

## Original Research Article

### Patterns of Coronary Heart Disease Respondents in a Tertiary Care Hospital in Bangladesh

#### ABSTRACT

**Background:** Coronary heart disease (CHD) is considered as the major leading cause of death which poses serious health problems in Bangladesh. Besides other neighboring countries, the prevalence of coronary heart disease (CHD) is also rising among the population in Bangladesh. Pre conception of the pattern of coronary heart disease respondents may be helpful in the management of such respondents. But in Bangladesh we have not enough research-oriented information regarding this issue. **Aim of the study:** The aim of this study was to assess the patterns of coronary heart disease respondents in a tertiary care hospital in Bangladesh. **Methods:** This was a prospective cross sectional descriptive study and was conducted during the period from 1<sup>st</sup> September 2017 to 28<sup>th</sup> February 2018 in Sylhet MAG Osmani Medical College Hospital, Sylhet, Bangladesh. In total 135 diagnosed coronary heart diseases cases, admitted indoor of the mentioned hospital and fulfilled the inclusion as well as exclusion criteria of this study were selected as the study subjects. All the demographic as well as clinical data were recorded. A predesigned questioner was used in data collection. All data were processed, analyzed and disseminated by using MS Excel and SPSS version 23 program as per need. **Results:** In this study, among total 135 participants, the male-female ratio was 1.7:1. The mean  $\pm$  SD age of the respondents was 52.01  $\pm$  6.91 years. In total, 57% of the respondents were with normal BMI and the mean  $\pm$  SD body weight of them was 61.66  $\pm$  8.83 Kg. As per the clinical diagnosis we observed that, 59% participants were with ACS and the rest 41% were with CSA. In 34.8% of the respondents, family history of cardiovascular diseases was found, Majority of our respondents (68.1%) were not currently smoker, 90.4% were physically inactive, only 2.2% of the respondents had the habit of alcohol intake. In this study, 68.1% of the respondents were with diabetes mellitus, 82.2% of the respondents with hypertension and 75.6% of our respondents were with dyslipidemia. **Conclusion:** Male peoples may be considered as the prone to coronary heart disease. Frequencies of younger CHD respondents may take attention of health professional as well as the policy makers. People's physical inactivity may be a cause of epidemic of several chronic diseases like cardiac diseases. Frequencies of hypertensive as well as diabetic cases among such respondents are also alarming.

**Keywords:** Heart disease, Coronary artery, Tertiary care, Cardiovascular.

#### INTRODUCTION

Coronary heart disease (CHD) is considered as the major leading cause of death which poses serious health problems in Bangladesh. The prevalence of CHD in Bangladesh has been reported to be 0.33% to 19.6% in different studies. Despite marked disparity in values, there seems to be a rising prevalence and mortality from CHD. A recent study from rural Bangladesh demonstrated a dramatic increase in CVD, and the age-standardized CVD mortality increased by 30-fold (from 16 deaths per 100,000 to 483 deaths per 100,000) among males and 47-fold (from 7 deaths per 100,000 to 330 deaths per 100,000) in females. Like CAD, hypertension is an increasingly important medical and public health problem in Bangladesh. Coronary heart disease (CHD) is responsible for 75% of the deaths occurring in developing countries like Bangladesh (Bangladesh Bureau of Statistics 2018) [1]. The most common coronary heart diseases that prevail at present are ischemic heart disease, peripheral vascular disease, cerebrovascular disease (stroke), heart failure, congenital heart disease, rheumatic heart disease, and acute myeloid leukaemia [2]. In Bangladesh, cardiovascular diseases, diabetes, COPD, and cancers have already become major health problems [3]. STEPS Survey 2010 found that 54% of them used tobacco in some form, <1% consumed alcohol within the past 30 days, 92% did not consume adequate fruit and vegetables, and 35% had low physical activity level. About 17% percent were overweight, 21% had abdominal obesity and 21% people had hypertension [4]. SDG (Sustainable Development Goal) 3.4 is the most important goal that by 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being. CVDs and its associated known risk factors account for 13.4% of disability adjusted life years (DALYs) lost in Bangladesh [5]. The major CVD risk factors such as abnormal glucose metabolism, high blood pressure, dyslipidemia, smoking, along with increasing age are well established. Obesity constitutes major risks for CVDs both directly (through underlying insulin resistance and inflammatory changes) and indirectly (Through the effect on other immediate risk factors like T2DM, dyslipidemia and HTN). Decades of observational studies have consistently associated socioeconomic factors such as higher education with decreased risk of CHD. The major objective of this study was to assess the pattern of coronary heart disease respondents treated in a tertiary care hospital in Bangladesh.

## METHODOLOGY

This was a cross sectional descriptive study which was conducted during the period from 1<sup>st</sup> September 2017 to 28<sup>th</sup> February 2018 in Sylhet MAG Osmani Medical College Hospital, Sylhet, Bangladesh. A total of 135 respondents were selected purposively from the mentioned hospital. This study protocol and the intervention was approved by the ethical committee of the same hospital. The whole intervention was conducted in accordance with the principles of human research specified in the Helsinki Declaration [6] and executed in compliance with currently applicable regulations and the provisions of the General Data Protection Regulation (GDPR) [7].

### Inclusion criteria:

- All atherosclerotic CHD respondents who fulfilled their diagnostic criteria.
- Cases between the age of 40 and 60 years.
- Irrespective of the sex.

### Exclusion criteria:

- Non-atherosclerotic CHD respondents.

After taking informed consent from all the participants, we measured height, weight, waist and hip circumference of the participants. Recording all the data, we filled up the predesigned questionnaire. Data were collected by both qualitative and quantitative method by using semi-structured questionnaire developed for the study by face-to-face interview. To ensure reliability and validity of data, 5% data were recollected and compared with the previous data randomly within 72 hours. Data were analyzed by SPSS version 20.0. Descriptive statistics were used to describe the data i.e. mean and standard deviation for quantitative variables, frequency and percentage for qualitative variables by chi-square test. P value of <0.05 was considered as significant. The result was presented in tables and figures. The chi-square test was done according to application at 5% level of significant.

## RESULTS

In this study, among total 135 participants, 63.7% were male whereas the rest 36.3% were female. So male participants were dominating in number and the male-female ratio was 1.7:1. All the respondents were ranging from 40 to 60 years of age. The mean age of the respondents was  $52.01 \pm 6.91$  years. In this study, 57% of the respondents were with normal BMI, 30.4% were overweight, 7.4% were obese and the rest 5.2% were underweight. The mean body weight of the respondents was  $61.66 \pm 8.83$  Kg. As per the clinical diagnosis, among total participants we observed that, 59% were with acute coronary syndrome (ACS) whereas the rest 41% were with chronic stable angina (CSA). In this study, in 34.8% of the respondents, family history of cardiovascular diseases was found. Majority of our respondents (68.1%) were not currently smoker. Only 9.6% of the respondents were physically active and rest of the respondents were physically inactive. Majority of our respondents (97.8%) had not the habit of alcohol intake; only 2.2% of the respondents had that habit. In this study, 68.1% of the respondents were with diabetes mellitus. In this study, there were 82.2% of the respondents with hypertension. Moreover, we found that, 75.6% of our respondents were with dyslipidemia.

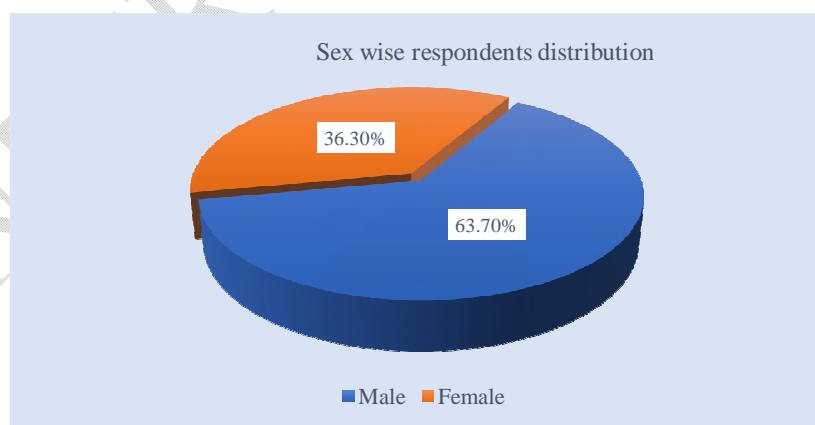


Figure 1: Pie chart showed sex distribution of the respondents (N=135)

Table 1: Age distribution of the Respondents (N=135)

Age in Years	n	%
40-44 Yrs.	34	25.2

45-49 Yrs.	24	17.8
50-55 Yrs.	23	17
56-60 Yrs.	54	40

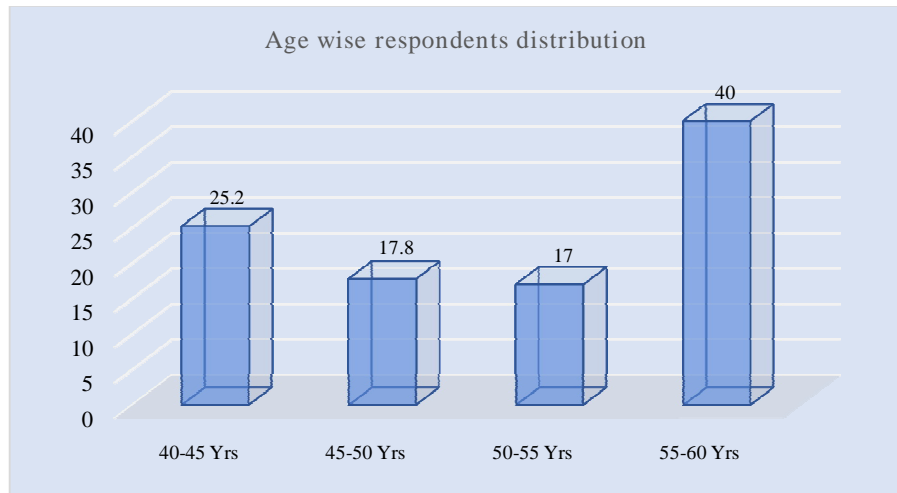


Figure II: Bar chart showed age distribution of the respondents. (N=135)

**Table 2:** BMI distribution of the respondents. (N=135)

BMI of the respondents	n	%
<18.5 (Underweight)	7	5.2
18.5-24.9 (Normal)	77	57
25-29.9 (Overweight)	41	30.4
>30 (Obese)	10	7.4

**Table 3:** Family history of cardiovascular diseases among respondents. (N=135)

Family history	n	%
Yes	47	34.8
No	88	65.2

**Table 4:** Distribution of currently smoking status among respondents. (N=135)

Current smoking status	n	%
Yes	20	14.8
No	92	68.1
Sometimes	23	17

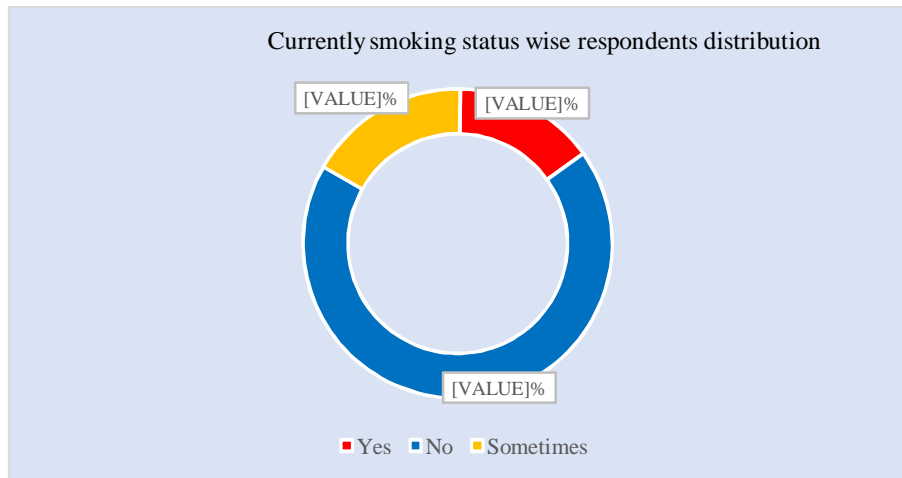


Figure III: Ring chart showed currently smoking status of the respondents (N=135)

Table 5: Distribution of the respondents by physical activity. (N=135)

Physical activity	n	%
Physically inactive	122	90.4
Physically active	13	9.6

Table 6: Distribution of the respondents by alcohol intake. (N=135)

Alcohol intake	n	%
Yes	3	2.2
No	132	97.8

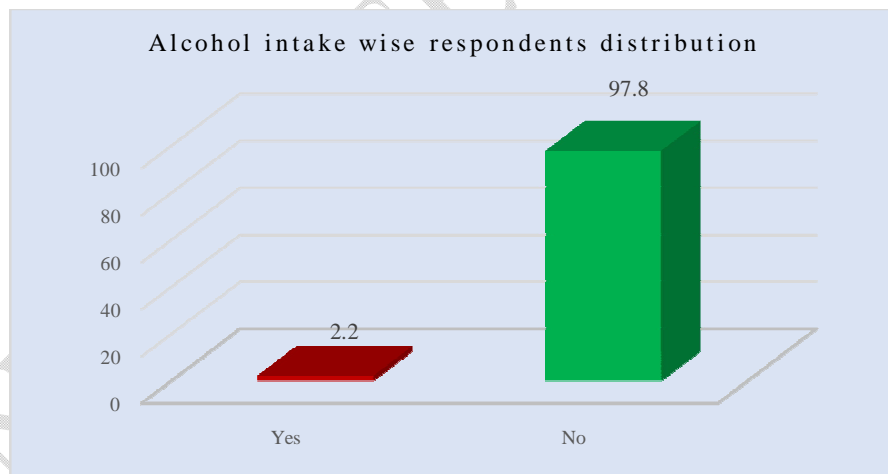


Figure IV: Bar chart showed alcohol intake wise respondents distribution (N=135)

Table 7: Distribution of diabetes mellitus among respondents. (N=135)

Diabetes mellitus	n	%
Yes	43	31.9
No	92	68.1

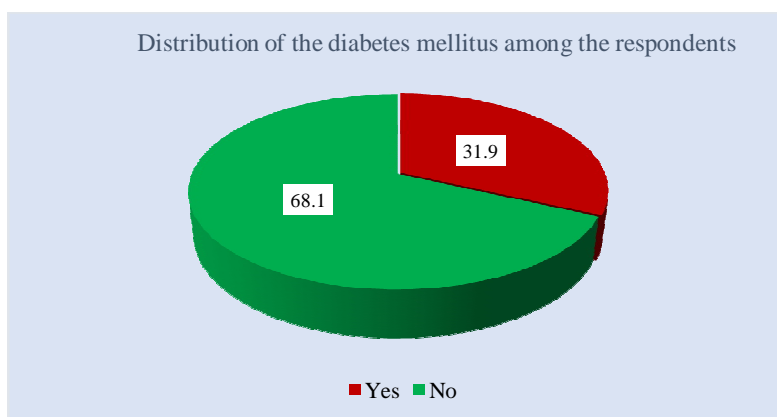


Figure V: Column chart showed diabetes mellitus status among the respondents. (N=135)

Table 8: Distribution of hypertension among respondents. (N=135)

Hypertension	n	%
Yes	111	82.2
No	24	17.8

Table 9: Distribution of dyslipidemia among respondents. (N=135)

Dyslipidemia	n	%
Yes	102	75.6
No	33	24.4

## DISCUSSION

This cross sectional type of descriptive study provided us information about pattern of coronary artery disease and its relation to their socio-economic characteristics. Among total 135 participants, about 58.5% were with acute coronary syndrome (ACS) and rest 41.5% were with chronic stable angina (CSA). About more than half (63.7%) of the respondents were male and 36.3% were female. Similarly, in another study, [8] majorities (85.8%) of the respondents were from >40 year's age group and among them 74.4% were male. All the respondents were ranging from 40 to 60 years of age. The mean± SD age of the respondents was 52.01±6.91 years. In another study, the respondents who were younger than 60 years contributed 39.2% of the study population [9]. Regarding residence status of the participants, it was found that, 66.48% respondents were from rural areas and 33.52% were from urban areas. In a community-based study, the prevalence of prehypertension and hypertension accounted for 32% and 16%, respectively, among adults in rural Bangladesh [10]. Majority of the respondents (65.2%) were with the positive family history of cardiovascular diseases, 34.8% were with negative family history of cardiovascular diseases. Majority of the respondents (68.1%) were not current smokers, 17% sometimes smoked and 14.8% were current smokers (mean± SD duration was 19.62±10.33 years). About 90.4% of the respondents were physically inactive, 9.6% active. Majority of the respondents (97.8%) were free from alcohol intake, 2.2% were with the habit of alcohol intake. Bangladesh ranks the highest among the South Asian countries in respect of physical inactivity [11]. In another study, 77.4% of the respondents were either ever smoked or consumed smokeless tobacco and it was higher in male respondents than female respondents (81.5% vs. 73.5%, p<0.001) [12]. Among the South Asian countries, Bangladesh ranks the highest in respect of physical inactivity [13]. A large number of the respondents (68.1%) were with diabetes mellitus, 82.2% were with hypertension, and 75.6% were with dyslipidemia. As regards risk factors for CHD, advancing age, diabetes, hypertension, family history of CHD and high ACR are very consistent with other studies. Interestingly, smoking habit, general obesity (High BMI), central obesity (High WHR), dyslipidemia (High cholesterol, TG, low HDL) and extremes of social class were found not significantly related to CHD. Why these known risk factors are not related to CHD in the study populations not clear. Possibly, the study population was neither obese (mean BMI±SD:19.4±2.9; WHR: 0.84±0.07) nor dyslipidemia (95% CI: cholesterol, 121-129, TG, 105-117) and not exceeding the thresholds of obesity or dyslipidemia for developing CHD. Among the coronary heart disease, 74.7% had ischemic heart disease, 6% had coronary artery disease, 5.1% had valvular disease and 14.2% had other heart disease. Among the respondents of IHD, 38.8% had anterior MI, 38.4% had unstable

angina and 19.4% had old MI. Among the respondents of coronary artery disease, majority (66.7%) had right coronary artery disease and most common valvular disease was aortic stenosis (55.6%) followed by mitral regurgitation (38.9%). Among the other heart diseases, 28% was LVF, 22.0% heart blocks, 22.0% DCM, 14% ICM, 10% VSD and 2% ASD. None of these variables showed any significant association with CHD in another study [14]. In another study, most (56.9%) of the respondents were hypertensive, 95.4% had up to 200 mg/dl as total cholesterol level [15]. Consequently, these risk factors were found not contributing to atherosclerosis. All the findings of this study may be helpful in the treatment arena of CHD and in further similar studies.

#### LIMITATION OF THE STUDY

This was a single centered study with small sized samples. Moreover, the study was conducted at a very short period of time. So, the findings of this study may not reflect the exact scenario of the whole country.

#### CONCLUSION & RECOMMENDATION

Male peoples may be considered as the prone to coronary heart disease. Frequencies of younger CHD respondents may take attention of health professional as well as the policy makers. People's physical inactivity may be a cause of epidemic of several chronic diseases like cardiac diseases. Frequencies of hypertensive as well as diabetic cases among such respondents are also alarming. For getting more specific results we would like to recommend for conducting similar more studies in several places with larger sized samples.

#### REFERENCES

- [1] Bangladesh Bureau of Statistics (2018). Available at: <http://www.bbs.gov.bd/>.
- [2] Kabiruzzaman M, Malik F, Ahmed N, Badiuzzaman M, Choudhury S, Haque T, Rahman H, Ahmed M, Banik D, Khan M, Dutta A, Sayeed S, Khandaker R and Malik A (2010). Burden of heart failure respondents in a tertiary level cardiac hospital. *Journal of Bangladesh College of Physicians and Surgeons*, 28(1): 24-29.
- [3] World Health Organization. Health Profile of Bangladesh. WHO Bangladesh, 2003. Available from: [http://www.who.org/country/health\\_profile.html](http://www.who.org/country/health_profile.html). [Last accessed on 2010 Oct 22].
- [4] Zaman M, Rahman M, Rahman M, Bhuiyan M, Karim M, Chowdhury M. Prevalence of risk factors for non-communicable diseases in Bangladesh: Results from STEPS survey 2010. *Indian Journal of Public Health*. 2016;60(1):17.
- [5] El-Saharty S, Ahsan KZ, Koehlmoos TL, Engelgau MM. Tackling Non Communicable Diseases in Bangladesh: Now is the Time: Direction in Development. Washington, DC: World Bank; 10.1596/978-0-8213-9920-0 License: Creative Commons Attribution CC BY 3.0. World Bank Publications; 2013. 1-13 p.
- [6] World Medical Association. (2001). World Medical Association Declaration of Helsinki. Ethical principles for medical research involving human subjects. *Bulletin of the World Health Organization*, 79(4), 373-374. World Health Organization. <https://apps.who.int/iris/handle/10665/268312>.
- [7] Voigt, Paul, and Axel von dem Bussche. "Enforcement and fines under the GDPR." *The EU General Data Protection Regulation (GDPR)*. Springer, Cham, 2017. 201-217.
- [8] Awal, A., et al. "Pattern of Coronary Heart Disease Among the Admitted Respondents in Cardiology Department and Itsrelation to Their Socio-Demographic Characteristics." *Journal of Bio-Science* (2021): 59-68.
- [9] Altaleb, Fatimah Fahad, et al. "Pattern and factors associated with cardiovascular diseases among respondents attending the cardiac center in Arar City, Northern Saudi Arabia." *Electronic physician* 9.10 (2017): 5459.
- [10] Khanam MA, Lindeboom W, Razzaque A, Niessen L and Milton AH (2015). Prevalence and determinants of pre- hypertension and hypertension among the adults in rural Bangladesh: findings from a community-based study. *BMC Public Health*, 15: 203.
- [11] Ng N, Hakimi M, Minh HV, Juvekar S, Razzaque A, Ashraf A, Ahmed SM, Kanungsukkasem U, Soonthornthada K and Bich TH (2009). Prevalence of physical inactivity in nine rural INDEPTH Health and Demographic Surveillance Systems in five Asian countries, *Global Health Action*, 2: 1.
- [12] Khanam F, Hossain B, Mistry SK, Afsana K and Rahman M (2019). Prevalence and Risk Factors of Cardiovascular Diseases among Bangladeshi Adults: Findings from a Cross-sectional Study. *Journal of Epidemiology and Global Health*, 9(3): 176-184.
- [13] Ng N, Hakimi M, Minh HV, Juvekar S, Razzaque A, Ashraf A, Ahmed SM, Kanungsukkasem U, Soonthornthada K and Bich TH (2009). Prevalence of physical inactivity in nine rural INDEPTH Health and Demographic Surveillance Systems in five Asian countries, *Global Health Action*, 2: 1.
- [14] Awal, A., et al. "Pattern of Coronary Heart Disease Among the Admitted Respondents in Cardiology Department and Itsrelation to Their Socio-Demographic Characteristics." *Journal of Bio-Science* (2021): 59-68.

- [15] Haque MJ, Awal MA and Akhter MP (2017). Circadian variation in the onset of acute MI and some selected characteristics of respondents attending at Cardiology Department of Rajshahi Medical College Hospital. J Universe Med. Coll., 1(1): 9-13.

UNDER PEER REVIEW