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Original Article

The impact of heart disease risk factors on the age of 30 to 80 Years Old Patients- Residing in and around Khulna district of Bangladesh

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ABSTRACT

Objectives: The present study aimed to evaluate the Impact of heart disease risk factors on the age of 30 −80 years' old patients-residing in and around Khulna District of Bangladesh. Data collection took place in April, 2017 to October, 2017.

Methods: The research was characterized by questionnaires on the basis of gender, age, BMI, physical activity, working pattern, family history, fast food consumption, smoking habit and Total cholesterol test. The population sample consisted of 240 patients were selected randomly for collection of data who were diagnosis by heart disease. Measurements were made of blood cholesterol, blood pressure and anthropometric measurements. Data were analyzed statistically.

Results: Outcomes of 240 patients (188 males, 52 females). Risk factors were 78% males found more vulnerable to HD than 22% females because their consumption of fast food, overweight, obesity, physical inactivity and life style. 85.60% male and 65.40% female respondents have hypertensive and male are more affected than female. The majority (40.4%) of females worked 8 h/day compared to 33.5% of their male counterparts. And 18.6% male maintain regularity on walk where female maintain regularity 11.5%. About 45.2% of males consume fast food everyday compared to 32.7% of females. Males (53.2%) had high total cholesterol compared to 42.3% of females.

Conclusion: This population of male and female presented the Impact of Heart Disease Risk Factors in all ages, being necessary the implementation of measures that stimulate changes in the daily habits and improve health conditions.

1. Introduction

Heart disease is now the most common cause of death worldwide; it is on the rise and has become a true pandemic that respects no borders [13]. Unlike developing countries, Bangladesh is also experiencing an epidemiological transition from infectious, communicable diseases to chronic, non-communicable diseases (NCDs) like cardiovascular diseases, diabetes, cancer, chronic respiratory diseases, and injury [10]. According to WHO the most important behavioral risk factors of HDs are unhealthy diet, physical inactivity. These risk factors are responsible for about 80% of HD and cerebrovascular disease (WHO, 2011) [10]. The inverse relation between physical activity and HD remains controversial. However, whether the association between physical activity and HD is independent of other cardiovascular risk factors is debatable [1]. HD is now on the increase in Bangladesh, possibly due to the changing lifestyle, increasing body weight and working pattern [9]. Overweight and obesity are well-known risk factors for HD in the general population. Although overweight and obesity are associated with an increased risk of cardiovascular disease (CVD), higher levels of physical activity are associated with a decreased risk of CVD [3]. Bangladeshi people, like other south Asians, have high susceptibility to ischemic heart disease (IHD) but population-based data are lacking in Bangladesh. A prevalence of 3.4% was recorded in rural population with traditional lifestyle and thin body mass index [15].

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1.1. Risk factors for HD

It is well known that heart disease is the leading cause of mortality in the western societies. A number of risk factors such as family history, diabetes, hypertension, and obesity, smoking and physical inactivity are responsible for a significant proportion of the overall cardiovascular risk. Interestingly, recent data suggest there is a gradient in the incidence, morbidity and mortality of cardiovascular disease across the spectrum of socioeconomic status, as this is defined by educational level, occupation or income. Additionally, dietary mediators seem to play significant role in the pathogenesis of cardiovascular disease, mediating some of the discrepancies in atherosclerosis among different socioeconomic layers [12].

The risk of heart attack is greater in men than in women, and men have heart attacks earlier in life than women, Social history or Race. Including cultural identity, ethnicity, socioeconomic status and mental health [7]. HD is a multi-factorial condition, resulting from the convergence of genetics, environment, diet, and lifestyle. Recognized risk factors for the development of ischemic heart disease include family history, high blood pressure, smoking, elevated low-density lipoprotein (LDL) cholesterol, diabetes, physical inactivity, and obesity. There are two types of risk factors for heart disease, these are: Modifiable risk factors (those we can treat or control) include: Cigarette Smoking and exposure to tobacco smoke, High Blood pressure, Unhealthy cholesterol levels—high total cholesterol, low HDL cholesterol, high LDL (bad) cholesterol (Especially high LDL or "bad" cholesterol over 100 mg/dl) and low HDL or "good" cholesterol under (40 mg/dL or < 1 mmol/l in males &< 1.3 mmol/l or 50 mg/dl in females), raised triglyceride level (>2.0 mmol/l or 180 mg/dl): Triglyceride levels - Triglycerides are a type of fat that is packaged with cholesterol when the lipoproteins form in the liver cells. Triglycerides are stored in fat all over the body and can be an energy source, like carbohydrates. Our cholesterol Lower is better. Less than 150 mg/dL is best., Uncontrolled diabetes, Poor Nutrition (low consumption of fruit and vegetables), Physical inactivity or Lack of exercise, Alcohol intake or Drinking too much alcohol, Obesity, Depression, Accumulation of abdominal fat, Uncontrolled stress or anger [17]. Non-modifiable risk factors (those that cannot be changed) include: Increasing age (especially after age 65), Family history of premature HD, Gender. Therefore, in the present article, we aim to review the impact of heart disease risk factors on the age of 30–80 years old patients-residing in and around Khulna district of Bangladesh.

2. Methods

Study Type: This study is Descriptive cross sectional study.

Sampling Technique: Inclusion/Exclusion criteria: The widest possible range of studies that met the inclusion criteria was included; as it has been argued that excluding studies on the grounds of 'poor quality' introduces the most important source of bias into qualitative reviews [5,6]. So, I collect data from those participants who have heart disease. They are not included in my research work who have no heart disease.

Place of Study: Cardiac Hospital in Khulna city, Bangladesh.

Study Period: April, 2017 to October, 2017.

Study Population: The data were collected a total number of 240 patients with aged upto 30 years and older with a diagnosis of first incident acute HD in reputed cardiac hospitals in Khulna city.

2.1. Sources of data

There are two sources of data collection. Primary source includes the field where the incidence occurs. Through face-to-face interaction, data were collected. Here primary sources are respondents. Secondary source is such a data, which is supplied by some institution. For conducting the study, secondary data were collected from different sources, which are as following-Relevant books and journal, relevant thesis, Relevant articles from website.

Data collection: Data were collected by face to face Interview method, by using questionnaires and for each questionnaire needed at least ≈15 min. I collected data on nutritional status, history of physical activity, family history of HD disease and life style. Next, the data on anthropometry includes height and weight. Height was measured to the nearest 0.1 cm with a standard anthropometer and weight to the nearest 0.1 kg with a portable weighing machine and light clothing with no shoes. The body mass index (BMI), to estimate overall obesity, overweight, normal and malnourished was calculated by dividing body-weight in kilograms by height in metres squared (kg/m^2). A body mass index ≥30 kg/m^2 was considered overweight.

Data on the age, and physical activity of each individual were also collected. Physical activity was classified into three levels. Low/sedentary activity referred to people involved in office work, research, teaching, business and land ownership; medium activity was attributed to dual jobs and land owners involved in agriculture work; and high activity referred to farmers actively involved in the field and in agriculture labours. **Laboratory measurements:** Total cholesterol levels were estimated using standard protocols [1,8].

2.2. Data processing and statistical analysis

The data was exported into Statistical Package for Social Sciences (IBM SPSS Statistics) version 20 for further analysis along with the biochemical measurements. Descriptive statistics were computed on the data and the mean and standard deviation were used to describe continuous data while frequencies were used to describe categorical data.

3. Results

This chapter indicates data analysis of different age group of Heart disease patients based on genders, BMI, physical activity, fast food consumption, patient's occupation, family history of HD, smoking, in Khulna city of Bangladesh.

Fig. 1 shows that between 50-59 years old male and female were mostly affected by Heart disease. So from this result it is clear that older age is a risk factor of heart disease both male and female (see Fig. 2).

Above the curve shows that, the amount of male respondents' affected by overweight is larger than female respondents. The relationship links excess body weight with Heart disease both indirectly as an independent risk factor for the established biomedical risk factors and directly as an independent risk factor for Heart disease [2]. Obesity is significantly associated with increased risk of future Heart disease [11,14]. From our survey report it is shown that 56.40% male respondents have overweight where female were 53.80% (see Fig. 3).

Below this figure we illustrates that, among 240 respondents, 62.20% male and 65.40% female respondents gain HD from family where 37.80% male and 34.60% female respondents did not gain this disease from family. In this curve, we can say that the family history is often responsible to affect HD (see Fig. 4).

This chart shows that 85.60% male and 65.40% female respondents have hypertensive and male are more affected than female and it is clear that hypertensive is a risk factor for heart disease.

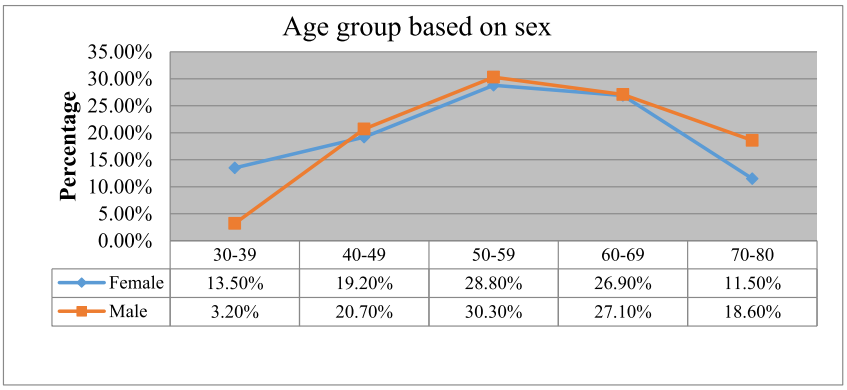

Fig. 1. Different age group based on Sex.
Source: Field Survey (2017).

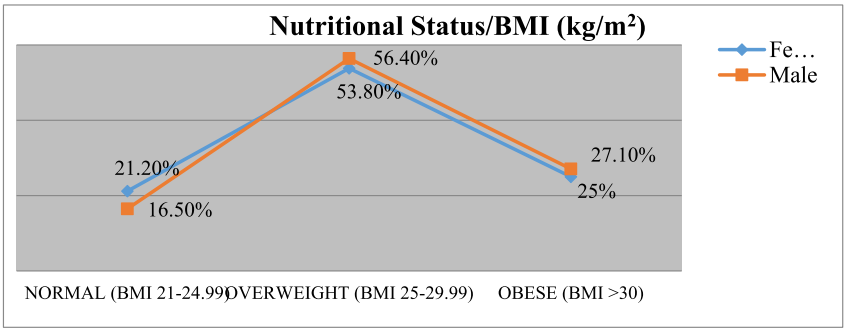

Fig. 2. Prevalence of obesity and overweight between male and female participants.
Source: Field Survey (2017).

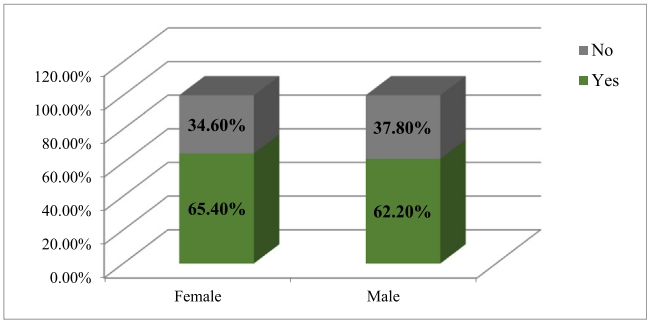

Fig. 3. Family History of the respondents.
Source: Field Survey (2017).

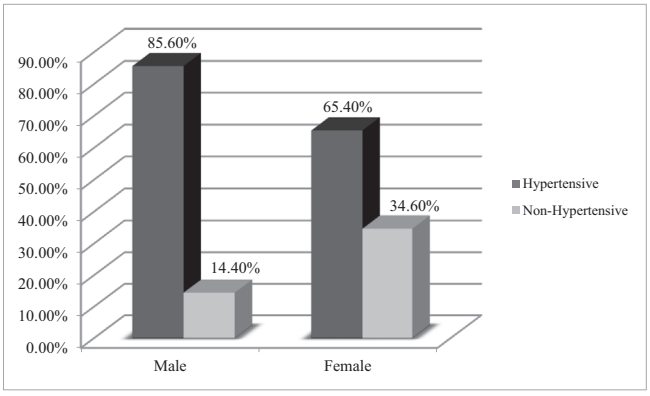

Fig. 4. Hypertension based on gender.
Source: Field Survey (2017).

Table 1 illustrates Respondent's occupation based on gender. Among the total number of respondent's, only 6.4% male were do heavy work and where female Respondents were totally absent so for the causes of heart disease low physical activity is responsible and act as a risk factor for heart disease. PIA (physical activity level) is an important contributor to heart disease. Cardiovascular benefits of regular physical activity include reduced blood pressure, weight control, reduced waist circumference all of which help to reduce the risk of developing heart disease [16].

Table 2 provides the socio-demographic characteristics of males and females. The majority (40.4%) of females worked 8 h/day compared to 33.5% of their male counterparts. And 18.6% male maintain regularity on walk where female maintain regularity 11.5%.

About 45.2% of males consume fast food everyday compared to 32.7% of females. In addition, only 3.8% of females consume fast food once a week compared to 3.7% of their male counterparts. About 35.1% of males have to take fast food 3 times a week while 36.5% of females have to take fast food 3 times a week (Table 3).

Table 4 provides the distribution of non-communicable disease risk factors between males and females. In addition, Males (53.2%) had high total cholesterol compared to 42.3% of females. At total of 26.9% of females were alcohol drinkers compared to 71.3% of males. In addition, 27.1% of males were smokers where females were 100% of Non smoker.

Table 1
Presence of HD based on PAL.

Respondent's occupation	Gender				Total No
	Total no	Male %	Total no	Female %	
Low/Sedentary work (Housewife, Retired)	38	20.2	37	71.2	75
Moderate/Medium work (office work, research, teaching, business and land ownership dual jobs and land owners involved in agriculture work)	138	73.4	15	28.8	153
Heavy work (Day labor, farmers actively involved in the field and in agriculture labours)	12	6.4	_	_	12
Total	188	100	52	100	240

Source: Field Survey (2017).

Table 2
Demographic characteristics of male and female participants.

Working hours		
	Males (n = 188) %	Females (n = 52) %
6 h/day	43 (22.9)	18 (34.6)
7 h/day	13 (6.9)	4 (7.7)
8 h/day	63 (33.5)	21 (40.4)
>8 h	50 (26.6)	1 (1.9)
Other	19 (10.1)	8 (15.4)
Regularity Maintain on Walk		
Yes	35 (18.6)	6 (11.5)
No	134 (71.3)	37 (71.2)
Sometimes	19 (10.1)	9 (17.3)

Source: Field Survey (2017).

Table 3
Differences in fast food consumption.

Frequency of Consumption fast food		
	Males n (%)	Females n (%)
Everyday	85 (45.2)	17 (32.7)
Once a week	7 (3.7)	2 (3.8)
Twice a week	20 (10.6)	6 (11.5)
3 times a week	66 (35.1)	19 (36.5)
Once a month	3 (1.6)	2 (3.8)
Twice a month	4 (2.1)	2 (3.8)
More than twice a month	3 (1.6)	4 (7.7)

Source: Field Survey (2017).

Table 4
Risk factors in male and female participants residing in and around Khulna district n (%).

T-Cholesterol (mg/dl)		
Variables	Males (n = 188) %	Females (n = 52) %
Desirable (<200 mg/dl)	13 (6.9)	4 (7.7)
High (200–240 mg/dl)	100 (53.2)	22 (42.3)
not done	75 (39.9)	26 (50.0)
Smoking status		
Non-smokers	137 (72.9)	52 (100.0)
Smokers	51 (27.1)	_
Alcohol consumption		
Non-drinkers	54 (28.7)	38 (73.1)
Drinkers	134 (71.3)	14 (26.9)

Source: Field Survey (2017).

4. Discussion

From this article we can state that between 50-59 years old male and female were mostly affected by heart disease and it is clear to know that older age is a risk factor of heart disease both male and female. The amount of male respondents' affected by overweight is larger than female respondents. The relationship links excess body weight with Heart disease both indirectly as an independent risk factor for the established biomedical risk factors and directly as an independent risk factor for Heart disease [2]. Obesity is significantly associated with increased risk of future Heart disease [11,14]. From our survey report it is shown that 56.40% male respondents have overweight where female were 53.80%. We illustrates that, among 240 respondents, 62.20% male and 65.40% female respondents gain HD from family where 37.80% male and 34.60% female respondents did not gain this disease from family. We can say that the family history is often responsible to affect HD. 85.60% male and 65.40% female respondents have hypertensive and male are more affected than female and it is clear that hypertensive is a risk factor for heart disease. Among the total number of respondent's, only 6.4% male were do heavy work and where female Respondents were totally absent so for the causes of heart disease low physical activity is responsible and act as a risk factor for heart disease. PIA (physical activity level) is an important contributor to heart disease. Cardiovascular benefits of regular physical activity include reduced blood pressure, weight control, reduced waist circumference all of which help to reduce the risk of developing heart disease [16]. The majority (40.4%) of females worked 8 h/day compared to 33.5% of their male counterparts. And 18.6% male maintain regularity on walk where female maintain regularity 11.5%. About 45.2% of males consume fast food everyday compared to 32.7% of females. In addition, only 3.8% of females consume fast food once a week compared to 3.7% of their male counterparts. About 35.1% of males have to take fast food 3 times a week while 36.5% of females have to take fast food 3 times a week (Table 3). Table 4 provides the distribution of non-communicable disease risk factors between males and females. In addition, Males (53.2%) had high total cholesterol compared to 42.3% of females. At total of 26.9% of females were alcohol drinkers compared to 71.3% of males. In addition, 27.1% of males were smokers where females were 100% of Non smoker. So, finally it is clearly known that there risk factors are responsible the impact of heart disease.

5. Conclusion

It is well known that heart disease is the leading cause of mortality in the western societies. HD prevention in Asia is an important issue for the world health because half of the world's population is living in Asia [4]. For analysis of HD, from our research demonstrates that overweight, obesity, previous family history of cardiac diseases, and sedentary life style are the influential risk factors of heart disease. The aim of this study is to give an update of the present knowledge in heart disease consequences of obesity, overweight, physical activity for all kinds of people in this world. So, we have concluded that increasing body weight, physical inactivity, unhealthy eating habits, and poor lifestyle has an impact on Heart disease. This population of male and female presented the impacts

of risk factors on heart disease in all ages, being necessary the implementation of measures that stimulate changes in the daily habits and improve health conditions.

Conflicts of interest

The authors hereby declare that they have no financial or non-financial potential conflicts of interest.

Authors' contribution

KNL, TAS - participated in experiments, study design, manuscript preparation. KNL, TAS - carried out the study design, participated in experiments, manuscript preparation, and statistical analysis. They Supervising and directing the project. KNL -checked the grammatical mistakes and corrected the final manuscript. All authors read and approved the final version of the manuscript. The authors thank the staff and participants of the study for their important contributions.

List of Abbreviations

BMI	Body Mass Index
CVD	Cardiovascular Disease
CV	Cardiovascular
FFQs	Food-Frequency Questionnaires
HD	Heart Disease
HF	Heart Failure
HTN	Hypertension
IHD	Ischemic heart disease
NCDs	Non-Communicable Diseases
PIA	Physical inactivity
SPSS	Statistical Package for Social Scientist
T-Cholesterol	Total Cholesterol
WHO	World Health Organization

Appendix A. Supplementary data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.dsx.2018.07.011.

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