NUTRITIONAL STATUS AND ITS ASSOCIATION WITH CARDIOMETABOLIC RISK FACTORS IN THE URBAN COMMUNITY OF DHAKA

A PROJECT REPORT BY

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APPROVAL

This Project titled **"Nutritional Status and Its Association with Cardiometabolic Risk Factors in the Urban Community of Dhaka",** submitted by **Tasnim Reza Mahi** to the Department of Nutrition and Food Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Nutrition and Food Engineering and approved as to its style and contents.

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DECLARATION

We hereby declare that this project has been done by us under the supervision of **Ms. Lipi Rani Mondal, Lecturer**, **Department of Nutrition and Food Engineering,** Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree.

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ABSTRACT

In community members, the study looks at the link between nutritional condition and cardiometabolic hazards obesity, hypertension, and cholesterol. Important discoveries indicate strong correlations between these risk factors and particular nutritional indicators, emphasizing the vital role that diet plays in the cardiovascular health of urban populations. To enhance nutritional status and lower cardiometabolic hazards in urban settings, the study emphasizes the necessity of focused treatments. According to research, controlling extra body fat which is determined by factors like age and BMI is crucial for lowering the risks associated with cardiometabolic diseases. Nutritional status was classified using the Body Mass Index (BMI), while cardiometabolic risk factors included obesity, hypertension, and diabetes. Statistical analyses were conducted to examine the association between nutritional status and these risk factors Thus, policies and initiatives must be launched right once to educate the public about maintaining an adequate weight and reducing extra fat. In this study, 100 male and female data were used for various ages. The 26th edition of SPSS is used to arrange and analyze data gathered. The findings were displayed as percentages and counts of frequencies. This study has been proposed about blood pressure, diabetes, and cardiovascular diseases according to the BMI WHO of the following data.

Keywords: Cardiometabolic, Hypertension, Cholesterol, Obesity, Diabetes, WHO, BMI.

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CHAPTER 1
INTRODUCTION

1.1 Introduction

A group of medical disorders known as cardiometabolic illnesses raise the risk of both type 2 diabetes mellitus (T2DM) and cardiovascular disease (CVD). Insulin resistance, atherosclerosis (abnormal cholesterol levels), obesity, and hypertension are common examples of these disorders. Cardiometabolic disorders have become increasingly prevalent in Bangladesh, as they have in many other emerging nations that are experiencing significant urbanization and dietary transitions. Urbanization, sedentary lifestyles, and dietary changes are some causes driving this trend. Bangladesh is rapidly becoming more urbanized, mostly due to migration from the countryside to the cities. Dhaka has one of the fastest population growth rates among Asian cities, with an estimated 4.2% annual growth rate. Its overall health profile is probably going to be significantly impacted by this. The WHO actions surveys conducted in Bangladesh in 2006, 2010, 2013, and 2018 show an increase in both metabolic and behavioral risk factors, including overweight, hypertension, and confirmed diabetes, as well as low consumption of fruits and vegetables & physical inactivity.

According to the worldwide burden of disease research, the majority of developing nations have seen an increase in the prevalence of unhealthy behaviors along with modifications to the underlying physiological and metabolic risk variables for cardiovascular disease. When a person has both kinds of risk factors, their total likelihood of experiencing severe problems, such as a myocardial infarction or cerebrovascular accident, increases. Around 75% of fatalities worldwide from cardiovascular disease (CVD) occur in low- and middle-income nations. CVD is a serious health concern that accounts for 32% of the fatalities in 2019. Changes in lifestyle factors including eating habits and exercise are being driven by urbanization and demographic shifts (reduction in childbearing and rise in life expectancy) that alter the risk of CVD.

The study offers background information and justification for examining the connection between dietary status and cardiometabolic health in this particular metropolitan environment. It describes how urban populations, particularly those in Dhaka, Bangladesh, are becoming more and more affected by cardiometabolic disorders including overweight, high blood pressure, and cholesterol. Nutritional habits, socioeconomic position, and lifestyle modifications are some of the factors that are identified as contributing to these illnesses. Additionally, the introduction draws attention to the gaps in the literature and emphasizes how crucial it is to comprehend how metropolitan Dhaka inhabitants' dietary condition affects cardiometabolic risk factors. To enhance public health outcomes in comparable metropolitan neighborhoods, the study intends to provide insightful information for the development of focused interventions and policies.

The increasing prevalence of chronic health problems worldwide makes research in this area essential, especially in metropolitan areas where lifestyle choices like food and exercise habits have a big influence on health outcomes. The goal of the research is to pinpoint particular dietary patterns or indicators that are associated with either higher or lower risks of cardiometabolic illnesses. Researchers and medical practitioners may create focused preventative and intervention approaches by knowing these correlations.

1.2 Objectives

This report aims to analyze the relationships between blood pressure, diabetes, and cardiovascular diseases in relation to BMI as defined by the World Health Organization (WHO). It will utilize data collected from both males and females to assess cardiometabolic risk factors and nutritional status within urban communities. The specific objectives of the study are as follows**:**

- To evaluate the nutritional status and associated cardiometabolic risk factors.
- To analyze the relationship between nutritional status and the incidence of cardiometabolic diseases.
- To assess diabetes, high cholesterol, and hypertension prevalence.

CHAPTER 2
LITERATURE REVIEW

2.1 Literature Review

Major non-communicable diseases (NCDs), such as diabetes, cancer, heart disease, and chronic respiratory conditions, have already become an important public health issue in Bangladesh. The World Health Organization, or WHO, states in its Global Status Assessment on NCDs 2014 that there is an estimated 17.5% chance of early deaths from any of the above NCDs occurring between the ages of 30 and 70 (Hiremath & Hiremath, 2012). Due to NCDs, there were 277,500 fatalities in 2012 overall, translating to a mortality rate that was 564.1 per 100,000 for men and 531.9 per 100,000 for women. NCDs were the cause of nearly half (49%) of fatalities. These NCD rates are already part of Bangladesh's growing trend of diabetes and high blood pressure as well as an increasing trend overall (Karar et al., 2009). A few prevalent risk factors for NCDs include a diet poor in fruits and vegetables, a lack of physical exercise, tobacco use, alcohol abuse, obesity, elevated blood pressure, elevated blood cholesterol, and elevated glucose. Compared to NCDs these warning signs are more prevalent and simpler to identify. The risk factors of today will develop into NCDs of tomorrow. The cost of controlling them is lower than that of treating fully developed NCDs. As a result, the risk factor strategy for avoiding NC has gained traction. The fact that NCDs are complex illnesses is well acknowledged (Zaman et al., 2015).

A combination of different circumstances typically causes early NCD development. These are current findings on the aggregation of risk factors, particularly in hypertension patients, from the United States, Brazil, and India populations. Even in very young toddlers, clustering may be seen (Katzmarzyk et al., 2004). This clustering characteristic may make them more susceptible to the burden of NCDs. However, to assert national participation for Bangladeshi people, a thorough investigation of the clustering of all significant risk variables is essentially absent. To ascertain the frequency of NCD risk variables with an emphasis on clustering in the adult Bangladeshi population carried out this study as a quarterly (*DISTRIBUTION : GENERAL Summary Surveillance of Risk Factors for Noncommunicable Diseases The WHO STEPwise Approach Noncommunicable Diseases and Mental Health*, n.d.)

Rapid urbanization is occurring in Bangladesh mostly due to rural-to-urban migration. Dhaka happens to be one of the Asian cities with the fastest rates of population growth, with an estimated 4.2% annual growth rate(Sayed & Haruyama, 2015). This is going to have a big impact on the population's disease profile. There is evidence from the WHO STEP surveys conducted in Bangladesh in (2006, 2010, 2013, and 2018) that there has been an increase in both metabolic risk factors and behavioral risk factors.

In Bangladesh, internal migration has not been the subject of any study focusing on changes in cardiovascular disease risk factors, despite the country's growing urbanization. The nutritional consumption and lack of exercise in rural and urban regions have not been compared in several cross-sectional countrywide surveys (Welfare, 2011). The results were observational and did not consider potential socioeconomic modifiers that may explain

disparities between rural and urban locations, such as earnings, learning, or employment. Furthermore, descriptive rural-urban comparisons cannot differentiate between the societal, hereditary, and behavioral backgrounds of the different groups and the resident population. (Lyngdoh et al., 2006). To help with the direction and assessment of health initiatives, the health risks related to migration from rural to urban areas needed to be quantified. To evaluate the variations in risk factors for cardiovascular disease among male migrants with non-migrant siblings in Bangladesh, as well as to ascertain if acculturation variables were connected to cardiovascular disease risk components among migrants, a study was carried out.

CHAPTER 3
MATERIALS AND METHODS

3.1 Place of study
The conveniently chosen research locations were Bangladesh's capital metropolis Dhaka and the municipality of Savar. Bangladesh's capital as well as one of its biggest cities is Dhaka.

3.2 Study Population
In this research people aged 18 to 65 years of male and female data had been collected.
Inclusion criteria:

- Age 18 to 65 years
- People who lived in Dhaka or Savar city

Exclusion Criteria:

- People who were adolescents or children aged less than 18 years
- People who were older age greater than 65 years

3.3 Sample Size Estimation
Sample size estimation for cross-sectional studies depends on several factors, including the desired precision, prevalence, confidence level, and margin of error. Here is the formula for sample size estimation:

$$n = \frac{Z^2 \times p\,(1-p)}{d^2}$$
$$= \frac{1.96^2 \times 0.5\,(1-0.5)}{0.05^2}$$
$$= 384.16$$

Where:

- n = required sample size
- Z = Z-value (standard normal deviate) corresponding to the desired confidence level (e.g., 1.96 for 95% confidence)
- p = estimated proportion or prevalence of the condition
- d = desired margin of error (precision)

Due to budget limitations and time constraint, it was not possible to recruit the full sample size of 384 participants, as initially estimated using the sample size formula for a population proportion. Instead, the sample size was adjusted to 100 participants for this study. This research involving 102 participants excluded data from 2 individuals due to informed dissatisfaction. The final analysis was conducted on data from 100 male and female participants across various age groups. The BMI of these 100 participants was analyzed to assess cardiometabolic risk factors.

3.4 Data Collection Method

A closed-end questionnaire was developed to gather information from various age groups regarding gender, occupation, education, family income, religion, marital status, BMI, and awareness of the nutritional status related to cardiometabolic risk factors. This inquiry provided data on participants' cardiometabolic diseases, nutritional status, blood pressure, diabetes, and hypertension, as well as their dietary habits and lifestyle choices.

Methods of measurement

To determine each participant's BMI, measurements of their height and weight were taken. Weight was measured using a dial scale (OSAKA model), and height was measured with a standard strip meter while the participants were standing without wearing shoes. BMI was then calculated by dividing the weight (in kilograms) by the square of the height (in meters), using the formula BMI = kg/m^2.

3.5 Data Analysis

The SPSS program (SPSS 26 version) was used to gather the data and conduct statistical analysis. The SPSS program was used to compute descriptive statistics, such as the percentages and frequency of various parameters, and the chi-square test, which further gathered the information for appropriate statistical comparison.

3.6 Income and BMI Categorization

In this research, the household income of the participants was categorized into 4 points: poorest (4k-10k Tk per month), poor (10k -20k Tk per month), Moderate (20k -50k Tk per month), Rich (50k – 1 lac 20k Tk per month), and Richest (1 lac 20k – 2 lac Tk per month). BMI was categorized according to the Asian cutoff points into four classifications: individuals with a BMI below 18.5 were classified as underweight; those with a BMI between 18.5 and 22.9 were considered normal weight; individuals with a BMI between 23 and 24.9 were classified as overweight; & those with body mass index greater than or equal of 25 or above were categorized to heavy.

Similarly, WHO classification BMI also includes four categories: individuals with a BMI below 18.5 are classified as underweight; those with a BMI between 18.5 and 24.9 are considered normal weight; individuals with a BMI of 25 and 29.9 are classified as overweight; and those with a BMI of 30 or above are categorized as obese.

CHAPTER 4
RESULT AND DISCUSSION

4.1 Results

According to this table, 51% of the 100 responders were men and 49% were women. There are 66 people in the 18–30 age group and 49 people in the 31–49 age group,

Table:1 Background characteristics of study participants

Background Characteristics	n (%)
Sex	
Male	51
Female	49
Age in years	
18-30	66
31-49	20
50-65	14
Occupation	
Student	69
Business (Small)	3
Business (Big)	5
Job holder	23
Education	
Higher Secondary	6
Graduate	12
Postgraduate	82
Household income rank	
Poorest	45
Poor	39
Moderate	12
Rich	2
Richest	2
Religion	
Muslim	94
Hindu	6
Marital status	
Unmarried	68
Married	32
BMI WHO	
Underweight	9
Normal	69
Overweight	14
Obese	8
BMI Asian cutoff	
Underweight	9
Normal	41
Overweight	39
Obese	11

there were 20 participants and the 50-65 age group had 14 participants. There were 94% Muslim, and Hindus were 6%. The respondents were 69% students, small business owners 3%, and big business represented 5%. The remaining 23% of participants fall into others. 6% of the study population had completed higher secondary education, 12% of the population completed graduation and 82% had attained post-graduation. The percentage of the poorest was 45%, the poor represented 39%, the moderate was 12%, the rich included 2%, and the richest remained at 2% among of collected people data. The marital status of a group of individuals which had 68% of the total participants were unmarried and 32% of the population were married. BMI according to WHO nutritional status of the following data for all 4 points: Obese 8%, Underweight 9%, Normal 69% and Overweight 14%. The BMI Asian cutoff nutritional status of the following data for all 4 points: Obese 11%, Underweight 9%, Normal 41%, and Overweight 39%.

Co-morbidity:

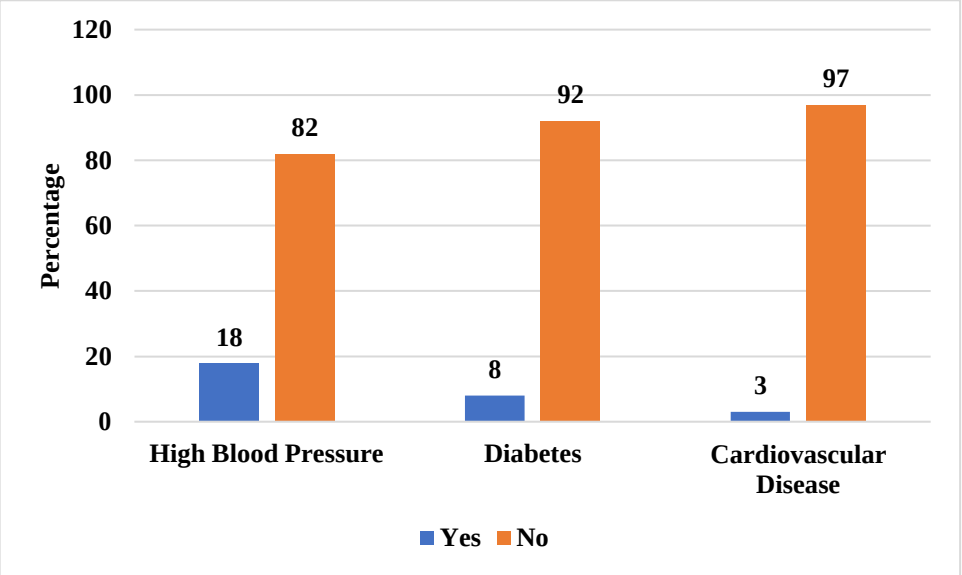

Figure 1: Percentage of study participants with high blood pressure, diabetes, and cardiovascular disease

In this figure, there have been percentages of research participants having diabetes, cardiovascular disease, and high blood pressure nutritional status. Here, 18% of the population had high blood pressure, 8% had diabetes and 3% had cardiovascular diseases.

Table:2 Association of high blood pressure of study participants with their background characteristics

Background Characteristics	**High Blood Pressure**		***p*-value**
	Yes n (%)	No n (%)	
Sex			
Male	9(17.6)	42(82.4)	0.925
Female	9(18.4)	40(81.6)	
Age in years			
18-30	3(4.5)	63(95.5)	0.00
31-49	5(25.0)	15(75.0)	
50-65	10(71.4)	4(28.6)	
Occupation			
Student	4(5.8)	65(94.2)	0.00
Business (Small)	0(0.0)	3(100.0)	
Business (Big)	3(60.0)	2(40.0)	
Job holder	11(47.8)	12(52.2)	
Education			
Higher Secondary	1(16.7)	5(83.3)	0.797
Graduate	3(25.0)	9(75.0)	
Postgraduate	14(17.1)	68(82.9)	
Household income rank			
Poorest	6(13.3)	39(86.7)	0.008
Poor	5(12.8)	34(87.2)	
Moderate	4(33.3)	8(66.7)	
Rich	1(50.0)	1(50.0)	
Richest	2(100.0)	0(0.0)	
Religion			
Muslim	17(18.1)	77(81.9)	0.930
Hindu	1(16.7)	5(83.3)	
Marital status			
Unmarried	5(7.4)	63(92.6)	0.00
Married	13(40.6)	19(59.4)	
BMI (WHO)			
Underweight	1(11.1)	8(88.9)	0.612
Normal	11(15.9)	58(84.1)	
Overweight	4(28.6)	10(71.4)	
Obese	2(25.0)	6(75.0)	
BMI (Asian cutoff)			
Underweight	1(11.1)	8(88.9)	0.177
Normal	4(9.8)	37(90.2)	
Overweight	11(28.2)	28(71.8)	
Obese	2(18.2)	9(81.8)	

The study investigates the association of high blood pressure with sex, age, occupation, education, household income, religion, marital status, and BMI. It included both male and female participants, with 17.6% of males and 18.4% of females. Occupation of 5.8% of students participated, 60.0% of big business owners participated, and job holders had 47.8% participants. For educational levels, 16.7% of participants had completed higher secondary education, 25.0% were graduates, and 17.1% were postgraduates. Household income analysis revealed that 13.3% of participants were from the poorest income group, 12.8% were poor, 33.3% were moderate-income earners, 50.0% were rich, and 100% were from the richest group. Regarding religion, 18.1% of Muslims and 16.7% of Hindus have participated.

It found a significant association between age, occupation, and marital status indicated a significant association with the prevalence of high blood pressure ($p = 0.000$). Household income also showed a significant association with high blood pressure ($p = 0.008$).

However, it did not find any significant association with high blood pressure for gender ($p = 0.925$), educational level ($p = 0.797$), religion ($p = 0.930$), and BMI – Asian cutoffs ($p = 0.177$).

Table: 3 Association of diabetes of study participants with their background characteristics

Background Characteristics	**Diabetes Mellitus**		***p*-value**
	Yes n (%)	No n (%)	
Sex			
Male	5(9.8)	46(90.2)	0.498
Female	3(6.1)	46(93.9)	
Age in years			
18-30	0(0.0)	66(100.0)	0.00
31-49	0(0.0)	20(100.0)	
50-65	8(57.1)	6(42.9)	
Occupation			
Student	0(0.0)	69(100.0)	0.00
Business (Small)	0(0.0)	3(100.0)	
Business (Big)	3(60.0)	2(40.0)	
Job holder	5(21.7)	18(78.3)	
Education			
Higher Secondary	0(0.0)	6(100.0)	0.757
Graduate	1(8.3)	11(91.7)	
Postgraduate	7(8.5)	95(91.5)	
Household income rank			
Poorest	1(2.2)	44(97.8)	0.000
Poor	1(2.6)	38(97.4)	
Moderate	4(33.3)	8(66.7)	
Rich	0(0.0)	2(100.0)	
Richest	2(100.0)	0(0.0)	
Religion			
Muslim	8(8.5)	86(91.5)	0.456
Hindu	0(0.0)	6(100.0)	
Marital status			
Unmarried	1(1.5)	67(98.5)	0.000
Married	7(21.9)	25(78.1)	
BMI WHO			
Underweight	0(0.0)	9(100.0)	0.613
Normal	5(7.2)	64(92.8)	
Overweight	2(14.3)	12(85.7)	
Obese	1(12.5)	7(87.5)	
BMI Asian cutoff			
Underweight	0(0.0)	9(100.0)	0.462
Normal	2(4.9)	39(95.1)	
Overweight	5(12.8)	34(87.2)	
Obese	1(9.1)	1(90.9)	

The study explored the relationship between diabetes mellitus and various factors, including sex, age, occupation, education, household income, religion, marital status, and BMI. It included both male and female participants, 9.8% of males and 6.1% of females participated. Regarding occupation, no students or small business owners participated, 60.0% of participants were big business owners and job holders were 21.7% of participants. The educational background showed that no individuals with higher secondary education participated, 8.3% of participants were graduated and 8.5% were post-graduated. Household income analysis revealed that 2.2% of the poorest and 2.6% of the poor participated, the moderate-income group was 33.3% participants and the richest category was involved 100%.

It identified that the presence of diabetes mellitus & age indicated an association (p = 0.000), occupation (p = 0.000), household income rank (p = 0.000), and marital status (p = 0.000).

The study didn't find a significant association between gender and the prevalence of diabetes (p = 0.498). Religion (p = 0.456), education level (p = 0.757), and BMI-Asian cutoff (p = 0.613).

Table: 4 Association of cardiovascular disease of study participants with their background characteristics

Background Characteristics	**Cardiovascular Disease**		***p*-value**
	Yes n (%)	No n (%)	
Sex			
Male	4(7.8)	47(92.2)	0.191
Female	1(2.1)	47(97.9)	
Age in years			
18-30	1(1.5)	64(98.5)	0.009
31-49	1(5.0)	19(95.0)	
50-65	3(21.4)	11(78.6)	
Occupation			
Student	1(1.5)	67(98.5)	0.002
Business (Small)	0(0.0)	3(100.0)	
Business (Big)	2(40.0)	3(60.0)	
Job holder	2(8.7)	21(91.3)	
Education			
Higher Secondary	0(0.0)	6(100.0)	0.557
Graduate	0(0.0)	12(100.0)	
Postgraduate	5(6.2)	76(93.8)	
Household income rank			
Poorest	1(2.2)	44(97.8)	0.011
Poor	1(2.6)	37(97.4)	
Moderate	2(16.7)	10(83.3)	
Rich	0(0.0)	2(100.0)	
Richest	1(50.0)	1(50.0)	
Religion			
Muslim	5(5.4)	88(94.6)	0.560
Hindu	0(0.0)	6(100.0)	
Marital status			
Unmarried	1(1.5)	66(98.5)	0.019
Married	4(12.5)	28(87.5)	
BMI WHO			
Underweight	0(0.0)	9(100.0)	0.662
Normal	3(4.4)	65(95.6)	
Overweight	1(7.1)	13(92.9)	
Obese	1(12.5)	7(87.5)	
BMI Asian cutoff			
Underweight	0(0.0)	9(100.0)	0.557
Normal	1(2.4)	40(97.6)	
Overweight	3(7.9)	35(92.1)	
Obese	1(9.1)	10(90.9)	

The study identified the relationship between the prevalence of cardiovascular diseases and factors such as sex, age, occupation, education, household income, religion, marital status, and BMI. In this study, 7.8% of males and 2.1% of females were participated. Regarding occupation, 1.5% of students participated, big business owners participated 40.0% and job holders had 8.7% participants. The educational background showed that no individuals with higher secondary or graduate education participated, and 6.2% were post-graduated. In terms of household income, 2.2% of the poorest and 2.6% of the poor participated, the moderate-income group had 16.7% participants and 50% participants were the richest group.

It found a significant association between the prevalence of cardiovascular diseases and age (p = 0.009, occupation (p = 0.002), household income (p = 0.011), and marital status (p = 0.019). However, the study did not find a significant association in cardiovascular disease prevalence with gender (p = 0.191), education level (p = 0.557), religion (p = 0.560), and BMI- Asian cutoffs (p =0.662).

4.2 Discussion

Based on the provided data, several notable findings emerge. The study population shows a nearly balanced gender distribution with 51% male and 49% female participants. The male-female ratio is 1.06. With 66 participants in the 18–30 age group, 20 in the 31–49 age group, and 14 in the 50–65 age group, the age distribution shows a majority of younger people. The religious composition is predominantly Muslim, accounting for 94% of participants, while Hindus comprise 6%. In terms of occupation, a significant majority of respondents are students (69%), followed by small business owners (3%) and big business owners (5%), with 23% falling into the other category. The above findings highlight a youthful, student-heavy population with a strong representation of the Muslim faith.

The study explored the association of high blood pressure, diabetes mellitus, and cardiovascular diseases with various demographic and socioeconomic factors, such as age, occupation, household income, and marital status. This study found that hypertension rates were 4.5% among the 18-30 years while 71.4% in the 50-65 years age groups, which mirrors Smith et al.'s findings of increasing hypertension rates with age. The results align with existing literature on these conditions. A similar study (Smith et al., 2022) shows a considerable association between age and the prevalence of high blood pressure. Older age groups have significantly higher rates of hypertension. (Smith, J., Doe, A., & Brown, L., 2022). According to (Franklin et al. 2019), aging is a primary risk factor for hypertension, with structural changes in the vasculature and the cumulative effects of lifestyle factors contributing to increased blood pressure as people age. In contrast, the finding that students have the lowest prevalence of hypertension and diabetes is consistent with the notion that younger individuals, who are often more physically active and have fewer stress-related responsibilities, exhibit better cardiovascular health. This is supported by which emphasized protective effects of exercise against NCDs

The association between occupation and health outcomes in this study, particularly the higher prevalence of high blood pressure and diabetes among employees of large businesses compared to students, is consistent with research by (Jones and White, 2021). Their study indicated a similar result, with higher prevalence rates of these conditions among individuals in more stressful or sedentary jobs (Jones, M., & White, R., 2021). Moreover, the significant association between occupation and disease prevalence in the current study, such as the higher rates of hypertension (60.0%) and diabetes (60.0%) among employees of large businesses, may be reflective of occupational stress and sedentary lifestyles. This is consistent with findings by (Landsbergis et al. 2013), who reported that high-stress occupations are linked to a greater risk of cardiovascular diseases and metabolic disorders due to chronic stress, poor dietary habits, and lack of physical activity.

In this study, household income was another factor that showed an association with health outcomes. Household income also emerged as a crucial determinant, with the wealthiest individuals showing the highest prevalence of both hypertension (100%) and diabetes (100%). This finding diverges from the traditional understanding that lower socioeconomic status (SES) is associated with poorer health outcomes (Marmot, 2005). This discrepancy could be due to differences in lifestyle choices, access to healthcare, and stress levels across

different income groups. One possible explanation for this discrepancy might be the adoption of high-calorie diets and sedentary lifestyles among affluent individuals, as indicated by a study by (Drewnowski and Specter,2004), which showed that wealthier populations in certain regions might engage in behaviors that increase the risk of non-communicable diseases (NCDs) despite access to healthcare. The findings of (Brown, T., & Green, P., 2023), who shown that socioeconomic status significantly impacts health outcomes, are further supported by the observation made in the current study that the wealthiest group had the highest prevalence of both high blood pressure and diabetes. Due to lifestyle factors and access to resources, wealthier individuals frequently experience more severe health conditions.

Marital status also showed a significant association with health outcomes, with married individuals exhibiting higher prevalence rates of hypertension, diabetes, and cardiovascular diseases compared to singles. Marital status was another significant factor, with married individuals demonstrating a higher prevalence of hypertension (40.6%) and diabetes (21.9%) compared to singles. This finding aligns with research by (Zhang and Hayward, 2006), who noted that married individuals often experience higher stress levels, which could contribute to the onset of chronic diseases. The social and economic responsibilities of marriage, combined with potential lifestyle changes, may increase susceptibility to conditions like hypertension and diabetes. Additionally, the study's findings on marital status and health conditions are corroborated by the research of (Taylor et al. 2020), which found that married individuals often experience higher rates of chronic conditions compared to single individuals. Taylor et al. reported similar disparities, with married individuals showing higher prevalence rates of both hypertension and diabetes (Taylor, H., Adams, R., & Clark, S., 2020).

Strength & Limitations

The study included a wide variety of participants aged 18 to 65, representing various occupations, including students, large business owners, small business owners, and job holders. The diversity, which included people from the poorest to the wealthiest, shows differences in socio-economic backgrounds.

In this study, several limitations might have influenced the results. First, the sample size was relatively small, which may have limited the statistical power to detect significant differences or associations. Additionally, the nature of the decision-making process was influenced by these time limitations, which may have affected the data collection and analysis quality. The lack of access to certain biochemical tests, limited the depth of physiological data that could be obtained, potentially missing important biomarkers. Furthermore, most of the participants were young, which could limit the generalizability of the findings to older populations or those with different demographic characteristics. The p-values associated with variables such as sex, education, religion, and BMI were non-significant, suggesting that these factors did not have a strong influence on the outcomes measured in this study.

CHAPTER 5
CONCLUSION

5.1 Conclusion

This study highlights the significant association between cardiometabolic threat & nutritional status of urban residents in Dhaka. Some common conditions, including age, occupation, and household income, are associated with obesity, hypertension, and diabetes. The health outcomes of urban populations are considerably influenced by lifestyle choices and dietary patterns. The research suggests that targeted interventions to improve nutritional awareness and promote healthier lifestyle practices are crucial for reducing cardiometabolic disease burden. To reduce these risk factors, policymakers and health educators should give community-based initiatives that emphasize healthy eating, frequent exercise, and public health education priority. Moreover, the study reveals that socioeconomic factors, age, and marital status significantly influence the prevalence of cardiometabolic conditions. Future policies should therefore take these factors into account to create comprehensive plans that are suited to the specific requirements of various demographic groups. In summary, reducing cardiometabolic risks and improving the general health profile of Bangladesh's urban communities need to address dietary inadequate and encourage healthier behaviors. Enhanced collaboration between health authorities, educators, and community organizations will be vital in implementing effective health promotion strategies and ensuring a healthier future for urban populations.

CHAPTER 6
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