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Original Research Article

Public knowledge of cardiovascular disease and its risk factors in Tangail, Bangladesh: a cross-sectional survey

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ABSTRACT

Background: Cardiovascular Disease (CVD) is a major public health problem throughout the world. In Bangladesh, the reliable data concerning various aspects of CVD is inadequate at present due to lack of national population-based surveys or central administrative health data. Given the rising incidence of CVDs in Bangladesh, an improved understanding of the CVD, symptoms and risk factors is needed. Hence, this study was performed to assess the level of knowledge towards CVD types, warning symptoms of heart attack or stroke, and CVD risk factors.
Methods: A descriptive cross-sectional survey was conducted from May 2018 to June 2018 using standard questionnaire on a sample of 350 randomly selected Bangladeshi individuals. All the data of the study were input in SPSS (Statistical Package for the Social Sciences) version 20.0 software from IBM for windows and the gathered data thus analyzed using SPSS & Microsoft Excel.
Results: The respondents' knowledge about types of CVD, symptom heart attack, symptom of stroke and the risk factors of CVD are 38.9%, 67.7%, 35.7%, and 92.9% respectively. The most common risk factors of CVD found to be known by around than two-third of respondents were unhealthy diet (66.9%), physical inactivity (64.3), obesity (61.4%), and smoking (58.6%).
Conclusions: The respondents' knowledge about types of CVD, symptom heart attack, symptom of stroke and the risk factors of CVD are 38.9%, 67.7%, 35.7%, and 92.9% respectively. The most common risk factors of CVD found to be known by around than two-third of respondents were unhealthy diet (66.9%), physical inactivity (64.3), obesity (61.4%), and smoking (58.6%).

Keywords: Cardiovascular disease, Knowledge, Symptoms, Risk factors, Heart attack, Stroke, Bangladesh

INTRODUCTION

Cardiovascular diseases (CVD) are group of disorders that involve the heart or blood vessels or both. They include coronary heart disease, manifested by myocardial infarction (MI), angina pectoris, heart failure, and coronary death; cerebrovascular disease, manifested by stroke and transient ischemic attack; peripheral arterial disease, manifested by intermittent claudication; rheumatic heart disease that is characterized by damage to the heart muscle and heart valves from rheumatic fever that is caused by streptococcal bacteria; congenital heart disease, which is defined as malformations of heart structure existing at birth; and deep vein thrombosis and pulmonary embolism.[1] Cardiovascular diseases represent major public health problem and the prominent cause of death worldwide, although the mortality for this cause is falling gradually due to advances in diagnosis and therapy. The mortality rate due to these diseases was 214-455 deaths per 100,000, being lower in developed countries.[2] The economic impact of different types of CVD is enormous. Bangladesh is a developing country

burdened with communicable diseases. The major causes of death in Bangladesh gradually shifted from acute infection and parasitic disease to non-communicable disease.[3] The burden of CVD is increasing at greater rate in South Asia. In India, the prevalence of CVD has been estimated to be nearly 3% in 2000, and upto 10% in recent year.[4] Among the non-communicable disease (NCD), CVD is probably the most important cause of mortality and morbidity in Bangladesh. In 2014, NCD was responsible for 59% of the total death and CVD was the single most important contributor being responsible for 17%.[5] Heart attacks and strokes are usually acute events and are mainly caused by a blockage that prevents blood from flowing to the heart or brain. The most common reason is a build-up of fatty deposits on the inner walls of the blood vessels. Strokes can be caused by bleeding from a blood vessel in the brain or by blood clots.[6] According to the heart disease and stroke statistics-2016 updated by American Heart Association, heart disease and stroke continue to be the top two killers Worldwide.

The most important risk factors of heart disease and stroke are unhealthy diet, physical inactivity, tobacco use and harmful use of alcohol.[6] Cardiovascular disease (CVD) is one of the most preventable causes of death in the world, due to the majority of its risk factors are controllable or preventable, such as hypertension, dyslipidaemia, diabetes, obesity, smoking, lack of physical activity, stress, unhealthy dietary practices and diabetes. The social and environmental causes of coronary heart disease and stroke are well recognized, and enhanced population-based prevention programs could result in a significant decrease in CVD morbidity and mortality.[7] Knowledge towards CVD and its variable risk factors is a very important to change the individuals' health attitudes, behaviors and lifestyle.[8,9] Improvement of knowledge to recognize the heart attack and stroke symptoms will lead to quick presentation of the patients to medical care that may result in better outcomes.[10-12] Good knowledge about the risk factor of CVD among people will help them to be proactive in decreasing their risk since the majority of the risk factors are modifiable.[12-14]

The baseline knowledge about CVD among the population has significant public health application as it helps in developing targeted educational programs.[12] Knowledge of CVD, its symptoms and risk factors have been studied worldwide in various populations. Yet, little is known about the CVD knowledge in the Bangladesh, where only few study was published. However, there are no published studies to date that comprehensively assess the existing knowledge of CVD among the public in Bangladesh, where CVDs are estimated to cause 17.0% of all mortalities.[5] To design effective treatment and prevention strategies, an assessment of the public knowledge about CVD is essential. Knowledge of CVD, its symptoms and risk factors have been studied in various population but there is no published data to date that comprehensively analyzed the preexisting knowledge about CVD among the people in Bangladesh. Therefore, this study was done to assess the current knowledge about CVD, its symptoms and risk factors among the people of Bangladesh.

METHODS

A descriptive, cross-sectional survey was conducted in Bangladesh. The survey was conducted during the period from April, 2018 to June 30, 2018. The study population consisted of Bangladeshi people from Tangail District. Ethical approval for this study was obtained from the Department of Biotechnology and Genetic Engineering, Mawlana Bhashani Science and Technology University, Bangladesh.

In the present study, sample size consisted of 350 people which were sampled by using purposive sampling technique. Random sampling was used for selection of people from houses, government and private enterprises and university. The individuals were contacted and given an explanation with regard to the purpose of the study. They were free to refuse participation in the study. Data were collected anonymously via self-administered questionnaire. Those who agreed to take part in the study were given the questionnaires, which were completed anonymously and collected after completion. They were assured for confidentiality and gave written consent to participate in the study. Incentives were not offered for completion of the questionnaire. Exclusion criteria were expatriates, age ≤20 years and ≥80 years, and health care professionals and students. Based on the literature search, the study questionnaire was adapted from validated surveys that were previously used in Australia, Pakistan, North Ireland, Canada, Jordan, South Africa and Kuwait.[11-18]

The questionnaire consisted of three sections, and it contains both open-ended and close-ended questions. The first section included seventeen items to provide information about the demographic and clinical characteristics of the participants (age, gender, marital status, educational level, employment, residence, monthly income, personal health, height, weight, smoking status, exercise, healthy food, lifestyle, and family history of CVD). Section two consisted of four questions to provide information about the participants' medical status including presence of chronic diseases, chronic use of medications, recent measures of blood pressure, blood cholesterol and glucose levels, and last time for checking blood pressure, body weight, blood cholesterol and blood glucose. The third section included five questions to determine the knowledge with regard to six types of CVD, five heart attack warning symptoms, five stroke warning symptoms, and nine CVD risk factors. Data were entered into the Statistical Package for Social Sciences (SPSS, version 21, SPSS, Chicago, IL, U.S.A.), and descriptive and comparative analysis were conducted.

RESULTS

Demographic characteristics

A total of 365 Bangladeshi individuals with several age groups were approached to be included in the study, giving a response rate of 95.9% (n=350). Of the respondents, 43.4% were females, 62.3% had high education, and 60.0% with a medium monthly income ((20,000 - 50,000 BDT). Moreover, 68.3% respondents were unemployed and 59.1% live in urban area. The demographic characteristics of respondents are shown in Table 1.

Table 1: Demographic characteristics of the study respondents (n=350).

Characteristics	Frequency (%)
Age of the respondents	
20-29	177 (50.6)
30-39	52 (14.9)
40-49	62 (17.7)
50-59	53 (15.1)
>60	6 (1.7)
Gender	
Male	198 (56.6)
Female	152 (43.4)
Marital status	
Single$^{\phi}$	163 (46.6)
Married	187 (53.4)
Educational level	
Low-intermediate education$^{\Psi}$	132(37.7)
High education$^{\perp}$	218 (62.3)
Employment	
Unemployed$^{\vartheta}$	239 (68.30
Employed	111(31.70)
Monthly income	
Low (<20,000 BDT)	113 (32.3)
Medium (20,000 – 50,000 BDT)	210 (60.0)
High (> 50,000 BDT)	27 (7.7)
Residence	
City	34 (9.7)
Rural area	109 (31.1)
Urban area	207 (59.1)

$^{\phi}$Includes divorced and widowed; $^{\Psi}$Includes less than high school, high school and diploma; $^{\perp}$Includes University and postgraduate; $^{\vartheta}$Includes retired, housewives and students.

Clinical characteristics of respondents

Two hundred forty-nine respondents (71.1%) reported that they had normal body weight; however, 21.4% of them were found to have for overweight or 2% were found to obese. Of the study population, 4.9% reported that they were smokers and 22.3% were currently smokers, 36.0% indicated exercising for 30 minutes more than five times/week, and 72.3% reported eating healthy food every day. Most of participants (86.3%) indicated to be somewhat stressful.

Table 2: Clinical characteristics of respondents (n=350).

Characteristics	Frequency (%)
Personal health	
Excellent	33 (9.4)
Very Good	66 (18.9)
Good	181 (51.7)
Fair	54 (15.4)
Poor	16 (4.6)
Self-reported weight description	
Under weight	19 (5.4)
Normal	249 (71.2)
Over weight	75 (21.4)
Obese	7 (2.0)
Eating healthy food everyday	253 (72.3)
Life style	
Very stressful or stressful	193 (55.2)
Relatively stressful	109 (31.1)
Free from stress	48 (13.7)
Smokers	78 (22.3)
30 Minutes exercise/week	
0-2 times	60 (17.1)
3-5 times	164 (46.9)
≥ 5 times	126 (36.0)
Family history of CVD	198 (56.6)
Chronic diseaseΦ	118 (33.7)
Hypertension	79 (22.6)
Diabetes	63 (18)
High blood cholesterol level	27 (7.7)
Coronary heart disease (CHD)	21 (6.0)

ΦTotal number exceeds 118 due to multiple responses.

About 22.6% of respondents indicated to have hypertension, 18% diabetes, 7.7% high blood cholesterol level and 6% coronary heart disease (CHD). All respondents with diabetes and CHD reported that they use medications for these diseases. 6.0% of the hypertensive and 52% high blood cholesterol level patients reported that they were not using medications. Of the study population, 21.5%, 79.8% and 59.8% reported that they did not know their recent measures for blood pressure, blood cholesterol and blood glucose, respectively. The clinical characteristics of respondents are shown in Table 2.

Knowledge about cardiovascular disease (CVD)

Table 3 shows respondents' knowledge about CVD types, heart attack or stroke warning symptoms, and CVD risk factors. 61.1% did not know any type of CVD, and 12.8% identified four or more types of CVD. The commonest type of CVD identified was CHD (38.9%), followed by congenital heart disease (35.4%), and Rheumatic heart disease (30.6%).

32.3% of the respondents did not recognize any heart attack symptom, whereas 20.6% knew one, 15.4% two, 10.3% three, 13.1% four, and 8.3% five. The commonest heart attack symptom reported was 'chest pain or discomfort' (68.3%) followed by 'difficulty in breathing or shortness of breath' (57.1%), and 'pain or discomfort in the jaw, neck or back' (42.9%).

Table 3: Respondents' knowledge of CVD types, heart attack and stroke symptoms and CVD risk factors of (n=350).

Category	Frequency (%)
CVD Types	
Coronary heart disease	136 (38.9)
Cerebrovascular disease	80 (22.9)
Peripheral arterial disease	67 (19.1)
Rheumatic heart disease	107 (30.6)
Congenital heart disease	124 (35.4)
Deep vein thrombosis and Pulmonary embolism	74 (21.1)
Heart attack symptoms	
Chest pain or discomfort	239 (68.3)
Difficulty in breathing or shortness of breath	200 (57.1)
Pain or discomfort in arms or shoulder	126 (36)
Feeling weak, light-headed, or faint	125 (35.7)
Pain or discomfort in the jaw, neck or back	150 (42.9)
Stroke symptoms	
Sudden confusion or trouble speaking or understanding others	152 (43.4)
Sudden numbness or weakness of the face, arm, or leg	195 (55.7)
Sudden trouble seeing in one or both eyes	81 (23.1)
Severe headache with no known cause	64 (18.3)
Sudden dizziness, trouble walking, or loss of balance or coordination	153 (43.7)
CVD Risk factors	
Smoking	205 (58.6)
Unhealthy diet	234 (66.9)
Physical inactivity	225 (64.3)
Obesity	215 (61.4)
Stress	208 (59.4)
Positive family history	106 (30.3)
High LDL Cholesterol levels	182 (52)
Hypertension	196 (56)
Diabetes	199 (56.9)

64.3% did not know any stroke symptom, whereas 16.6% identified one, 5.1% two, 2.3% three, 5.7% four, and 6.0% five. The most common stroke symptoms indicated by participants were 'sudden numbness or weakness of the face, arm, or leg (55.7%), followed by 'sudden dizziness, trouble walking, or loss of balance or coordination' (43.7%), and 'sudden confusion or trouble speaking or understanding others' (43.4%).

7.1% did not know any CVD risk factor, whereas 19.1% indicated one to four, 28.6% five to seven, and 45.2% identified eight or nine risk factors. The commonest risk factors identified by about two-third of respondents were unhealthy diet, physical inactivity, obesity, and smoking.

DISCUSSION

Although there are several studies on the prevalence of CVD in Bangladesh but the best of our knowledge this is the first known study to be conducted in Bangladesh to comprehensively demonstrate the current level of public knowledge about types of CVD, warning symptoms of heart attack or stroke and CVD risk factors. Approximately two-third of the participants were not aware of any type of CVD and any stroke symptoms, one-third were not aware of any heart attack symptom. Despite the lower level of knowledge about types of CVD and its symptoms, respondents had much better knowledge of CVD risk factors. These findings would provide the quantitative measurement of the CVD knowledge among the community and identifying specific knowledge gap.

The public needs to have good knowledge about CVD and its risk factors, and this will aid them to be proactive in decreasing their risk since the majority of the risk factors are modifiable. The general knowledge about CVD and its types is deficient in Bangladesh. The same applies to Jordan, South Africa, and North Ireland.[14,19,20] Since all of them have poor knowledge about CVD. In all countries, the knowledge of CVD is better in higher education levels, higher socioeconomic levels and in people who exercise regularly, with positive family history, and who have a healthy diet. However, in Bangladesh a better knowledge is found only in people who are higher educated and on healthy diet or a positive family history of CVD. The low level of CVD knowledge might be due to lack of media publication, lack of proper education about CVD. Especially in the rural area most of the people completely unaware about the disease so the increase of awareness is necessary by media publication.

CONCLUSION

This study was done in Bangladesh to demonstrate the baseline levels of knowledge about CVD type, warning symptoms of heart attack or stroke, and CVD risk factors among the community population in Tangail, Bangladesh. The study population showed deficiencies in CVD knowledge. The findings showed that the Bangladeshi population needs to increase their awareness

regarding CVD by ascertaining more wide-spread and effective educational interventions.

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REFERENCES

1. World Health Organization: Cardiovascular diseases, 2012. http://www.euro.who. int/en/health-topics/noncommunicable-diseases/cardiovascular-diseases/ cardiovascular-diseases2/definition-of-cardiovascular-diseases. Accessed on 2 February 2017.
2. Soler EP, Ruiz VC. Epidemiology and risk factors of cerebral ischemia and ischemic heart diseases: similarities and differences. Curr Cardiol Rev 2010;6(3):138-49.
3. Bleich SN, Koehlmoos TL, Rashid M, Peters DH, Anderson G. Noncommunicable chronic disease in Bangladesh: overview of existing programs and priorities going forward. Health Policy. 2011;100(2-3):282-9.
4. Gupta R, Joshi P, Mohan V, Reddy KS, Yusuf S. Epidemiology and causation of coronary heart disease and stroke in India. Heart 2008;94(1):16-26.
5. World Health Organization: Cardiovascular diseases 2014. Available at: https://www.who.int/nmh/ publications/ ncd_report_chapter1.pdf.
6. World Health Organization: Cardiovascular diseases, 2012. Available at: https://www.who. int/news-room/fact-sheets/detail/cardiovascular-diseases-(cvds). Accessed on 17 May 2017.
7. Pearson TA, Palaniappan LP, Artinian NT, Carnethon MR, Criqui MH, Daniels SR, et al. American Heart Association Guide for Improving Cardiovascular Health at the Community Level, 2013 update: a scientific statement for public health practitioners, healthcare providers, and health policy makers. Circulation. 2013;127(16):1730-53.
8. Becker MH, Maiman LA, Kirscht JP, Haefner DP, Drachman RH. The Health Belief Model and prediction of dietary compliance: a field experiment. J Health Soc Behav. 1977;18(4):348-66.
9. Ford ES, Jones DH. Cardiovascular health knowledge in the United States: findings from the National Health Interview Survey, 1985. Prev Med 1991;20(6):725-36.
10. McKinley S, Dracup K, Moser DK, Ball C, Yamasaki K, Kim CJ, et al. International comparison of factors associated with delay in presentation for AMI treatment. Eur J Cardiovasc Nurs 2004;3(3):225-30.
11. Sug Yoon S, Heller RF, Levi C, Wiggers J, Fitzgerald PE: Knowledge of stroke risk factors, warning symptoms, and treatment among an Australian urban population. Stroke. 2001;32:1926–30.
12. Jafary FH, Aslam F, Mahmud H, Waheed A, Shakir M, Afzal A, Qayyum MA, et al. Cardiovascular health knowledge and behavior in patient attendants at four tertiary care hospitals in Pakistan– a cause for concern. BMC Public Health. 2005;5:124.
13. Perk J, De Backer G, Gohlke H, Graham I, Reiner Z, Verschuren WM, et al. European Guidelines on cardiovascular disease prevention in clinical practice (version 2012). The Fifth Joint Task Force of the European Society of Cardiology and Other Societies on Cardiovascular Disease Prevention in Clinical Practice (constituted by representatives of nine societies and by invited experts). Eur J Prev Cardiol. 2012;19:585-667.
14. Al Hamarneh YN, Crealey GE, McElnay JC: Coronary heart disease: health knowledge and behaviour. Int J Clin Pharm. 2011;33:111-23.
15. Gill R, Chow CM. Knowledge of heart disease and stroke among cardiology inpatients and outpatients in a Canadian inner-city urban hospital. Can J Cardiol. 2010:26:537–40.
16. Mukattash TL, Shara M, Jarab AS, Al-Azzam SI, Almaaytah A, Al Hamarneh YN. Public knowledge and awareness of cardiovascular disease and its risk factors: a cross-sectional study of 1000 Jordanians. Int J Pharm Pract 2012;20:367–76.
17. Li YQ, Wright SC. Risk factors for cardiovascular disease in the Ga-Rankuwa community. Curationis 2007;30:79–87.
18. Awad A, Al-Nafisi H. Public knowledge of cardiovascular disease and its risk factors in Kuwait: a cross-sectional survey. BMC Public Health. 2014,14:1131.
19. Mukattash TL, Shara M, Jarab AS, Al-Azzam SI, Almaaytah A, Al Hamarneh YN: Public knowledge and awareness of cardiovascular disease and its risk factors: a cross-sectional study of 1000 Jordanians. Int J Pharm Pract. 2012;20:367–76.
20. Li YQ, Wright SC. Risk factors for cardiovascular disease in the Ga-Rankuwa community. Curationis 2007;30:79–87.

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