

Public knowledge of heart attack symptoms and prevalence of self-reported cardiovascular risk factors in Ilorin, Nigeria

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ABSTRACT

Background and objectives: Despite reduction in door-to-balloon time in the management of acute myocardial infarction (AMI), prehospital delay by the patients has remained a major concern as benefits derivable from reperfusion treatments are time dependent. This study aimed at evaluating knowledge and perception of warning signs of heart attack among civil servants in Ilorin, Nigeria.

Materials and Methods: A pretested structured questionnaire was designed to obtain relevant information on knowledge and perception of heart attack symptoms; and action to be taken if one experiences the condition.

Results: Questionnaires from 601 subjects consisting of 312 (51.9%) males and 289 (48.1%) females were analyzed. Although, 78% of the respondents have heard about heart attack, only 44.4% could discriminate a heart attack symptom from other conditions. Higher proportion of women (50.2%) than men (39.1%) could identify a core symptom of heart attack ($P < 0.05$). Similarly, higher percentage of participants 40 years and older (48.3%) were more knowledgeable than those younger than 40 years (42.9%), but the difference was not statistically significant ($P > 0.05$). Higher percentage of women reported prior cardiovascular disease/risk factors than men.

Conclusion: We concluded that participants have low knowledge of heart attack symptoms with women being more knowledgeable than their male counterparts. There is the need for community education on heart attack warning signs and the need for early hospital presentation by affected individuals.

KEY WORDS: Cardiovascular risks, heart attack, Nigerians, prehospital delay, warning signs

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INTRODUCTION

Time is of the essence in the management of patients who present to the hospital on account of acute myocardial infarction (AMI). Studies have demonstrated that “time saved” in the initiation of lifesaving reperfusion strategies such as thrombolysis or percutaneous coronary intervention in these patients is equal to “muscle saved”.^[1,2] The benefits derivable from these treatments are time dependent. In many developed nations of the world, the “door-to-balloon” time in AMI management has been reduced considerably to less than 90 min leading to improved clinical outcome. However, patient’s indecision and reluctance to seek treatment have remained a major reason for prehospital delays. The urgency with which an individual seek medical attention following AMI depends on the ability of the victim to recognize cardinal symptoms of the disease and its perception

as a life-threatening condition.^[3] Although, coronary artery disease (CAD) is well known to be an uncommon disease among Africans residing in Africa, reports have suggested a gradual increase in its incidence among these populations.^[4,5] The prevalence of CAD has been predicted to rise in the next 2 decades in sub-Saharan Africa (SSA) due to gradual worsening of cardiovascular risk factors such as hypertension, type 2 diabetes mellitus, obesity, dyslipidemia, and increase tobacco use.^[6] Except something is done urgently to address these risk factors, SSA is likely to experience epidemic of CAD in no distant future. On the other hand, facilities for management of acute coronary syndromes are almost nonexistent in Nigeria and capacity building in this area is lagging behind the rate of evolution of the disease.^[7] Similarly, studies that assess baseline community knowledge of warning signs of AMI are rare in Nigeria. Evaluation of public knowledge of symptoms and perception of AMI will

determine gaps in recognition of this condition and serve as basis for community education.^[8] The current study, therefore, aimed at assessing awareness, knowledge, and perception of AMI among public servants in Ilorin, North Central Nigeria.

MATERIALS AND METHODS

The study was a descriptive cross-sectional evaluation of knowledge of warning signs and symptoms of heart attack among civil servants. A total of 650 civil servants (aged 18 years or older) were selected using a multistage systematic sampling from Federal, State, and Local Government workers residing in Ilorin for the study. The work places selected included Federal Secretariat Ilorin which houses all federal ministries in Kwara State, Kwara State Secretariat which similarly houses most of the ministries in the state, Ilorin East and West Local Government Councils. Permission was sought from head of each establishment and informed consent was obtained from each of the participants. List of staff were obtained from nominal role in each department and every fifth staff who gave consent to participate were recruited. The protocol for the study was reviewed and approved by the Ethics and Review Committee of the University of Ilorin Teaching Hospital. The participants completed the questionnaires voluntarily without any lead or instructions that could influence their choices. Questionnaire used in this study was adapted from previous studies among Chinese, Nepalese, and Americans to suit our participants.^[9-11] The questionnaires were pretested to determine its validity and applicability. Some of the main items in the questionnaires included age, sex, marital status, and socioeconomic status such as individual's income and health insurance. Information on awareness of heart attack, ability to discriminate a core heart attack symptom such as chest pain or discomfort from symptoms of stroke, transient ischemic attack, and heart failure were obtained. Adaptations of the questionnaire included action to be taken when the individual or a close person experiences a heart attack. Services like calling 911, 999, or 120 are not readily available in Nigeria and in most cities ambulance services to convey victims to hospitals are not available. Where ambulances are present, their services are poorly coordinated such that they are only available to transport staff and even corpses. The appropriate response from participants in this section in the context of our environment is to take the victim of heart attack to the hospital. Similarly, witchcraft (illness inflicted by somebody) was included as a risk factor/cause of heart attack, which was to act as a distracter in the assessment of participants' knowledge of risk factors of the condition. Information on prior experience with heart attack and other cardiovascular diseases such as hypertension, diabetes mellitus, dyslipidemia, obesity, and cigarette smoking were also obtained from the participants.

Statistical analysis

The data obtained were analyzed using the Statistical Package for Social Sciences (SPSS) version 15. Categorical variables were expressed as percentages while numerical values were presented as mean $\pm$ standard deviation. The degree of association was tested using Chi-square. A statistically significant association was taken at $P < 0.05$.

RESULTS

A total of 650 questionnaires were distributed to the participants, but 632 returned theirs giving a response rate of 97.2%. Some of the questionnaires were incompletely filled and so only 601 questionnaires were eligible for analysis. The subjects consisted of 312 (51.9%) males and 289 (48.1%) females with mean age of 31.4 ± 11.1 years. The mean ages of the male and female participants were similar ($P = 0.7$). Baseline characteristics of study participants are presented in Table 1. Four hundred and ninety-eight (82.9%) participants had above secondary school education (at least 14 years of education). Majority (73.5%) of the participants earned less than 50,000 naira (#50,000.00) per month and only 24% of the respondents had any form of health insurance or the other. Although most of the study participants (78%) had heard about heart attack, only 44.4% could identify a core symptom (chest pain or discomfort) of the condition from symptoms of stroke, transient ischemic attack, heart failure, and peptic ulcer disease symptoms. Knowledge of heart attack was significantly higher in females (50.2%) than in males (39.1%), $P < 0.05$. Similarly, knowledge of heart attack was higher in participants who were 40 years and older (48.3%) than those younger than 40 years (42.9%) of age, but the difference did not reach statistical significance ($P > 0.05$). The level of knowledge of heart attack was similar in participants with tertiary and below tertiary educational level ($P > 0.05$). The same pattern was observed in participants who earned below 50,000naira and those who earned 50,000 and above ($P > 0.05$). On the other hand, when both core and minor symptoms of heart attack were listed, more of the participants identified chest pain or discomfort (67.6%) and shortness of breaths (62.1%) as symptoms of the condition compared with minor symptoms such as pain in the neck, jaw, or back (20.3%); pain or discomfort in arm or shoulder (28.8%); and body weakness, lightheaded, and fainting (41.4%) as presented in Table 2. Perceived causes of heart attack by the subjects are displayed in Table 3. Majority (73.2%) of the respondents identified hypertension as a cause of heart attack; however, knowledge of cigarette smoking, diabetes mellitus, and high cholesterol as causes of heart attack declined progressively (48.8, 39.6, and 37.6%, respectively). Only an insignificant number of participants (10.5%) thought heart attack was due to witchcraft (inflicted by somebody). Self-reported experiences with prior

Table 1: Characteristics of study population

Characteristics	Number	Percentage	P
Sex			
Males	312	51.9	
Females	289	48.1	
Insurance coverage			
Any health insurance	144	24	
No health insurance	457	76	
Income (naira/month)			
<10000	220	36.6	
10000 to <50000	222	36.9	
50000 to <100000	110	18.3	
100000 to <250000	41	6.8	
≥250000	8	1.3	
Heard about heart attack before			
Yes	469	78	>0.05
Males	249	79.8	
Females	220	76.1	
No	109	18.1	
Not sure	23	3.9	
Knowledge of heart attack			
Correct response	267	44.4	<0.05*
Males	122	39.1	
Females	145	50.2	
Incorrect answer	334	55.6	
Correct response by age			
<40 years of age	185	42.9	>0.05
≥40 years age	82	48.3	
Correct response by educational level			
Secondary school and below	46/103	44.7	>0.05
Above Secondary school	221/498	44.3	
Correct response by income			
<#50,000.00 (\$300)	193/442	43.7	>0.05
≥#50,000.00 (\$300)	74/159	46.5	
Previous experience with heart attack	28	4.7	

*Statistically significant

Table 2: Knowledge of symptoms of heart attack

Symptoms	Yes (%)	No (%)	Not sure (%)
Pain in jaw, neck or back	122 (20.3)	199 (33.1)	280 (46.6)
Weakness on one side of the body	217 (36.1)	150 (25)	234 (38.9)
Weak, lightheaded, fainting	249 (41.4)	111 (18.5)	241 (40.1)
Chest pain, discomfort	406 (67.6)	49 (8.2)	146 (24.3)
Trouble seeing in one or both eyes	77 (12.8)	209 (34.8)	315 (52.4)
Pain or discomfort in arm or shoulder	173 (28.8)	136 (22.6)	292 (48.6)
Shortness of breath	373 (62.1)	64 (10.6)	164 (27.3)

cardiovascular diseases or risk factors are shown in Table 4. Higher percentage of women reported prior cardiovascular diseases or risk factors in all domains tested except cigarette smoking, but the differences were not statistically significant. On actions to be taken if an individual or a close relative experiences heart attack,

Table 3: Responses to the question "which of the following do you think are causes of heart attack"

Causes of heart attack	Yes	No	Not sure
Systemic hypertension	440 (73.2)	39 (6.5)	122 (20.3)
Diabetes mellitus	238 (39.6)	102 (17)	261 (43.4)
Witchcraft	63 (10.5)	296 (49.3)	242 (40.3)
Smoking	293 (48.8)	93 (15.5)	215 (35.8)
Alcohol intake	270 (44.9)	101 (16.8)	230 (38.3)
High cholesterol	226 (37.6)	105 (17.5)	270 (44.9)

Table 4: Self-reported cardiovascular disease/risk factors among the participants

Cardiovascular disease/risk factors	Males (%)	Female (%)	Total (%)	P
Systemic hypertension	49 (15.7)	58 (20.1)	107 (17.8)	>0.05
Diabetes mellitus	22 (7.1)	30 (10.4)	52 (8.7)	>0.05
High cholesterol	17 (5.4)	25 (8.7)	42 (7)	>0.05
Obesity	7 (2.2)	19 (6.6)	26 (4.3)	>0.05
Heart attack	13 (4.2)	15 (4.8)	28 (4.7)	>0.05
Stroke	8 (2.6)	10 (3.5)	18 (3)	>0.05
Smoking	26 (8.3)	6 (2.1)	32 (5.3)	>0.05

majority of the respondents (79.4%) will take the victim to the hospital instead of calling his or her doctor (9.7%), spouse (5.2), ambulance (5.5%), or go to a nearby chemist shop (0.33%) [Table 5].

DISCUSSION

Civil servants residing in urban centers of many developing nations including SSA are at increased risk of cardiovascular disease because of low levels of physical activity and westernization of their diets.^[12,13] This study focused on this group of individuals to assess their level of knowledge on heart attack warning signs and perception of the condition. Although, majority of the respondents have heard about heart attack previously, only 44.4% of them could identify a core symptom of heart attack from symptoms of other diseases such as stroke, transient ischemic attacks, heart failure, and peptic ulcer disease. This is not surprising because heart attacks have been previously rare in our environment and as such information on the disease may not be widely available. However, with the recent changes in the incidence of the disease, there is need for health education of our populace on the warning signs of heart attack and the need for early hospital presentation so that lifesaving therapies can be initiated as soon as possible.^[14,15] Similarly, there is need for training of health personnel to acquire relevant skills for advanced care of patients with AMI. For reasons, not very clear, knowledge of heart attack symptoms was better among the female than male participants. This may be related to the fact that females are generally more concerned about their health than males.^[16,17] Similarly, older individuals were

Table 5: Responses to the question "what will you do if you suspect someone has a heart attack?"

Action	Males (%)	Females (%)	Total (%)
Call his or her spouse	16 (5.1)	15 (5.2)	31 (5.2)
Take him/her to hospital	237 (76)	240 (83)	477 (79.4)
Tell him/her to call his/her doctor	38 (12.2)	20 (6.9)	58 (9.7)
Call ambulance	20 (6.4)	13 (4.5)	33 (5.5)
Go to chemist/pharmacy	1 (0.3)	1 (0.35)	2 (0.33)
Call police	-	-	-

more knowledgeable about heart attack symptoms than individuals younger than 40 years of age, although the difference was not statistically significant ($P > 0.05$). Heart attack essentially is a disease of middle-aged and older individuals and this may explain why they are more conversant with the symptoms of the disease than younger persons. Knowledge about core and minor symptoms of heart attacks in at risk individuals is important because the disease may present atypically. The results of this study showed that knowledge about minor symptoms of heart attack was very poor among the participants. Ability to recognize minor symptoms of heart attack ranged from 20.3% for pain in the neck, jaw, or back; 28.8% for pain or discomfort in arm or shoulder; and 41.4% for body weakness, lightheaded, and fainting.

Perceived causes of heart attacks are presented in Table 3. Majority (73.2%) of the participants recognized systemic hypertension as a risk factor of the disease. Systemic hypertension is a common cardiovascular disease in our environment and it is not surprising that many of the participants identified it as a risk for heart attack.^[18] On the other hand, many of the respondents did not know that cigarette smoking, diabetes mellitus, and high cholesterol levels are risks for heart attacks. This knowledge gap in identifying risks for heart attack may affect the respondents' adoption of healthy lifestyles. Although, witchcraft was included in the causes/risk factors for heart attacks as a distracter, about 10.5% of respondent thought that the disease could be inflicted as a result of witchcraft. Beliefs in witchcraft is common in our environment as it is in many developing nations of the world and this may have negative implications on health-seeking behaviors of many people living in such societies, especially in those with dire medical emergencies.^[19]

Analysis of prior experience with cardiovascular disease or risk factors showed that higher percentage of women reported systemic hypertension, diabetes mellitus, high cholesterol, obesity, heart attacks, and stroke than men. However, more males smoked cigarettes than females. Higher percentage of cardiovascular risk factors among women could be due to the fact that women often show aversion for weight loss in some populations in West Africa as larger women may be traditionally preferred over thinner ones by men.^[20] An earlier study from

southwest Nigeria had also reported higher prevalence of cardiovascular disease risk factors in females than in males.^[21] Until recently, cardiovascular disease was thought to be a disease of men exclusively. It is now known that heart disease affects more females than males and it accounts for more than 40% of all deaths in American women.^[22,23] Similarly, women tend to have atypical symptoms of heart attacks and present late. Heart attacks are generally more severe in women than in men. In the 1st year after a heart attack, women are more than 50% more likely to die than men are.^[24] Furthermore, diabetes, obesity, and dyslipidemia are commoner among women than men.

Unlike what is obtained in developed nations of the world where codes such as 911, 999, and 120 are called when there is an emergency, such services are not available in our environment and the only option left to the individuals is to take the victims to nearby hospitals. Similarly, ambulance services are not readily available to evacuate victims to the hospital. This often causes delays even in patients who are well-informed about heart attack symptoms.

CONCLUSION

In conclusion, the demonstrated level of knowledge of heart attack symptoms in the study participants was low. Women were more knowledgeable on heart attack symptoms than men. Self-reported prior experiences of cardiovascular disease or risk factors appeared to be commoner in females than males. There is need for health education of the populace on heart attack symptoms. Simple messages on heart attack could be designed in local languages and disseminated through electronic and print media. The finding from this study is probably a reflection of gender change in the trend of cardiovascular disease and risk factors in SSA. We therefore suggest more study to look at the relevance of our result. This will encourage adoption of healthy lifestyles and early presentation to healthcare facilities when women have symptoms of cardiovascular diseases.

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Questionnaire on awareness of heart attack in Ilorin, Nigeria

Ref no= AHA/13/01 Location.....

1. Biodata

SNO-----Phone no.-----

Age-----Sex-----Tribe-----Religion-----

Marital status:

single----- Married-----Divorced-----widow-----

How long have you been living in Ilorin-----years

State of origin-----LGA-----Occupation-----

2. Educational level

	Yes	No
a. None	()	()
b. Primary	()	()
c. Secondary	()	()

d. Tertiary	()	()
e. Others	()	()

3. Household income

a. Less than #10, 000 per month
b. Between #10, 000- < #50, 0000
c. Between #50, 000- <#100, 000
d. Between #100, 000 - < #250, 000
e. ≥#250, 000.

4. Do you have health insurance cover? () ()

5. Have you heard about heart attack before? () ()

6. What is heart attack? Choose one

a. Is a sudden weakness of upper and lower limbs on one side of the body
b. Sudden loss of sight in one or both eyes with deviation of mouth to one side
c. Sudden pain at the back of chest bone

- with pain moving towards the left or both arms
- d. Cough productive of foaming sputum and swelling of both legs
- e. Pain in the upper part of abdomen which is worsen by hunger.

7. Which of the followings do you think are symptoms of a heart attack? For each, indicate yes, no, or you are not sure.

Symptoms	Yes	No	I am not sure
Pain in jaw, neck or back			
Weakness in the arm and leg on one side of the body			
Weak, lightheaded, fainting			
Chest pain, discomfort			
Trouble seeing in one or both eyes			
Pain or discomfort in arm or shoulder			
Shortness of breath			

8. "If you think someone is having a heart attack, what is the first thing you will do?"

- a. Call his/her spouse or a family member
- b. Take him/her to the hospital
- c. Tell him/her to call his doctor
- d. Call ambulance number

- e. Go to a chemist
- f. Call police.

9. Have you been diagnosed with the following conditions before?

Condition	Yes	No	I am not sure
Hypertension			
Diabetes mellitus			
High cholesterol			
Obesity			
Prior heart attack or heart disease			
Prior stroke			
Smoking cigarette			

10. Which of the followings do you think are causes of heart attack? For each, indicate yes, no, or you are not sure.

Symptoms	Yes	No	I am not sure
Hypertension			
High cholesterol			
Witch craft			
Cigarette smoking			
Alcoholism			
High cholesterol			
Excess salt intake			

