

# Awareness of symptoms and risk factors of Myocardial Infarction among adults seeking health care from a rural hospital of India

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## ABSTRACT

**Background:** Myocardial infarction is a major health problem in developing countries like India. Early recognition of symptoms and prompt medical care are essential for providing appropriate treatment to prevent adverse clinical outcomes in patients with MI.

**Aims:** 1. To determine the level of awareness of warning symptoms of MI among rural adults. 2. To assess the level of knowledge about modifiable risk factors of MI among these adults.

**Materials and Methods:** It was a hospital based cross sectional study. 540 consecutive, consented OPD patients visited to rural health and training centre (RHTC) were taken as study subjects. Data in respect of age, sex, education, per capita monthly income, family size, awareness about MI warning symptoms and its risk factors were collected. The data were analyzed using SPSS software.

**Statistical analysis used:** Proportions and Chi-squared test.

**Results:** In present study, the participants identified 4.25 of out of 9 symptoms and 6.48 of out of 11 risk factors. The most frequent symptom identified was chest pain (95%) followed by pain in one shoulder/arm (66.85%). About 2.77% of rural adults don't know any of the MI symptoms. High Blood Pressure (88.7%) was the most frequently identified

risk factor followed by tobacco use (smoking and smokeless-78%). The least frequently identified modifiable risk factor were sedentary life style (10.37%) and stress (20.55%).

**Conclusion:** Educational interventions by interns and social workers posted in RHTC can be the first step to increase the awareness of early warning symptoms and risk factors of MI among rural adults visiting RHTC.

**Key words:** MI symptoms, Risk factors, Rural adults, Cardiovascular diseases, Lifestyle changes.

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**Submission Date:** 24-12-2015; **Review completed:** 19-05-2016;

**Accepted Date:** 01-06-2016.

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**DOI:** 10.5530/jcdr.2016.2.5

## INTRODUCTION

Cardiovascular diseases (CVDs) are the number one cause of death globally. An estimated 17.5 million people died from CVDs in 2012, representing 31% of all global deaths. Of these deaths, an estimated 7.4 million were due to coronary heart disease. Over three quarters of CVD deaths take place in low- and middle-income countries.<sup>1</sup> Worldwide, about 8.6 million myocardial infarctions occurred in 2013.<sup>2</sup> Ischaemic heart disease was the leading cause of death, killing 1215.4 thousand people in India 2012.<sup>3</sup> Most cardiovascular diseases can be prevented by addressing behavioural risk factors such as tobacco use, unhealthy diet and obesity, physical inactivity and harmful use of alcohol using population-wide strategies<sup>1</sup>. Knowledge of the predisposing risk factors is an important step in the modification of lifestyle behaviours conducive to optimal cardiovascular health in developing countries.<sup>4,5</sup> A lack of knowledge about symptoms is important because it can extend patient delay in summoning the emergency services and vitiate treatments such as thrombolysis and percutaneous angioplasty.<sup>6</sup> Awareness of Myocardial Infarction (MI) symptoms and risk factors are an important step for early treatment and prevention of MI. So an attempt was undertaken to determine the level of awareness of symptoms of MI among rural adults and to assess the level of knowledge about modifiable risk factors of MI among these adults.

## MATERIALS AND METHODS

**Study design:** A Hospital based cross sectional study was conducted in the field practice area of rural health and training centre (RHTC), Jammujhari in April-May 2013.

**Sample size:** The RHTC caters a population of about 12,000 distributed in 10 villages. As per registers of Anganwadi and RHTC, total persons in the age group 18–60 years were 5403. By taking 10% of adults, the sample size was decided to be taken were 540.

**Selection Criteria:** 540 consecutive, consented OPD patients were taken as study subjects. The patients who were reluctant and resistant were excluded and patients with previous history of Myocardial infarction were excluded and 2 patients with H/O MI were excluded.

**Method:** The study subjects were interviewed using a predesigned, pretested and structured questionnaire. Ethical clearance from the Institutional Ethical Committee was obtained. Informed consent was taken before interviewing subjects. The prospects of this study for improving understanding of symptoms of MI along with its risk factors was explained to the participants. The participants were interviewed individually and they were asked to identify MI symptoms and its risk factors. The questionnaire included items pertaining to warning symptoms of MI and its risk factors identified by the American Heart Association.<sup>7</sup> The structured questionnaire contained 18 items, including 9 MI symptoms and 11 items for risk factors. Data in respect of age, sex, education, per capita monthly income, family size, awareness about MI symptoms and its risk factors were collected. Patients with H/O myocardial infarction were excluded. The data were analyzed using SPSS software.

## RESULTS

The age of study population included in the study varied from 19–59 years. The mean age was 41.67 + 11.36. In this study, 56.7% of people

**Table 1: Socio-Demographic Factors (n = 540)**

Socio-Demographic characteristics	No. (Percentage)
Age (Mean + S.D.)	41.67 + 11.36
<b>Gender</b>	
Male	306 (56.7)
Female	234 (43.3)
<b>Religion</b>	
Hindu	526 (97.4)
Muslim	14 (2.6)
<b>Caste</b>	
General	515 (95.4)
SC	10 (1.8)
SEBC	15 (2.8)
<b>Type of family</b>	
Joint	354 (65.55)
Nuclear	146 (27.04)
Broken	40 (7.41)
<b>Occupation</b>	
Skilled worker including service holder	191 (35.4%)
Self employed doing business	99 (18.3%)
Unskilled	94 (17.4%)
Unemployed including House wife	156 (28.9%)
<b>Education</b>	
No schooling	31 (5.74)
Primary and secondary	281 (52.04)
Higher secondary and above	228 (42.22)
<b>Social class</b>	
Low	350 (64.8)
Middle	175 (32.4)
Upper	15 (2.8)
<b>Marital status</b>	
Married	428 (79.3)
Unmarried	72 (13.3)
Divorcee/Widow/Widower	40 (7.4)

were male and 43.3% were female. Out of 540 study subjects, 97.4% were Hindu, 92.8% belong to general category and 65.5% belong to joint family.

In the present study, majorities (35.4%) were skilled workers including teacher/clerk or similar service holders followed by 18.3% were self employed doing business. About 52% people were having primary education and 42.22% educated upto higher secondary or above. Among the study group, 64.8% belong to the lower social class. 32.4% belong to middle and 2.8% belong to upper social class. In the present study, 79.3% were married.

Participants were assessed for their knowledge on symptoms of myocardial infarction. They were told to identify the symptoms of MI (Table 2). Out of 540 respondents, most frequent symptom identified was chest pain (95%) followed by pain in one shoulder/arm (66.85%) and back pain (53.88%). About 2.77% of rural adults don't know any of the MI symptoms.

Participants were assessed for their knowledge on risk factors of the MI (Table 3), most frequently identified risk factor was high Blood Pressure (88.7%) followed by tobacco use (smoking and smokeless-78%) and Diabetes Mellitus (74.26%). About 70% rural adults identified heavy alcohol drinking as one of the risk factor and about 60% identified over-

**Table 2: Accurate responses for MI symptoms (n = 540)**

MI warning symptoms	Number (Percentage)
Chest pain	513 (95)
Pain in one shoulder/arm	361 (66.85)
Back pain	291 (53.88)
Epigastric discomfort/indigestion	268 (49.63)
Shortness of breath	243 (45)
Cold sweat	109 (20.18)
Nausea or vomiting	86 (15.92)
Lightheadedness / fatigue	78(14.44)
Neck/ Jaw pain	41 (7.59)
Don't know any symptoms	15 (2.77)

**Table 3: Accurate response rates for MI risk factors (n = 540)**

MI risk factors	Number (Percentage)
High blood pressure	479 (88.7)
Smoking	426 (78.88)
Tobacco smokeless	423 (78.33)
High cholesterol	421 (77.96)
Diabetes Mellitus	401 (74.26)
Heavy Alcohol drinking	377 (69.81)
Overweight/ Obesity	320 (59.26)
Family history of cardio vascular disease	274 (50.74)
High fat diet	197 (36.48)
Worry/ Anxiety/Stress	111 (20.55)
Sedentary life style	56 (10.37)
Don't know any risk factor	61 (11.29)

**Table 4: Level of awareness of MI warning symptoms and risk factors**

Level of awareness of symptoms (n = 540)	Number (Percentage)
Identified all symptoms (9/9)	36 (6.66)
Identified 4-8 symptoms (>4/9)	121 (22.4)
Identified less than 4 symptoms (<4/9)	350 (64.8)
Not identified any symptoms (0/9)	15 (2.77)
Level of awareness of risk factors (n = 540)	
Identified all risk factors (11/11)	16 (2.96)
Identified 5-10 risk factors (>5/11)	302 (55.92)
Identified less than 5 risk factors (<5/11)	161 (29.81)
Not identified any risk factor (0/11)	61 (11.29)

weight/obesity as the risk factor of MI. The least frequently identified modifiable risk factors were sedentary life style (10.37%), stress (20.55%) and high fat diet (36.48%). It was observed that 11.29% persons don't know about any of the risk factor.

The table 4 depicts that majority (67%) of study subjects were having low level of awareness of MI warning symptoms and 41% were having low level of awareness of MI risk factors. The awareness of MI warning symptoms was significantly lower in low socioeconomic group ( $X^2=86.07$ ,  $P<0.001$ ,  $d.f=1$ ) and among study subjects educated upto secondary level ( $X^2=55.15$ ,  $P<0.001$ ,  $d.f=1$ ). Similarly the awareness of risk factors was significantly lower in low socioeconomic group ( $X^2=6.66$ ,  $P<0.01$ ,

d.f=1) and among study subjects educated upto secondary level ( $X^2=34.64$ ,  $P<0.001$ , d.f=1). There is no difference in level of awareness in other socio-demographic variables like age, gender, occupation, type of family etc.

## DISCUSSION

In the present study, the participants identified 4.25 of out of 9 symptoms and 6.48 of out of 11 risk factors. The most frequent symptom identified was Chest pain (95%) followed by pain in one shoulder/arm (66.85%) and back pain (53.88%). In our study, there was no difference in level of awareness in other socio-demographic variables like age, gender, occupation, type of family. Majority (67%) of study subjects were having low level of awareness of MI warning symptoms. The awareness of MI warning symptoms was significantly lower in low socioeconomic group ( $P<0.001$ ) and among study subjects educated upto secondary level ( $P<0.001$ ). In the study by Whitaker S *et al* in Birmingham, UK in a street survey, chest pain was identified by 75% and arm pain by 40% people as a symptom of MI. They also observed that 60.5% of study subjects in were having low level of awareness of MI warning symptoms and no significant differences in knowledge across groups by age and sex.<sup>6</sup> Another study by Kim EM *et al* from Korea, where 75% of the patients were having knowledge that chest pain was the symptom of MI and more than 50% of patients were not aware of the other symptoms of MI. They also found that the participants those were having lower education and lower monthly income were having low knowledge of symptoms of MI which is comparable with our study.<sup>7</sup> In a study by Greenlund KJ *et al*, Seven State & US Virgin Island found that 95% of participant recognized chest pain or discomfort and 89% identified pain or discomfort in the arm as a symptom of MI similar with our study.<sup>8</sup> Awareness about other symptoms like epigastric discomfort, shortness of breath, cold sweat, nausea or vomiting, lightheadedness/ fatigue, neck/jaw pain was low and each identified by less than 50% subjects. A study by Canto JG *et al* university of Alabama Birmingham suggested that 33% of patients admitted to a hospital with a myocardial infarction did not have chest pain on presentation to the hospital.<sup>9</sup> So there is a need for making people aware and to recognize multiple symptoms of MI.

Most frequently identified risk factor in our study was high Blood Pressure (88.7%) followed by tobacco use (smoking and smokeless – 78%) and Diabetes Mellitus (74.26%). About 70% rural adults identified heavy alcohol drinking as one of the risk factor and about 60% identified overweight/obesity as the risk factor of MI. The least frequently identified modifiable risk factors were sedentary life style (10.37%), stress (20.55%) and high fat diet (36.48%). It was observed that 11.29% persons don't know about any of the risk factor. In our study, 41% adults were having low level of awareness of MI risk factors and the awareness of risk factors was significantly lower in low socioeconomic group ( $P<0.01$ ) and among study subjects educated upto secondary level ( $P<0.001$ ). Our study was comparable with the study by Ansa VO *et al*, Nigeria where 70.6% were identified Smoking, 52.8% identified excessive alcohol use and 41.6% of respondents identified obesity as a risk of MI.<sup>10</sup> In another study by Muhammad Zuhaid, Pakistan found that only 28.7% of the subjects were having good level of knowledge about the risk factors of MI. They also found that there was a significant association between educational status and good level of knowledge about risk factors of MI ( $p<0.001$ ).<sup>11</sup>

## LIMITATION

The limitation of this study was that the study subjects were recruited from rural adults attending rural health and training centre who were from nearby areas. Hence, these findings cannot be generalized for all rural adults.

## CONCLUSION

Knowledge of MI symptoms and risk factors among rural adults is though better, it is not for all symptoms and risk factors. Therefore, public health education for the rural adults should focus on improving awareness about symptoms and risk factors of MI so that preventive actions can be taken. In our rural setting, educational interventions by interns and social workers posted in RHTC can be the first step to increase the awareness of early warning symptoms and risk factors of MI among rural adults visiting RHTC.

## ACKNOWLEDGEMENT

We sincerely thank and acknowledge the rural adults for their participation in the study.

## CONFLICT OF INTEREST

The author declare no conflict of interest.

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**Cite this article :** Patnaik L, Pattanaik S, Sahu T, Panda BK. Awareness of symptoms and risk factors of Myocardial Infarction among adults seeking health care from a rural hospital of India. *J Cardiovasc Disease Res*. 2016;7(2):83-5.