Research Article

Acute Myocardial Infarction Patients' Knowledge Regarding the Modifiable Risk Factors of Heart Disease

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ABSTRACT

Background: Acute myocardial infarction (heart attack) is a condition of the heart that occurs when blood flow to the heart muscles is stopped abruptly. The disruption in blood flow to the heart muscles is usually caused by a blockage of one or several coronary arteries. Heart attacks can be fatal owing to the critical functions performed by blood in the heart. Fatalities arising from heart attacks are witnessed all over the world. The difference in fatality rates of heart attacks is highly dependent on the exposure to risk factors such as smoking and obesity. Healthy living populations will rarely encounter high cases of a heart attack. This study was set out to assess and document the knowledge level of acute myocardial infarction patients regarding the modifiable risk factors of a heart attack in Saudi Arabia. Patients suffering from a heart attack are at great danger of fatality. Knowledge of modifiable factors can promote healthy living habits and behaviors among them. Methods: A cross-sectional survey was developed to assess knowledge levels of acute myocardial infarction patients in the three cities of Riyadh, Jeddah, and Dammam. A total of 123 participants were recruited through convenient sampling across 15 hospitals in the cities. The eligibility criteria for recruitment included a mandatory age of 18 years and Saudi Arabian citizenship. Participants were issued with questionnaires containing different questions on modifiable risk factors (fatty foods, vegetables, fruits, smoking, physical exercise, and obesity). Results: Five out of the six modifiable factors represented knowledge levels of less than 50%. Participants were only knowledgeable on the risk factor of obesity which saw 52.8% associating it with a heart attack. Conclusion: There is a need to boost education and awareness among acute myocardial infarction patients in Saudi Arabia.

Key words: *Acute myocardial infarction, convenient sampling, modifiable risk factors.*

INTRODUCTION

Myocardial infarction is the foremost form of ischemic heart disease [1-3] and it is distinguished by a disproportion of coronary blood supply and myocardial demand [4]. Acute myocardial infarction is the medical terminology used to refer to a heart attack [5]. In the medical context, a heart attack is described as a life-threatening condition that occurs in a person when the flow of blood to the heart is abruptly stopped. The abrupt cut-off of blood supply to the heart causes tissue damage and increases the risk of a person's death [6]. The disruption of blood flow to the heart muscles is usually caused by the blockage of one or several coronary arteries. Usually, the blockage of coronary arteries is caused by the continued build-up of plaque in the arteries. The plaque is made up of cholesterol, fat, and cellular waster products accumulated in the artery after some time [7]. In some

cases, the plaque formed in a coronary artery can rupture and develop into a clot that disrupts blood flow to the heart muscles. The interruption in blood flow further exposes a person to the risk of damaged heart muscles.

The flow of blood to the heart muscles must remain undisrupted. Disruptions of blood to flow to the heart have always been attributed to serious fatalities [5, 8, 9]. The prevalence and, hence, the fatality rate from heart attacks is high in most parts of the world. In the United States, it is estimated that a person dies from a heart attack every 40 seconds. This prevalence translates to fatalities of more than 700,000 in a year. According to Mane et al. [5], it is estimated that 14% of persons with heart attack eventually succumb to the condition. The prevalence of myocardial infarction in Saudi Arabia is not as high as in the United States of America. According to Aljefree, & Ahmed [8] the prevalence of coronary heart diseases in Saudi Arabia is approximately 5.5%. Nonetheless, research from recent years points to an increasing trend in cases of a heart attack in Saudi Arabia [10-13]. The growing trend in cases of acute myocardial infarction in Saudi Arabia is mainly attributed to the growth of risk factors, such as a rise in cases of obesity and diabetes [9, 14, 15].

Previous studies have investigated the knowledge of modifiable risk factors of acute myocardial infarction among patients. Studies conducted by [9-13] established that knowledge is a critical requirement for formulating and implementing primary and secondary strategies for preventing and managing patients with cardiovascular disease (CVD). A study performed by Sreejith et al. [10] Quantified the levels of knowledge of modifiable risk factors among patients with acute myocardial infarction. The study which was conducted in a tertiary care unit in Saudi Arabia recruited a total of 720 respondents. The knowledge levels of the participants were assessed based on their understanding of four risk factors, including obesity, consumption of fatty foods, physical exercise, and smoking. Patients with a good understanding of three out of the four risk factors were classified as knowledgeable. The findings of the study indicated a knowledge level of 42%, indicating a poor level of knowledge on modifiable factors. Studies based on the same methodology in pointed to the same observation among patients with acute myocardial infarction in Saudi Arabia [10, 12, 13, 16, 17]. The scholars suggest the need for urgent and targeted knowledge awareness strategies on modifiable risk factors.

An independent study carried out to assess the population awareness of CVD risk factors in Jeddah also pointed to the evidence of limited knowledge [13]. The cross-sectional study set out to establish knowledge awareness on modifiable risk factors of acute myocardial infarction. Participants in the study were recruited through an online questionnaire, increasing the categories of persons that were involved in the research. The awareness score for modifiable risks was unsatisfactory, with the correlation found to be $P < 0.003$ [13]. Other nationwide studies conducted in the country all point to poor knowledge levels of modifiable risks of acute myocardial infarction in Saudi Arabia [15-18]. With such increasing trends in risk factors of acute myocardial infarction, there is a need to evaluate knowledge awareness among different groups of people in Saudi Arabia. This will enhance promote quality health outcomes by sensitizing people to observe healthy lifestyle habits.

Research Aim and Objectives

This study focuses on knowledge awareness among patients with acute myocardial infarction in Saudi Arabia. Patients with acute myocardial infarction need to be more knowledgeable about the condition. Given the high threat to life posed by the condition, the patients must be well-grounded with information that is important for healthy living. More importantly, the patients should be aware of the risk factors that are associated with the condition. Risk factors, such as diabetes, smoking, obesity, and stress, are modifiable and can, hence, be improved to limit cases of fatality among patients.

MATERIALS AND METHODS

A cross-sectional survey method was adopted in this study. The objective was to assess and evaluate the knowledge levels of modifiable risks in patients with acute myocardial infarction in Saudi Arabia's three cities of Riyadh, Jeddah, and Dammam. Participants for the study were recruited based on a pre-planned strategy. An almost equal number of patients from the three cities of Riyadh, Jeddah, and Dammam were targeted in the cross-sectional survey. The recruitment period for the participants was set at three weeks, spamming from 05/06/2020 to 26/07/2020. The respondents were recruited through a convenient sampling strategy. The method of convenient sampling was adopted to enhance randomness and increase the number of patients for the study. A total of 123 participants were recruited in the study. Data was collected from the participants using hard copy questionnaires. The researcher distributed the questionnaires to patients in 15 hospitals spread across the three cities. Notably, only participants that had been admitted to hospitals were recruited in the study. This observation was critical in

ensuring that only the patient group was evaluated in the study. Once participants had answered the questionnaire data was transferred to MS Excel to facilitate the process of analysis.

Inclusion and Exclusion Criteria

The research methodology was guided with an inclusion and exclusion criteria to determine the eligibility of patients to participate in the study. For an individual to be recruited in the study he/she had to be above 18 years, be a Saudi Arabian citizen, a resident of Saudi Arabia, and be diagnosed with acute myocardial infarction. The age of 18 years was chosen to conform with the research requirement of consent of information by participants. While the age restriction was capped at 18, a majority of the participants that were recruited were more than the age of 35. This was consistent with the theory that older patients have a high risk of contracting acute myocardial infarction. Finally, the study eliminated patients who could not read and write since they could not respond to the research questions.

Survey Questions

The participants were asked to respond to a wide range of questions. The first class of questions for the questionnaire was on gender. Here, participants were recruited to state whether they were male or female. The next class of questions was on the modifiable risks that are associated with acute myocardial infarction. The patients were asked to respond to questions testing their knowledge on six modifiable risk factors of acute myocardial infarction. The six modifiable risk factors included consumption of fatty food, consumption of a diet rich in vegetables, consumption of a diet rich in fruits, smoking, physical exercise, and obesity. For each of the six modifiable risk factors mentioned in the questionnaire, the participants were required to give two types of responses. First, the participants were required to state whether a relationship existed between the modifiable risk and heart attack. In responding to the question, participants were expected to answer with a "Yes", "No, or "Don't Know." Next, the participants were expected to state how each of the modifiable risks affects heart attack. In responding to the question, participants were expected to answer with an "increase", "Decrease", "No Effect", or "Don't Know."

Validation of the Questionnaire and Statistical Analysis

The questionnaire used in the study was validated by an expert to authenticate the results that were retrieved from the study. The data collected was analyzed through four statistical indicators including frequency, percentage, valid percent, and cumulative percent. The four statistical indicators used in the data analysis process were critical in interoperating the findings of the study concerning the knowledge levels of acute myocardial infarction patients.

RESULTS

This section of the study presents the findings that retrieved from the questionnaires answered by acute myocardial infarction patients. The format of the data presentation is consistent with the survey questions.

Table 1: Participants' answers to the questionnaire.

Questions	N	%
Fatty foods consumption Is there any relationship between fatty food consumption and heart attack?		
Yes	46	37.4
No	49	39.8
Don't Know	28	22.8
How does the consumption of fatty food affect the heart attack?		
Increases	7	5.7
Decrease	22	17.9
No effect	6	4.9
Don't Know	11	8.9
Vegetables Is there any relationship between a diet rich in vegetables on a heart attack?		
Yes	57	46.3
No	43	35.0

Don't Know	23	18.7
What is the effect of a diet rich in vegetables on heart attack?		
Increase	13	
Decrease	20	
No effect	8	
Don't Know	12	
Fruits		
Is there any relationship between diet rich in fruit on heart attack?		
Yes	57	46.3
No	43	35.0
Don't Know	23	18.7
What is the effect of diet rich in fruit on heart attack?		
Increase	16	
Decrease	12	
No effect	10	
Don't Know	19	
Smoking		
In your opinion is there any relationship between smoking and heart attack?		
Yes	51	41.5
No	44	35.8
Don't Know	28	22.8
In your opinion how does smoking affect the heart attack?		
Increases	11	8.9
Decrease	11	8.9
No effect	9	7.3
Don't Know	20	16.3
Exercise		
In your opinion is there any relationship between exercises and heart attack?		
Yes	48	39.0
No	42	34.1
Don't Know	33	26.8
In your opinion how does exercise affect heart attack?		
Increase	11	8.9
Decrease	11	8.9
No effect	10	8.1
Don't Know	16	13.0
Obesity		
Is there any relationship between obesity and heart attack?		
Yes	65	52.8
No	34	27.6
Don't Know	24	19.5
In your opinion how does obesity affect heart attack?		
Increases	15	
Decreases	16	
Don't Know	34	

Table 2: Association between gender and knowledge regarding the relationship between fatty food consumption and heart attack.

		Is there any relationship between fatty food consumption and heart attack?			Total
		Yes	No	Don't Know	
Gender	Male	28	31	17	76
	Female	18	18	11	47
Total		46	49	28	123

Table 3: Association between gender and knowledge regarding how does consumption of fatty food affect the heart attack

		How does the consumption of fatty food affect the heart attack?				Total
		Don't Know	Decrease	Increase	No effect	
Gender	Male	5	11	4	8	28
	Female	2	11	2	3	18
Total		7	22	6	11	46

DISCUSSION

From the demographic analysis, the respondents had a higher percentage of males (61.8%) compared to females (38.2%). In table 1, 37.4% of the respondents indicated that there is a relationship between fatty food and heart attack. However, a bigger percentage (39.8+22.8) either didn't know or were unsure whether or not fatty foods cause heart complications. This is an indicator that the respondents still have a reduced knowledge on the causes of heart complications [16], Further, only 4.9% of the participants indicated that the consumption of fatty acids increases heart attacks. The remaining percentage of participants cited untrue responses.

46.3% of the participants acknowledged that there is a relationship between a diet rich in vegetables and a heart attack. However, a larger percentage of the respondents did not associate a vegetable-rich diet with a heart attack. This is an indicator of poor knowledge among most patients. The poor knowledge level is further demonstrated by a high percentage (62.3%) indicating that vegetables increase heart attack. Only 24.5% of the participants stated that a vegetable-rich diet decreases heart attack.

A large percentage of participants (46.3%) acknowledged that there is a relationship between a fruit-rich diet and heart attack. The remaining percentage (35.0% + 18.7%) of participants did not associate a fruit-rich diet with a heart attack. While the knowledge levels were still poor, the proportion of participants (46.3%) stated that there is a relationship between a fruit-rich diet and heart attack. The modifiable factor also showed a positive trend of knowledge as more participants (13.0%) mentioned that fruits decrease heart attacks compared to the 9.8% that stated that fruits increase heart attacks. Knowledge levels were still poor as the remaining 77.2% (100%-46.3%-13.0%) did not know the correct response.

41.5% of the participants stated that a relationship exists between smoking and heart attack. A larger percentage (35.8% + 22.8%), however, failed to associate smoking with a heart attack. This is an indication of poor knowledge levels. On the flip side, a considerably high percentage of participants (43.1%) stated that smoking increases heart attack. This is an indicator that most patients are aware of the negative effects of smoking on persons with acute myocardial infarction. Nonetheless, a large number of participants (56.9%) were not knowledgeable about the effects of smoking. Additionally, 39% of the participants acknowledged that there is a relationship between heart attack and physical exercise. A larger percentage (34.1% + 26.8%), however, failed to associate exercise with a heart attack. The poor knowledge of exercise was further demonstrated by a larger percentage (45.8%) stating that exercise increases heart attack. A larger proportion (54.5%) of the participants was not knowledgeable about the factor of physical exercise [15, 16]. Finally, 52.8% of the participants associated obesity with a heart attack. A smaller percentage (27.6% + 19.5%) of the respondents did not associate obesity with a heart attack. This is a positive indicator of knowledge among participants. The positive knowledge level was also shown by a large percentage (47.7%) stating that obesity increases heart attack.

CONCLUSION

The research study was set out to establish the knowledge level of acute myocardial infarction patients regarding the modifiable risk factors of a heart attack in Riyadh, Jeddah, and Dammam. The overall research finding is that the knowledge level of patients regarding the modifiable risk factors of heart attack is significantly low. Out of all the six modifiable factors evaluated, patients demonstrated poor knowledge levels. Only obesity had a positive

indication of good knowledge with 52.8% patients acknowledging that it had a relationship with a heart attack. A further 47.7% linked obesity to an increase in a heart attack. The remaining five modifiable factors recorded significantly lower indicators of knowledge on heart attack among patients. There is a need to embark on a vibrant campaign to increase knowledge awareness among patients with acute myocardial infarction. A good understanding of the condition will improve the scope of healthy living among affected patients.

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