographic factors that were associated with knowledge.

Literature Review

According to the research, people with ACS put off getting medical help, with 82.8% of the delay being attributable to the patient's decision. Patients who put off getting medical help typically thought their symptoms weren't related to their heart. These symptoms and misinterpretations may influence the decision to seek treatment due to a lack of awareness about ACS symptoms or the inappropriate adoption of attitudes and beliefs regarding symptoms [9]. Chest discomfort is a well-known indicator of the disease, but knowledge of other ACS symptoms is low, according to a review of the literature on ACS knowledge, attitudes, and beliefs. This raises questions for those who experience these additional ACS symptoms, especially if they don't involve chest pain [10]. According to Moser and colleagues, patients who correctly connected symptoms to the heart were more likely to seek medical attention than those who misunderstood their symptoms. It is insufficient to merely rely on patients' awareness of ACS and its associated symptoms to persuade them to seek therapy. Their choice may be influenced by cognitive factors, attitudes, and beliefs [9]. Incorrect symptom attribution and a lack of understanding of ACS symptoms were major factors in the decision to seek medical attention. The general public lacked an understanding of ACS, its symptoms, and how to react to it [11, 12]. A few studies examined how well patients understood ACS symptoms and discovered that neither patients nor the general public had adequate knowledge of ACS [12]. Dracup *et al.* examined the ACS knowledge of 3522 patients [13]. A total of 56 percent of patients scored poorly, with the typical patient having a knowledge score of 71 percent. Similar outcomes were achieved by Irish patients (68.3%) [10]. another study of 720 patients from Pakistan found that most of them were unable to recognize any ACS indication [14]. Patients won't be able to adequately explain their physical symptoms if they are unaware of ACS symptoms including nausea, jaw pain, and syncope as well as more widely known related symptoms like chest and left arm pain. It is necessary to ascertain what patients with coronary heart disease know about their symptoms and the proper course of action to take, as well as their perceived risk of a future cardiac event, to provide appropriate information during the brief encounter available to most physicians, and to design appropriate educational programs. As a result, we conducted research to evaluate the level of knowledge about heart disease and ACS symptoms among ACS patients who were at high risk for a future cardiac attack.

Methodology

A descriptive type of cross-sectional study was conducted at a secondary-level hospital in the Chattogram division of Bangladesh. The calculated sample size was 288 which was

determined by following the statistical formula. A simple random sampling technique was used to select the sample respondents. Only patients aged above 18 years were considered for this study. A semi-structured questionnaire was prepared for the data collection after conducting a pre-test with a similar type of population in another hospital. Data collection was done in November 2021. Data were collected from both the indoor and outdoor patients. Before collecting the data, verbal informed consent was taken from every participant by explaining the purpose, risks, and benefits of the research to them. Data were checked regularly to avoid any errors. All the collected data were coded and entered into a database using SPSS software. Data analysis was done by using Stata version 13. A point was assigned based on the participant's responses to knowledge questions. For each accurate response to a knowledge question regarding ACS, one point was given, and the total number of correct responses was then determined. The anonymity of the participants was maintained in every stage of the study.

Results

In this study, the proportion of male participants (61.3%) was higher than that of female participants (38.7%). Most of the participants (55.1%) were between the ages of 51-60 years, with 21.6% aged between 41-50 years. The youngest age group was less than 30 years old having 4% of the participants, and the oldest age group was over 60 years old having 7.1% of participants. Nearly half (45.6%) of the patients were graduate/post-graduate. A total of 32.7% of participants were service holders whereas 29.2% were involved in different businesses. Approximately two third (68.0%) of patients were urban residents and 32.0% were rural residents (Table 01).

Table 1: Socio-demographic information of the respondents (n=288)

| Variables | Frequency | Percentage |
|---------------------------|-----------|------------|
| Sex | | |
| Male | 177 | 61.3 |
| Female | 111 | 38.7 |
| Age group | | |
| <30 years | 12 | 4.0 |
| 30-40 years | 35 | 12.2 |
| 41-50 years | 62 | 21.6 |
| 51-60 years | 159 | 55.1 |
| >60 years | 20 | 7.1 |
| Level of education | | |
| Primary | 41 | 14.1 |
| Secondary | 49 | 17.0 |
| Higher Secondary | 67 | 23.3 |
| Graduate/Post-graduate | 131 | 45.6 |
| Occupation | | |
| Housewife | 76 | 26.3 |
| Business | 84 | 29.2 |
| Service | 94 | 32.7 |
| Others | 34 | 11.8 |
| Residence | | |
| Urban | 196 | 68.0 |
| Rural | 92 | 32.0 |

Heart disease is the leading cause of death, according to 67.3 percent of the respondents. Furthermore, Just over half (53.8%) of research participants were aware that heart disease commonly affects people over the age of 60. Men are the most vulnerable demographic when it comes to heart disease, according to 64.2 percent of those who took part in the survey. A total of 45.5 percent of people were aware that the

location and severity of a heart attack can differ depending on which blood artery in the heart is blocked. Above seventy-five percent of those who took part in the study were aware that taking one aspirin pill can help the majority of people who have heart attacks. According to the survey, 78.6 percent of those surveyed were aware of the link between eating red meat and fatty foods and the risk of developing heart disease. About three-fourths of the participants were aware that regular physical activity can help reduce the risk of heart blockage. Less than half (45.9%) of the participants were aware that anxiety may increase the likelihood of developing

heart disease. The respondents reported checking their blood pressure and glucose levels regularly at a rate of 53.8 percent. Nearly half (48.3%) of the individuals examine their blood pressure and blood glucose levels every three months, while 28.8 percent do so monthly and 22.9 percent do it annually. Most people (95.7%) know that chest pain is an indication of heart disease. Only 41.1% of participants were aware that nausea or vomiting can be a sign of heart disease. Only 22.4 percent and 18.9 percent of respondents were aware that heartburn/indigestion and lower abdomen pain are indicators of heart disease (Table 02).

Table 2: Respondent's knowledge of ACS and its symptoms (n=288) (Multiple responses).

| Items | Frequency | Percentage |
|--|-----------|------------|
| Heart disease is the most common cause of death | 194 | 67.3 |
| Almost all heart attacks occur in people over the age of 60 | 155 | 53.8 |
| Heart disease prevalence is high among male | 185 | 64.2 |
| Hospitals have treatments that reduce the damage of heart attack | 172 | 59.8 |
| The location and size of a heart attack can vary depending on which blood vessel in the heart is blocked | 131 | 45.5 |
| Most patients benefit from taking one tablet of Aspirin if they experience a heart attack | 216 | 75.1 |
| Red meat and oily food increase the chance of heart disease | 226 | 78.6 |
| Regular exercise may help to reduce the chance of blockage in the heart | 205 | 71.2 |
| Anxiety may increase the chance of heart disease | 132 | 45.9 |
| Checked your blood pressure and glucose regularly | 155 | 53.8 |
| Frequency of checking BP and glucose level | | |
| Each month | 83 | 28.8 |
| Each 3 months | 139 | 48.3 |
| Every year | 66 | 22.9 |
| Symptoms | | |
| Chest pain/Pressure | 276 | 95.7 |
| Chest discomfort | 259 | 89.9 |
| Numbness | 230 | 79.8 |
| Weakness/Fatigue | 236 | 82.0 |
| Shortness of breath | 224 | 77.9 |
| Pale, ashen, loss/Change of color | 215 | 74.5 |
| Palpitation/Rapid heart rate | 227 | 78.8 |
| Sweating | 201 | 69.9 |
| Arm paralysis | 205 | 71.1 |
| Slurred speech | 170 | 58.9 |
| Neck pain | 157 | 54.6 |
| Back pain | 166 | 57.7 |
| Headache | 147 | 51.2 |
| Arm pain/Shoulder pain | 153 | 53.2 |
| Dizziness, Light-headedness | 163 | 56.7 |
| Loss of consciousness/Fainting | 176 | 61.2 |
| Jaw pain | 138 | 47.8 |
| Cough | 128 | 44.4 |
| Nausea/Vomiting | 118 | 41.1 |
| Heartburn/Indigestion | 65 | 22.4 |
| Lower abdomen pain | 54 | 18.9 |

Following the scoring system, the participants' knowledge levels are shown in Table 03. In terms of Acute Coronary Syndrome, 39.2 percent of participants' knowledge level was very good, while 20.8 percent were normal, and only 16.0 percent had poor knowledge of ACS.

Table 3: Level of knowledge of the respondents according to the scoring

| Level of knowledge | Frequency | Percentage |
|--------------------|-----------|------------|
| Very good (26-30) | 113 | 39.2 |
| Good (21-25) | 69 | 24.0 |
| Normal (15-20) | 60 | 20.8 |
| Poor (<15) | 46 | 16.0 |

Discussion

The current study examines individuals diagnosed with ACS in a secondary-level hospital in Bangladesh's level of understanding of ACS and its symptoms. The findings of the study imply that having a better understanding of cardiovascular risk factors may help patients with ACS make better decisions by properly raising their perceived risk of having a cardiac attack [15]. The findings demonstrate ACS patients' knowledge in Bangladesh. Analysis showed Knowledge level was significantly associated with the respondent's sex ($P=0.045$), age ($P=0.012$), and residence

($P=0.031$). No significant association was found between the level of knowledge of the respondents with their level of education ($P=0.097$) and occupation ($P=0.079$). In this study, 113 participants ($M=77$, $F=36$) have very good knowledge of ACS and among them, 61 people belong to the age group of 51 to 60 years. The level of knowledge of the participants with a higher level of education was better than participants with a lower educational qualification. The knowledge of ACS is higher among service holders compared to other professions (Table 04).

Table 4: Association of respondent's knowledge level with their socio-demographic characteristics

| Socio-demographic Characteristics | Level of knowledge | | | | P value |
|--|--------------------|------|--------|------|---------|
| | Very good | Good | Normal | Poor | |
| Sex | | | | | |
| Male | 77 | 36 | 38 | 26 | 0.045 |
| Female | 36 | 33 | 22 | 20 | |
| Age group | | | | | |
| <30 years | 7 | 3 | 1 | 1 | 0.012 |
| 30-40 years | 16 | 8 | 5 | 6 | |
| 41-50 years | 22 | 17 | 15 | 8 | |
| 51-60 years | 61 | 34 | 35 | 29 | |
| >60 years | 7 | 7 | 4 | 2 | |
| Respondent's educational status | | | | | |
| Primary | 22 | 8 | 7 | 4 | 0.097 |
| Secondary | 27 | 9 | 6 | 7 | |
| Higher Secondary | 31 | 13 | 12 | 11 | |
| Graduate/Post-graduate | 33 | 39 | 35 | 24 | |
| Respondent's occupation | | | | | |
| Housewife | 23 | 19 | 18 | 16 | 0.079 |
| Business | 33 | 19 | 16 | 16 | |
| Service | 49 | 23 | 18 | 4 | |
| Others | 8 | 8 | 8 | 10 | |
| Residence | | | | | |
| Urban | 98 | 34 | 28 | 36 | 0.031 |
| Rural | 15 | 35 | 32 | 10 | |

More than half of the participants correctly identified most of the symptoms, but not all ACS symptoms are similar to those reported in other research, according to the data [13, 16]. Comparable research findings were obtained in three countries (the United States, Australia, and New Zealand), with 56 percent of people understanding enough about ACS symptoms [13], which is greater than ours. Furthermore, when compared to the current study, an Irish study demonstrated a higher level of ACS knowledge (49.5%), yet the majority (98.9%) could recognize chest pain/pressure as a symptom [17], which is similar to our study. In an Ethiopian study, the majority of participants (83.6 percent) selected chest discomfort/heaviness as a symptom of ACS, which is lower than ours [18]. In contrast, a Pakistani study found that 81% of 720 participants were unable to recognize symptoms, and only 6% were able to identify one or more ACS symptoms [14]. Noureddine *et al.*, 2020, confirmed this finding, noting that only 13 out of 50 people scored better than 70% on knowledge questions. However, more than 85% of participants were aware of common symptoms such as chest pain and perspiration [19]. The majority of respondents in this survey did not recognize symptoms like stomach pain and heartburn/indigestion. The literature backed up the study's findings on the most and least recognized ACS symptoms [9, 10, 14]. This may be because patients frequently describe chest pain and discomfort as hallmark ACS symptoms. Furthermore, patients usually ascribe fewer reported symptoms to gastrointestinal problems other than heart

symptoms. Another factor is that most patients learn about ACS symptoms through personal experience rather than in-hospital education [9]. As a result, a lack of in-hospital training about ACS symptoms could be one of the possible causes of such low comprehension among patients. Based on the literature, a large deal of variation was assessed in the identification of ACS symptom information. Differences in research sites, socio-economic status, level of health literacy, and exposure to mass media campaigns are all relevant influences. According to previous studies on LMICs, males are more likely than females to be aware of ACS symptoms [20, 21, 22]. Females are the subjects of studies carried out in high-income nations, which confirm more [13]. Gender made no difference in knowledge about heart disease and its symptoms in a study of large population samples of healthy people, findings that contradict those of the current investigation [23, 24]. Furthermore, according to a literature analysis concentrating on the understanding of heart disease symptoms and risk factors, both women and men had a low level of knowledge regarding ACS [25]. Another explanation could be that the majority of women are housewives with minimal health-education opportunities. Due to household responsibilities, women have less time to engage in preventative activities, which may lead to a lack of knowledge about ACS. This inconsistency could be explained by sampling bias and the higher proportion of male participants in the current study. Participants in this study aged 30-60 years old scored significantly higher on the knowledge

measure than their older (>60) and younger (<30) counterparts did. Older people, according to some authors, scored lower on knowledge than those under the age of 60 [13]. The fact that middle-aged Bangladeshis are better aware of CVD could reflect that they have greater possibilities to learn about it and/or desire to do so. According to the literature, cardiovascular health knowledge levels rise linearly until middle age, when they begin to plateau [26]. The lack of knowledge among the younger age groups may show a lack of effective and adequate CVD education programs in Bangladeshi schools. As the years pass, they are likely to learn more from the media. According to the study findings, those who live in cities have more ACS knowledge than those who live in rural areas. This result is backed up by a new study from Bangladesh. Rural respondents had much more highly dissatisfactory knowledge (78.8% vs. 40.3 percent, $p = 0.006$) than urban respondents, according to the study [27]. In the current investigation, education level was also revealed to have a significant relationship with CHD knowledge. Participants with a greater degree of education had higher knowledge scores than those with a lower level of education. A study conducted in Oman backs up this conclusion [28]. This may be because educated patients have access to ACS-related information from several sources, but less educated patients do not. They are more aware of health messages conveyed through the media. The need for customized educational programs to the level of understanding of persons with low-intermediate education is emphasized in this conclusion.

This research gathered important data on people's knowledge about ACS. Health education programs are crucial from the aspect of public health to improve the general public's understanding of ACS and the right conduct toward it. In Bangladeshi culture, patients' families are typically involved in decision-making processes, therefore including them in such teaching programs could be beneficial. Patients who are young, female, less educated, uninsured, have experienced their first ACS incident, and have a lower socio-economic position should be targeted for these initiatives. Patients should be educated on how to respond to ACS symptoms, with a focus on non-traditional symptoms. To raise knowledge of ACS symptoms among patients, policymakers in each healthcare facility should give readily available resources such as leaflets and pamphlets, as well as non-traditional techniques. Psychological factors of perceived risk for a future ACS attack should be taken into account in future investigations. Incorporating qualitative research to investigate risk perceptions could also lead to fresh insights and a deeper grasp of the subject.

Conclusion

Coronary artery disease is a leading cause of death worldwide. Public knowledge of risk factors for acute coronary syndrome (ACS) is critical, but in Bangladesh, where ACS is on the rise and the incidence of MI is skyrocketing, no historical measures of it exist. As a result of this study's findings, it is believed that health awareness initiatives employing various media outlets focused on high-risk groups are needed to increase participants' knowledge and belief about ACS symptoms. A future large-scale study is also required for a better understanding of the problem and to close the gaps that have been identified.

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Conflict of interest

In this work, the authors said they had no competing interests.

Consent for publication

This article's writers have all given their approval for it to be published.

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