

**Health Practices among Rural Adults Regarding Prevention  
of Hypertension**

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**A thesis submitted to the Department of Mathematics and Natural Sciences  
in partial fulfillment of the requirements for the degree of B.Sc. in  
Biotechnology**

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## **Declaration**

It is hereby declared that

1. The thesis was submitted as our own original work while completing degree at Brac University.
2. The thesis does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The thesis does not contain material that has been accepted or submitted for any other degree or diploma at a university or other institution.
4. We have acknowledged all main sources of help.

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## **Ethics statement**

In the study titled "Health Practices among Rural Adults Regarding Prevention of Hypertension," adherence to ethical guidelines established by Brac University. Consent is informed, voluntary, and can be revoked at any stage by participants, ensuring respect for individual autonomy is upheld. Beneficence and non-maleficence are prioritized, with risks being minimized and the confidentiality and privacy of participant data being protected. Equitable treatment of all participants is guaranteed, with measures put in place to ensure data is used exclusively for the intended research purposes.

## **Abstract**

Bangladesh is currently facing the epidemiological transition from communicable diseases to non-communicable diseases (NCDs). Rural people are more vulnerable due to their poor healthcare accessibility. Although hypertension (HTN) is preventable, the issue is not that emphasized in rural areas. The current study was conducted during the second half of 2023 among rural adults to assess the level of health practices along with their determinants regarding the prevention of HTN. It was a cross-sectional study among 355 participants selected through multi-stage sampling. Data were collected through face-to-face interviews using a semi-structured questionnaire developed based on the objectives. The mean age of the respondents was 41.5 years and more than two-thirds (66.8%) of the respondents were males. The majority (84.8%) of the respondents were Muslims. The average monthly family income was around 19000 Taka. The findings indicated a predominant lack of adequate knowledge, unfavorable attitudes, and poor health practices concerning hypertension prevention among the study population. Socioeconomic factors such as gender disparity, monthly family income and educational status, along with regional variations, significantly influenced health behaviors ( $p < 0.05$ ). Besides the background issues, knowledge, attitude, and self-control were found to be significantly associated with health practices regarding HTN prevention ( $p < 0.05$ ). The average score of practice regarding HTN prevention increased gradually with the level of knowledge and attitude. Policymakers should give more emphasis on community awareness to ensure healthy practices regarding HTN prevention.

**Keywords:** Hypertension prevention; health practices; rural adults

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## List of Abbreviation

CI	Confidence Interval
CKD	Chronic kidney disease
CVD	Cardiovascular Disease
DOHaD	Developmental Origin of Health and Disease
HSC	Higher Secondary Certificate
HTN	Hypertension
KAP	Knowledge attitude and practice
MOHFW	Ministry of Health and Family Welfare
NCDs	Non-communicable diseases
SPSS	Statistical Package for te Social Sciences
SSC	Secondary School Certificate
TPB	Theory of Planned Behavior
WHO	World Health Organization

## **Chapter 1: Introduction**














### **1.1. Background**



In order to comprehend the present epidemiological condition in Bangladesh, it is crucial to understand the worldwide patterns in public health and how they are associated with the country's particular circumstances. Over the past few decades, there has been a noticeable shift in the global burden of disease from communicable diseases to non-communicable diseases (NCDs)(Thakur and Paika 2023; Li et al. 2022). This transition is particularly pronounced in developing countries, including Bangladesh, where rapid socio-economic changes are altering health profiles significantly (Chowdhury et al. 2023). Bangladesh is currently facing the epidemiological transition from communicable diseases to NCDs(Hossain et al. 2021; Mondal et al. 2022).A study showed that various factors like rapid industrialization, urbanization, improved life expectancy, unhealthy diet and changes in other lifestyle factors have been suggested to bring the burden of CVDs, including HTN in Bangladesh by various studies(Khanam et al. 2019).Another study published in Clinical Hypertension, conducted a systematic review and meta-analysis to understand the prevalence of HTN in Bangladesh. This comprehensive analysis involved reviewing 720 studies and then narrowing down to 53 studies for final consideration. The study highlighted various aspects, such as the prevalence of HTN in different age groups, genders, and geographical locations. It found a notable difference in HTN prevalence between rural and urban areas, with a higher prevalence in urban settings. This study provides a detailed statistical analysis of HTN prevalence in Bangladesh, considering factors like age, gender, and geographical location(M. Chowdhury et al. 2020).Besides,a study published on BMC Public Health, focused on a cross-sectional survey to explore the prevalence of CVD and associated sociodemographic and lifestyle factors in Bangladesh. This study was conducted among 12,338 respondents aged 35 years and above, selected from rural areas and urban slums. It found that about 30% of participants had HTN, with significant associations with factors like diabetes, body mass index, extra salt intake, age, gender, and socioeconomic status. The prevalence of CVD in this study was found to be 4.5%, with a higher incidence among older populations, women, and high-income groups. This study underscores the importance of public health interventions to address the rising prevalence of CVD and its risk factors in Bangladesh (Moniruzzaman, Ahmed, and Zaman 2017). Urbanization, a key factor, often leads to lifestyle changes that increase the risk of developing NCDs. These changes include reduced physical activity due to sedentary jobs and urban living conditions, and increased

consumption of processed foods high in salt, sugar, and unhealthy fats (Colozza, Wang, and Avendaño 2023; Sun et al. 2023). Another significant aspect of this transition is the change in dietary habits (Wang et al. 2022). Globally, there has been a move away from traditional diets, which are typically rich in fruits, vegetables, and whole grains, towards more processed and high-calorie foods (Clemente-Suárez et al. 2023). This shift contributes to the rise in obesity, a major risk factor for various NCDs including HTN, heart disease, and diabetes (Hariharan et al. 2021). A study examining evidence from 173 countries from 1980 to 2008 explored the contribution of urbanization to NCDs. It focused on how urbanization influences key NCD risk factors like BMI, cholesterol, diabetes, and HTN (Goryakin, Rocco, and Suhreke 2017). A study investigated the decline of chronic and recurrent infections in Sub-Saharan Africa due to urbanization and its potential role in the origins of NCDs (Bickler et al. 2017). Research on urbanization and coronary heart disease risk factors in South Asian children highlighted how urbanization influences the health of younger populations (Agarwala et al. 2023). A qualitative study in Dhaka, Bangladesh, examined perceptions and behaviors related to NCDs among slum dwellers, focusing on the rapid urbanization in the city (Kabir, Karim, and Billah 2022). A global study from 1980 and 2008 looked at the associations of metabolic risk factors like BMI and diabetes with national income, urbanization, and Western diet (Danaei et al. 2013). Around the world various socio demographic, behavioral, genetic and biochemical factors have been studied to show significant relation with HTN (Zatońska et al. 2023; Cho et al. 2023). A study emphasizing the importance of tracking health conditions and risk behaviors related to chronic diseases, including HTN, underlines the significance of health promotion and disease prevention programs. It highlights obesity, physical inactivity, diabetes, HTN, tobacco use, and alcohol use as key risk factors for chronic diseases (Pickens et al. 2018). An analysis of CVD risk assessment guidelines underscores the role of screening and lifestyle interventions in managing HTN and CVD risk. This study reflects on the integration of age, sex, smoking, blood pressure, and lipid levels into CVD risk assessment using prediction models (Arnett et al. 2019). The Lancet Commission on HTN identifies key actions to improve blood pressure management at both the population and individual levels. It addresses the global burden of elevated blood pressure and HTN, emphasizing the importance of managing other CVD risk factors like smoking, obesity, dyslipidemia, and diabetes mellitus (Sharman et al. 2020; Padwal et al. 2019; Neupane et al. 2022). Research on blood pressure profiles and awareness and treatment of HTN in Europe points to HTN as a leading risk factor for mortality (O'Flynn et al. 2015; Oparil et al. 2018). It stresses the WHO and United Nations' global action plan for

preventing and controlling HTN, which includes monitoring national HTN prevalence as a key indicator (Gee et al. 2014; “First WHO Report Details Devastating Impact of HTN and Ways to Stop It,” n.d.). However World Health Organization (WHO) recognizes 4 major risk factors for the prevention of HTN from the WHO 4×4 model of NCD prevention (Schwartz, Shaffer, and Bukhman 2021).

## Visualizing NCDs Since 2008: 4 (diseases) x 4 (risk factors)

Noncommunicable Diseases 4 Diseases, 4 Modifiable Shared Risk Factors				
	Tobacco Use	Unhealthy diets	Physical Inactivity	Harmful Use of Alcohol
Cardio-vascular				
Diabetes				
Cancer				
Chronic Respiratory				

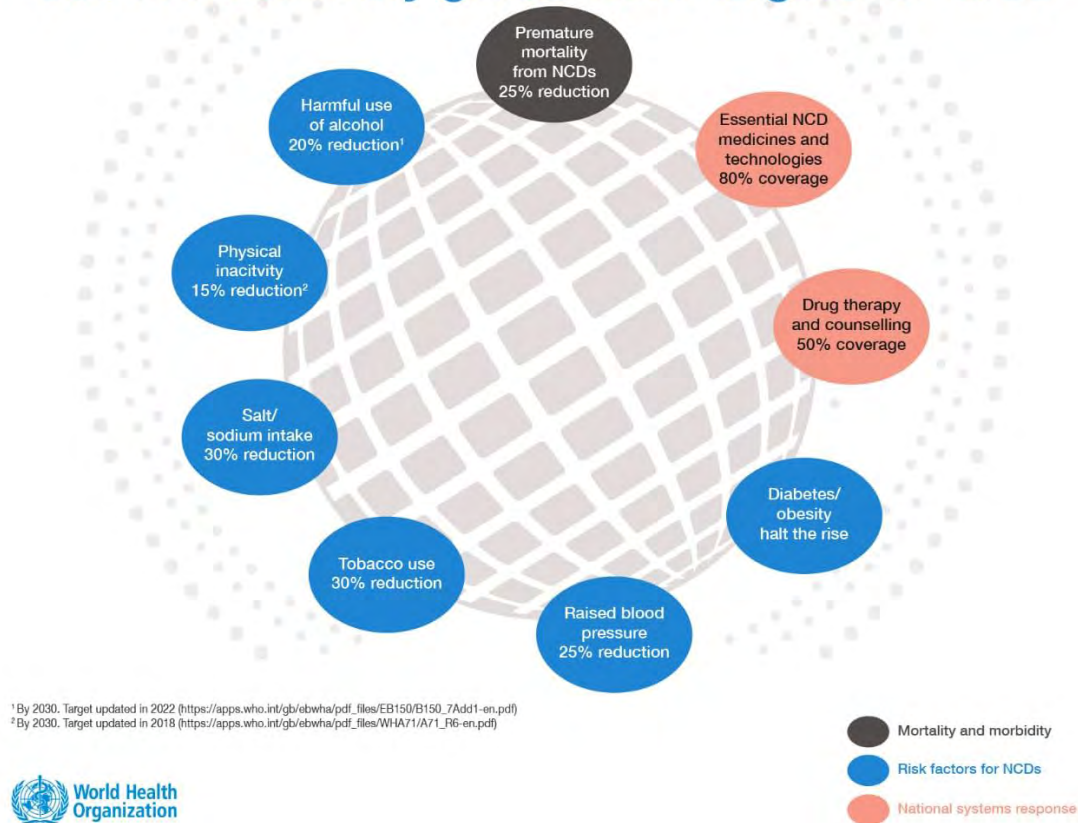
**Fig 1.1.1: WHO 4×4 model of NCD prevention (Schwartz, Shaffer, and Bukhman 2021)**

According to WHO, there are 4 major NCDs of global health concern, and they share four common modifiable risk factors- tobacco use, unhealthy diets, physical inactivity, and alcohol use, which are highly significant for prevention strategies (Budrevičiūtė et al. 2020). Controlling the modifiable risk factors, impact and burden of NCDs can be reduced to a drastic margin (“Reducing Modifiable Risk Factors for Noncommunicable Diseases,” n.d.; Gbadamosi and Tlou 2020). Tobacco accounts for 7.2 million deaths every year including the second-hand smoking (Ahluwalia et al. 2019), 4.1 million deaths every year are attributed to excess sodium/salt intake (“Noncommunicable Diseases | WHO | Regional Office for Africa” 2024), insufficient physical activity cause 1.6 million deaths annually (“Indicator Metadata

Registry Details,” n.d.) and more than 3.3 million annual deaths are attributed to alcohol use (Ramanan and Singh 2016). Studies around the world have found these risk factors strongly associated with the incidence of HTN (Shen et al. 2017; Kazi, El-Kashif, and Ahsan 2020; Pilakkadavath and Sherid 2016). According to WHO, most important way to control NCDs is by focusing on reduction of risk factors with an comprehensive approach requiring various sectors and addressing the impact of NCDs on individual and societal levels (Ganju et al. 2020).A study conducted among the Mishing tribes in Assam, India, using the WHO STEPs approach assessed the prevalence of NCD risk factors. The study found high levels of tobacco and alcohol use, unhealthy diet habits, and a significant prevalence of HTN, underscoring the need for integrated population-level and high-risk strategies to reduce these risk factors and improve HTN control(Kandpal, Sachdeva, and Saraswathy 2016).The HOPE 4 study, a community-based, cluster-randomized controlled trial, demonstrated that a comprehensive model of care led by non-physician health workers and involving primary care physicians and family support significantly improved blood pressure control and CVD risk. This study showed the effectiveness of a comprehensive and context-informed approach in managing HTN and reducing CVD risk (Schwalm et al. 2019). A report on chronic kidney disease (CKD) as a key determinant of poor health outcomes in major NCDs highlighted the importance of early detection and treatment of CKD to improve CVD and renal outcomes. This study emphasized the role of CKD in HTN management and its significant impact on reducing the overall burden of NCDs (Couser et al. 2011). Integrating approaches targeting CKD within NCD programs could minimize the need for renal replacement therapy and improve outcomes of diabetes and CVD , including HTN (Luyckx, Cherney, and Bello 2020; Li et al. 2020).



## Set of 9 voluntary global NCD targets for 2025



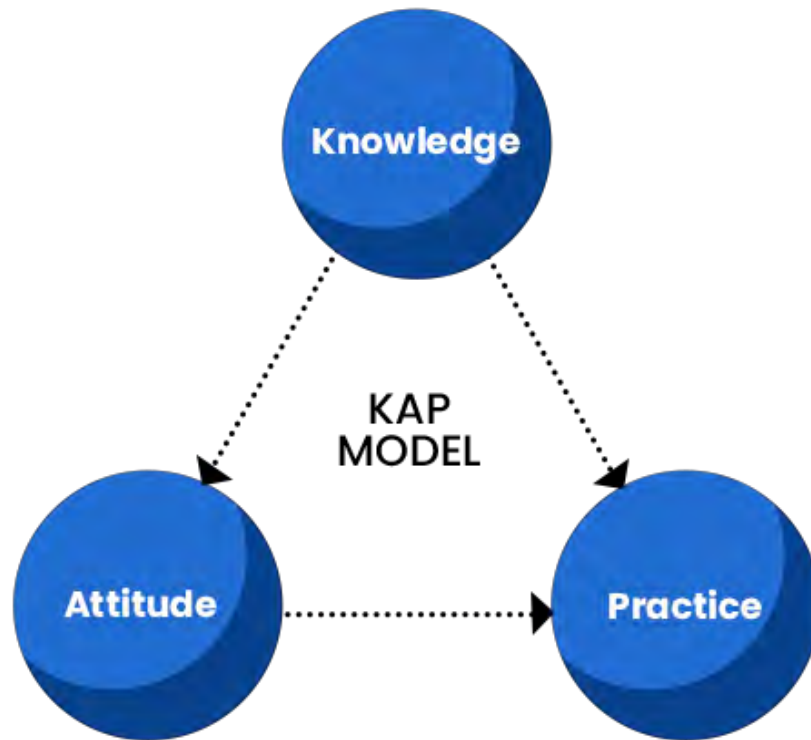
**Figure 1.1.2: Set of 9 Voluntary global NCD targets for 2025 (“9 Global Targets for Noncommunicable Diseases for 2025,” n.d.)**

NCDs are silent killers and may remain undetected and untreated during earlier days of incidence (–Chronic, Noncommunicable Diseases (NCDs): A Silent Scourge Threatening to Overwhelm Global Health - Fogarty International Center @ NIH,” n.d.) This is more prevalent in rural Bangladesh (Fottrell et al. 2018; Nujhat et al. 2020). In the context of Bangladesh, the transition to a greater burden of NCDs also highlights the disparities in healthcare access between urban and rural areas (Islam et al. 2023; Ali et al. 2022). Rural areas, where the majority of the Bangladeshi population resides, often lack the necessary healthcare infrastructure and resources to effectively manage and prevent NCDs (Kabir, Karim, and Billah 2022; Rasul et al. 2022). This gap in healthcare provision is a significant challenge in managing the rising incidence of HTN and other chronic diseases in these communities (Kabir, Karim, and Billah 2023); M. T. Islam, Bruce, and Alam 2023). A study conducted a cross-sectional survey on diabetes, HTN, and NCD risk factors in rural Bangladesh. It found variations in the prevalence of these conditions by age, sex, and wealth, highlighting the challenges of managing NCDs in rural settings due to socio-economic disparities. The study emphasized the immediate health threat posed by NCD risk factors,

hyperglycaemia, and raised blood pressure in rural Bangladesh, underscoring the need for improved detection, treatment, and prevention strategies (Kundu et al. 2022). A study investigated the prevalence of NCD risk factors with a focus on their clustering in Bangladeshi adults, including those from rural areas. The study found a high prevalence of risk factors such as tobacco use, inadequate fruit and vegetable consumption, and physical inactivity. The findings suggested that Bangladesh could expect a significant increase in NCDs in the near future, and the clustering of risk factors raised concerns about their compounded impact on health (Zaman et al. 2015). A study conducted a qualitative study among hypertensive women in rural Bangladesh to explore their understanding, management practices, and challenges related to HTN. The study found gaps in biomedical understanding of HTN, with many participants preferring home management and alternative treatments over medication adherence. It highlighted the impact of socio-economic conditions and gender-based negligence on HTN management behaviors, suggesting the need for comprehensive health education programs and interventions for hypertensive care in rural communities (Boitchi et al. 2021). However, by detecting the condition earlier the risks of heart attack, heart failure, stroke, and kidney failure can be minimized (“8 Things You Can Do to Prevent Heart Disease and Stroke” 2024). Self-care is an important component for prevention and management of NCDs through adherence to medication, healthy behaviour and better awareness to the risk factors and their consequences (Siddiqui et al. 2024). Self-care is more important to areas with limited access to health. Among various self-care strategies, two prominent studies stand out for their significant contributions to HTN prevention. Firstly, the DASH (Dietary Approaches to Stop Hypertension) eating plan revolutionized our understanding of dietary impact on blood pressure. This study effectively demonstrated how a diet rich in fruits, vegetables, whole grains, and low-fat dairy could significantly lower blood pressure, even surpassing conventional low-fat dietary recommendations. This proves the immense potential of dietary modifications, particularly in areas where access to medication might be restricted (Steinberg, Bennett, and Svetkey 2017). Secondly, the Finnish National High Blood Pressure Prevention Program shed light on the effectiveness of non-pharmacological interventions. This program compared lifestyle modifications, including dietary changes, increased physical activity, and smoking cessation, with traditional medical treatment. Interestingly, both approaches successfully reduced blood pressure and CVD risk. However, lifestyle intervention emerged as a more cost-effective option, even showing a slight edge in reducing stroke incidence. This signifies the potential of non-drug strategies as

sustainable and cost-effective approaches to HTN prevention, especially in resource-limited settings (Dhungana, Pedišić, and De Courten 2022).

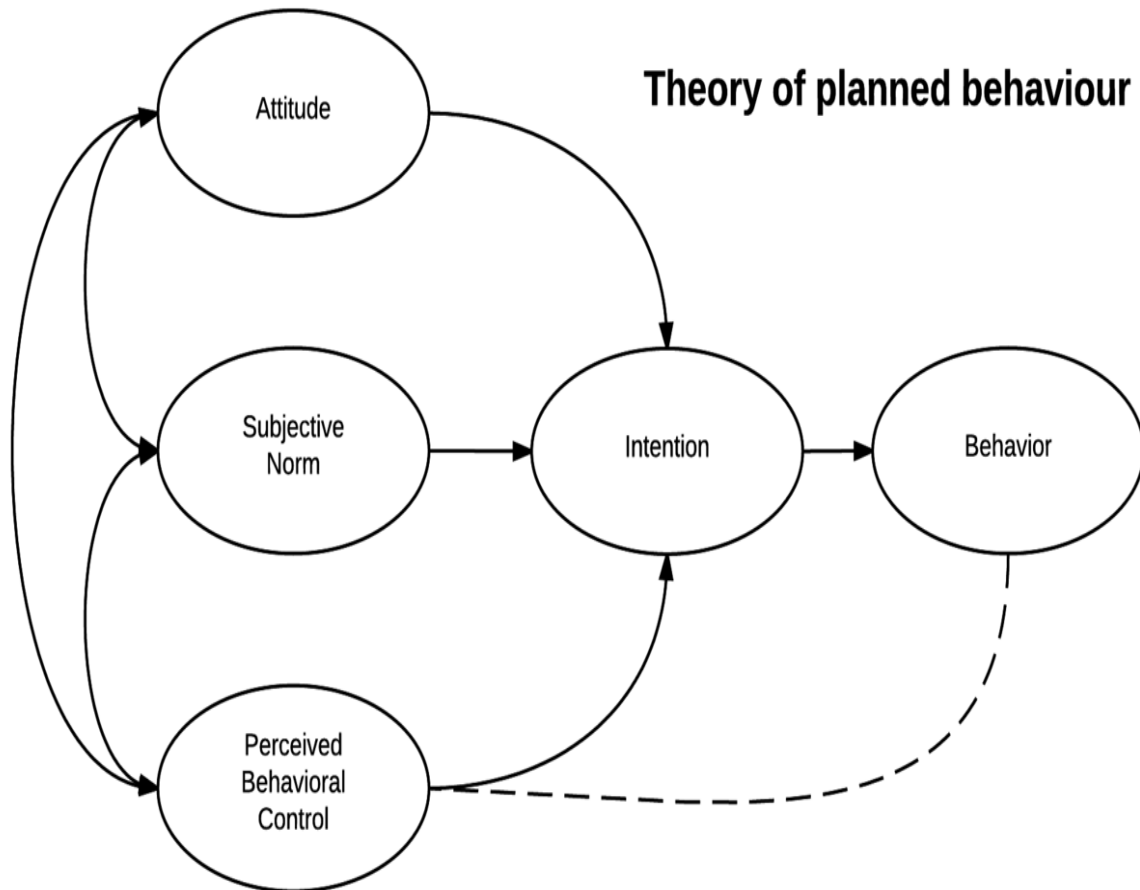
Knowledge attitude and practice (KAP) model describes the direct and indirect relationships of knowledge with practice (Buang, Rahman, and Haque 2019; Ralapanawa et al. 2020). Attitude is the mediator in KAP model. The KAP model data can help identify knowledge gaps, attitudes barriers, and practices patterns that may facilitate understanding and actions regarding a particular issue (Yang Zhang et al. 2023). Recent studies have highlighted the crucial role of the Knowledge, Attitude, and Practice (KAP) model in understanding and managing HTN (Alhowaymel et al. 2023). A study conducted in Harar, Eastern Ethiopia, assessed the lifestyle modification knowledge, attitude, and practice among adult hypertensive patients. It was found that while 73.0% of participants had good knowledge and 66.4% had a favorable attitude, only 49.6% had good practice regarding lifestyle modifications. This indicates a disparity between knowledge, attitude, and actual practice, emphasizing the need for strategies to enhance lifestyle modification practices (Bogale et al. 2020). Another study in Thailand evaluated the effectiveness of a combined savings and health education program for older adults with HTN. Post-intervention, there were notable improvements in knowledge, attitude, and practice towards hypertensive care and prevention, suggesting the positive impact of integrated educational and financial programs on HTN management (Vongskan 2016). Additionally, research in Baghdad, Iraq, aimed to assess hypertensive patients' knowledge, attitude, and practice about their condition. Results indicated that over 60% of patients had good knowledge and 80% had a positive attitude, but only 24% demonstrated good practice. This study underscores the gap between knowledge and actual practice among patients, highlighting the need for ongoing education and awareness programs to improve HTN management (Sadeq and Lafta 2017). These studies collectively emphasize the importance of integrating knowledge, attitude, and practice into effective HTN prevention and management strategies.



**Figure 1.1.3: The KAP model (“KAP Pediatric Endocrinology,,” n.d.)**

Theory of Planned Behavior (TPB) links beliefs to behavior (De Groot and Steg 2007). The theory consists of 3 core components- attitude, subjective norm and behavioral control, which together shape the intention and practice (**Figure 1.3**) (Ajzen 1991). As a general rule, the more favorable the attitude and subjective norm, and the greater the perceived control, the stronger should be the person’s intention to perform the behavior in question (Bošnjak, Ajzen, and Schmidt 2020). TPB has been effectively used in various studies focusing on HTN prevention (Pourmand et al. 2020; Eslamimehr et al. 2022). For instance, a study emphasized the role of subjective norms, perceived behavioral control, and intention in enhancing HTN prevention behaviors, concluding that TPB-based interventions are significantly effective in this area (Hatefnia, Alizadeh, and Ghorbani 2018). Another study investigated an educational program based on TPB for patients with pre-HTN. The intervention led to marked improvements across various metrics, including knowledge, attitude, perceived behavioral control, subjective norms, behavioral intention, and actual behavior, underscoring the potential of TPB-based educational interventions in enhancing self-care behaviors among pre-HTN patients (Rahimdel et al. 2019). Furthermore, a study conducted on female adolescent students revealed that education rooted in TPB significantly

improved attitudes, subjective norms, perceived control, and behavioral intention in terms of nutrition and physical activity, influencing HTN preventive behaviors in this demographic (Matlabi et al. 2018). These studies collectively highlight the utility of the TPB framework in crafting interventions aimed at improving HTN prevention behaviors, particularly by focusing on the key components of attitude, subjective norms, and perceived behavioral control. The current study of ours considered factors based on the TPB and KAP models.



**Figure 1.1.4: The Theory of Planned Behavior(Ajzen 1991)**

## **1.2. Objectives**

### **General objective**

To find out the influence of major determinants (knowledge, attitude and self-control) on healthy practice regarding HTN prevention among rural adults of Bangladesh

## **Specific objectives**

1. To assess the level of knowledge, attitude, motivation and self-control regarding HTN prevention among rural adults of Bangladesh
2. To assess the level of health practice regarding HTN prevention among the rural participants
3. To determine the significant predictors of healthy practice regarding HTN prevention among rural adults of Bangladesh
4. To find out the socio-economic disparity in health practices regarding HTN prevention among rural adults of Bangladesh

### **1.3. Rationale**

Bangladesh with the highest population density in world is very vulnerable to the highly transmissible non-communicable disease like HTN (International Non-communicable Diseases, n.d.). With implementing nationwide inflation in recent times, Bangladesh is giving heavy economic tolls as like any other country in the world. Moreover, with a large population having low health literacy, Bangladesh is in a very vulnerable situation. Government of Bangladesh is trying hard to cope with the situation with various public health initiatives and using mass media to aware the people regarding personal awareness, health practices about HTN prevention (Alam et al. 2014; Kibria, Gupta, and Nayeem 2021).

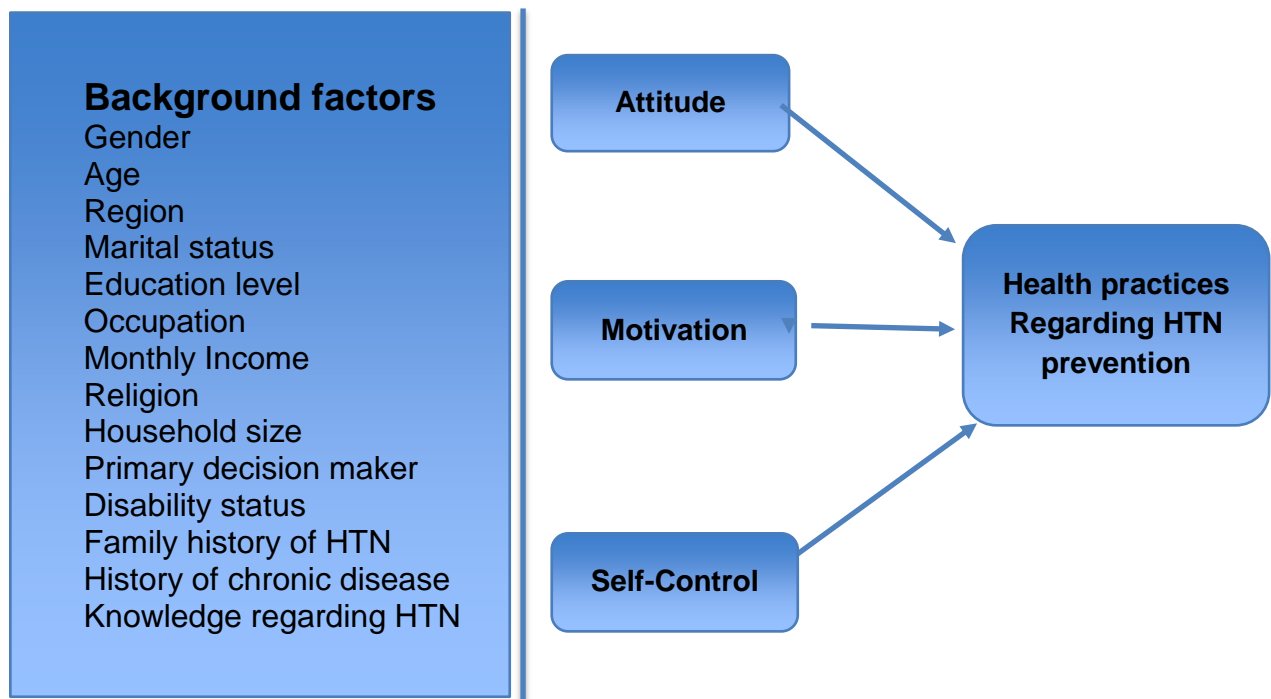
Rural population is more vulnerable to the situation considering their socioeconomic conditions and inability to access proper media for health information (X. Chen et al. 2018). Although government is conducting large media campaigns over mass media, but there is no study yet been conducted to assess the condition using KAP and TPB models together in rural Bangladesh regarding HTN Prevention. This study will help the policy-makers to design proper program to improve knowledge, attitude and behavior regarding HTN prevention situation in rural Bangladesh.

Hypothetical model of preventive or healthy behavior of rural adults of Bangladesh was framed through KAP and TPB models with background issues according to country context and NCD (4 into 4 Model). The aim of this study was to establish and justify the theoretical approach to improve health practices of adults regarding HTN prevention using current data obtained from the rural area of Bangladesh. Findings of the study could be used to apply using theoretical model in developing programs to ensure healthy practices in a rational way to control the rapid spread of HTN patients in Bangladesh.

#### 1.4 Important variables in the current study

##### Independent variables:

Socio-demographic variables	Other important variables
<ul style="list-style-type: none"><li>● Sex of the respondents</li><li>● Age of the respondents</li><li>● Religion</li><li>● Marital status</li><li>● Educational status of the respondents</li><li>● Occupational status of the respondents</li><li>● Family income</li><li>● Number of family members</li></ul>	<ul style="list-style-type: none"><li>● Knowledge</li><li>● Attitude</li><li>● Motivation</li><li>● Self-control</li></ul>
<b>Dependent variable:</b>	
Health behavior of rural adults regarding HTN prevention	



**Figure 1.4.1: Conceptual Framework of research**

### 1.5 Operational definitions

**Hypertension (HTN):** A medical condition characterized by persistently elevated blood pressure exceeding the normal range, often leading to increased risks of heart disease, stroke, and other health complications.

**Non-communicable diseases (NCDs):** Chronic diseases that are not transmitted from person to person. They include a range of conditions, such as CVDs, cancers, chronic respiratory diseases, and diabetes, primarily influenced by lifestyle choices, environmental factors, genetics, and age.

**Socioeconomic status:** A measure that considers income, education, and occupation to determine an individual's or a group's economic and social position relative to others. In the context of the thesis, it is used to examine how these factors influence health practices and HTN prevention in rural areas.

**Health practices:** Refers to behaviors and actions undertaken by individuals to maintain or improve their health. Here, this term specifically relates to activities and choices made by rural adults to prevent or manage hypertension, such as diet, exercise, stress management, and health check-ups.



**Rural adults:** Adults living in rural areas, characterized by less population density and fewer healthcare resources compared to urban areas. In this case, this term focuses on this demographic's unique challenges and behaviors in preventing and managing hypertension.

**Knowledge:** In the context of our study, knowledge refers to the awareness and understanding of hypertension, its causes, risk factors, and prevention methods. This includes familiarity with lifestyle factors such as diet, exercise, and stress management that can influence blood pressure.

**Attitude:** Attitude in our study is defined as the individual's perspective or stance towards HTN prevention. It encompasses beliefs about the importance of preventing hypertension, the effectiveness of various prevention strategies, and the personal relevance of HTN risk factors.

**Motivation:** This refers to the internal drive or willingness to engage in behaviors that prevent hypertension. It includes factors that encourage an individual to maintain a healthy lifestyle, such as personal health goals, desire to avoid illness, and the influence of social support.

**Self-control:** The ability of an individual to regulate their impulses, emotions, and behaviors to achieve long-term goals. In the context of HTN prevention, self-control refers to the capacity of rural adults to consistently engage in healthy practices such as adhering to a balanced diet, maintaining regular physical activity, managing stress effectively, and avoiding harmful habits like tobacco use. It encompasses the discipline to resist unhealthy choices and maintain behaviors that contribute to lower blood pressure and overall better health outcomes.

**Health behavior:** Actions and practices undertaken by individuals to preserve, enhance, or maintain their health. Health behavior specifically relates to the various activities and decisions made by rural adults for the prevention and management of hypertension. This includes dietary choices, engagement in physical exercise, regular monitoring of blood pressure, stress management, and avoidance of risk factors such as tobacco and excessive alcohol consumption. The term captures both the adoption of beneficial practices and the avoidance.

**Cross-sectional study:** This refers to the study design, which in this case involves observing a specific population at a single point in time to collect data.

**Multi-stage sampling:** This is a sampling method used in the study. It involves selecting a sample in multiple stages, such as choosing areas, then households within those areas, and finally individuals within those households.

**Semi-structured questionnaire:** This is the tool used for data collection. It consists of pre-determined questions,

**Likert scale:** This is used in the questionnaire to quantify responses. Participants rate their level of agreement or disagreement on a symmetric agree-disagree scale for a series of statements.

**Preventive behavior:** This term refers to actions or practices undertaken by individuals to prevent health issues. This study specifically relates to behaviors aimed at preventing HTN.

**Gender disparity:** This term refers to the differences in health practices between males and females, particularly in the context of HTN prevention. The document highlights that there was a significant difference in the average score of practices for HTN prevention between male and female respondents, indicating a gender disparity in health practices.

**Theory of Planned Behavior (TPB):** TPB is a psychological theory that explains human behavior by considering the interaction of behavioral, normative, and control beliefs. It posits that three core components - attitude, subjective norms, and perceived behavioral control - together shape an individual's behavioral intentions. This theory has been widely used in various fields to understand and predict human behavior.

**Knowledge, Attitude, and Practice (KAP) model:** The KAP model is a quantitative method for assessing the knowledge, attitudes, and practices of a population on a specific topic, such as health or nutrition. It uses predefined questions in standardized questionnaires to collect data and analyze gaps and barriers to behavior change.

**WHO 4×4 model of NCD prevention:** This model, recognized by the World Health Organization (WHO), identifies four major non-communicable diseases (NCDs) of global health concern. These diseases share four common modifiable risk factors: tobacco use, unhealthy diets, physical inactivity, and alcohol use. These risk factors are crucial for prevention strategies, as controlling them can significantly reduce the impact and burden of NCDs. The model emphasizes the strong association of these risk factors with the incidence of hypertension.

**Practice regarding HTN prevention:** In this study, the practice of hypertension (HTN) prevention and its predictors were assessed as dependent and independent variables using scales of different items. The total scores of all variables were categorized into three groups: poor ( $\leq 60\%$ ), fair (61-80%), and good ( $> 80\%$ ). The practice regarding HTN prevention was evaluated based on six items across three dimensions, with the mean score of health practice being 14.26 (SD $\pm$ 3.7), ranging from a minimum score of 7 to a maximum of 22.

**Educational status:** The educational level of respondents, categorized in the thesis as illiterate, primary education, JSC, SSC, HSC, and above.

**Occupational status:** The employment status of respondents, categorized in various groups such as agricultural worker, laborer, housewife, garments/factory worker, business, government employee, etc.

**Monthly family income:** The average income of a family per month. In the study, it is detailed with specific income ranges and the average income value.

**Age:** The age range of individuals participating in the study is 18 years and above. The study specifies the minimum and maximum ages, as well as the mean age with standard deviation.

**Religion:** The religious affiliations of the study participants. This notes the predominant religions among respondents.

## **Chapter 2: Literature Review**

This study was designed to determine the status of HTN prevention behavior of rural adults of Bangladesh with its predictors in KAP and TPB models. Various research articles published in different national and international journals, reports, abstracts and textbooks were reviewed thoroughly and critically to identify this problem and for further analysis between independent and dependent variables to establish NCD 4 into 4 model to prevent the HTN among rural adults (Mills, Ștefănescu, and He 2020). Following issues were discussed in this chapter based on previous findings:

### **2.1 Global and regional overview of HTN Prevention**

### **2.2 HTN prevention in Bangladesh**

### **2.3 HTN prevention program of Bangladesh**

### **2.4 HTN prevention behavior of adults**

### **2.5. Knowledge, Attitude and Practice (KAP) Model**

### **2.6. Application of KAP in HTN Prevention**

### **2.7 Theory of Planned Behavior (TPB)**

### **2.8. Application of TPB in HTN Prevention**

### **2.9. NCD 4 into 4 model**

### **2.10. Application of NCD 4 into 4 model in HTN Prevention**

### **2.11. Previous studies on factors related to HTN prevention behaviour**

### **2.12. Conceptual framework of HTN prevention behaviour of rural adults**

## **2.1. Global and Regional Overview of HTN Prevention**

HTN is a major risk factor for CVDs, affecting 1.13 billion people worldwide (F. Islam et al. 2021). The strategies for its prevention vary significantly HTN across regions, reflecting diverse socio-economic and cultural contexts. A systematic review and meta-analysis of natural and quasi-experiments evaluated interventions used to prevent or control. The study found that education and counseling on lifestyle modifications such as promoting physical activity, promoting a healthy diet, and smoking cessation consultations could help prevent HTN in healthy people (Hannan et al. 2022). The use of computerized clinical practice guidelines by general practitioners, education and management of HTN, the screening for CVD goals and referral could help improve HTN control in patients with HTN (Unger et al. 2020). The educating and counseling on physical activity and diet, the monitoring of patients' metabolic factors and chronic diseases, the combination of education on lifestyles with management of HTN, the screening for economic risk factors, medical needs, and CVD risk factors and referral all could help reduce blood pressure. A systematic review of HTN awareness, treatment, and control in Africa found that the prevalence of HTN varied widely across the continent, ranging from 15.2% to 54.9%. The review also found that HTN awareness, treatment, and control were generally low, with only 30.3% of hypertensive individuals aware of their condition, 22.8% receiving treatment, and 10.4% achieving blood pressure control. The review identified several factors associated with HTN diagnosis, treatment, and control, including age, sex, education, income, and access to healthcare (Kayima et al. 2013). A study published in the International Journal of Hypertension analyzed trends in the prevalence, awareness, treatment, and control of HTN in China between 2000 and 2020. The study found that the prevalence of HTN increased from 18.8% in 2000 to 27.9% in 2020, while the awareness, treatment, and control of HTN also improved over the same period. The study identified several factors associated with HTN, including age, sex, education, income, and lifestyle factors (Xu et al. 2021). A study published in BMC Public Health assessed the prevalence, awareness, treatment, and control of HTN across seven sites in East and West Africa. The study found that the prevalence of HTN varied widely across the sites, ranging from 19.3% to 54.7%. The study also found that HTN awareness, treatment, and control were generally low, with only 17.5% of hypertensive individuals aware of their condition, 11.6% receiving treatment, and 3.1% achieving blood pressure control. The study identified several factors associated with HTN, including age, sex, education, income, and lifestyle factors (Okello et al. 2020). A study published in BMC

Cardiovascular Disorders reviewed the literature on HTN awareness, treatment, and control in Africa. The study found that the prevalence of HTN varied widely across the continent, ranging from 15.2% to 54.9%. The study also found that HTN awareness, treatment, and control were generally low, with only 30.3% of hypertensive individuals aware of their condition, 22.8% receiving treatment, and 10.4% achieving blood pressure control. The study identified several factors associated with HTN diagnosis, treatment, and control, including age, sex, education, income, and access to healthcare (Unwin 2001).

## **2.2. HTN prevention in Bangladesh**

HTN is a major health concern in Bangladesh, with its prevalence on the rise due to lifestyle changes and urbanization (M. A. B. Chowdhury et al. 2021). The country faces unique challenges such as limited healthcare resources and a widespread lack of awareness (Husain et al. 2022). A systematic review and meta-analysis of HTN prevalence in Bangladesh found that the overall weighted pooled prevalence of HTN is 20.0%. The study identified the range of HTN prevalence is from 1.10% to 75.0% and an overall increasing trend of HTN prevalence is observed. The study concluded that strategies targeting prevention are required to mitigate a further increase in the prevalence and reduce the morbidity and mortality associated with it (J. Y. Islam et al. 2018). A study published in the Journal of Health, Population, and Nutrition assessed the prevalence and associated risk factors of HTN among adult men and women aged over 30 years residing in selected urban and rural areas of Dhaka division, Bangladesh. The study found that the prevalence of HTN was higher in urban areas than in rural areas. The study identified several factors associated with HTN, including age, sex, education, income, and lifestyle factors (Hasan et al. 2021). A study published in the Journal of Hypertension evaluated the effectiveness of a multicomponent intervention that spanned both the community and health system levels in improving HTN control in low- and middle-income countries, including Bangladesh. The study found that the intervention improved HTN control and reduced blood pressure in the study population (Iqbal et al. 2021). A study published in the Journal of Public Health assessed the prevalence and associated factors of HTN among adults in Bangladesh. The study found that the prevalence of HTN was higher among women than men and increased with age. The study identified several factors associated with HTN, including education, income, and lifestyle factors (Ali et al. 2022). A study published in the Journal of Cardiovascular Disease Research evaluated the effectiveness of a community-based HTN management program in Bangladesh. The study

found that the program improved HTN control and reduced blood pressure in the study population. The study identified several factors associated with HTN, including age, sex, education, income, and lifestyle factors (Jafar et al. 2018).

### **2.3. HTN prevention Programs in Bangladesh**

Bangladesh has implemented both government-led and NGO-supported programs focusing on awareness, screening, and lifestyle modification (K. Islam et al. 2022). However, the effectiveness of these programs varies, with some areas showing better outcomes than others. NCDC, in collaboration with the National Heart Foundation of Bangladesh and Resolve to Save Lives, has implemented a program to strengthen the detection, treatment, and follow-up of high blood pressure in primary care. The program has been successful in controlling blood pressure in 58% of patients in treatment (Resolve to Save Lives 2022). BRAC has been working to improve the health of people in Bangladesh through various programs, including HTN prevention. They have been providing health education and awareness-raising activities to help people understand the importance of HTN PREV and control (Rahman et al. 2021). The World Health Organization has developed national guidelines for the management of HTN in Bangladesh (Nugent et al. 2017). These guidelines provide recommendations for the prevention, diagnosis, and management of HTN in Bangladesh.

### **2.4. HTN Prevention Behavior of Adults**

Adults' behavior towards HTN PREV is influenced by factors such as knowledge, cultural beliefs, and access to healthcare (Jahan et al. 2020; M. A. Khanam et al. 2014). There is a need for increased awareness and education to encourage proactive PREV measures. A study in rural China revealed how limited understanding of HTN and ingrained beliefs about dietary salt consumption hindered proactive PREV measures among older adults (Jiang et al. 2023). Beyond knowledge gaps, social norms and gender roles can also pose significant barriers. In India, research has shown how traditional expectations and power dynamics within families can limit women's access to healthcare services and decision-making regarding their health, impacting their ability to engage in preventive measures for HTN. This highlights the need for interventions that not only raise awareness but also empower women through community-based programs and tackle gender-specific barriers (Morgan et al. 2017). Faith-based communities can also hold untapped potential in the fight against HTN. A study in Latin America explored how religious beliefs and practices within congregations could be

harnessed for preventive efforts. The research suggests that partnering with religious leaders to disseminate accurate information and mobilize community support for healthy lifestyle changes could prove highly effective (Syed et al. 2023). However, cultural considerations alone cannot fully address the global challenge of HTN prevention. Economic disparities and limited access to healthcare often play a significant role, particularly in resource-constrained regions (White-Williams et al. 2020). A study in Sub-Saharan Africa revealed how poverty and scarce healthcare facilities hampered HTN management among local communities. The research emphasizes the urgent need for affordable and accessible healthcare services, coupled with financial assistance programs to support medication adherence and preventive measures (Sorato et al. 2021). Finally, technological advancements offer promising avenues to bridge knowledge gaps and empower individuals to take charge of their health. A recent study on mobile health interventions demonstrated the effectiveness of phone-based programs in delivering personalized health education and behavior change support for HTN PREVENTION among low-income populations globally. This highlights the potential of digital tools to reach underserved communities and promote proactive health management (Zhang, Tan, and Wang 2023).

## **2.5. Knowledge, Attitude, and Practice (KAP) Model**

The Knowledge, Attitudes, and Practices (KAP) model is a framework used primarily in public health, social sciences, and marketing to analyze how a group's knowledge (information and awareness about a subject), attitudes (beliefs and feelings towards the subject), and practices (actual behaviors or actions) interrelate and influence outcomes (Andrade et al. 2020). Originally developed in public health to design and assess interventions, the model helps in understanding behavior patterns and decision-making processes, and is widely employed to guide the creation of educational programs, social research, and marketing strategies (Verplanken and Orbell 2022). By evaluating these three components, the KAP model provides insights into how effectively information is being disseminated, how attitudes may support or hinder certain behaviors, and how practices can be altered for better outcomes (Azim et al. 2023). A study conducted in Jiangbei District, Ningbo City, revealed that while residents showed a high level of knowledge about HTN, their overall KAP level regarding chronic NCDs was not high. Factors influencing KAP included gender, age, and education level. The study emphasized the need for personalized health education and behavior intervention based on risk factors. Research on KAP elements



pertaining to a healthy lifestyle among individuals at risk of NCDs indicated that knowledge about the harmful effects of an unhealthy diet and lifestyle was common (Chen, Liu, and Xi 2022). However, this did not always translate into healthy lifestyle practices due to barriers in applying this knowledge. This highlighted the need for re-examining existing behavior change strategies. Another study in Haishu District, Zhejiang Province, assessed the KAP regarding chronic NCD prevention and control among various populations. Results showed that knowledge, attitude, and practice scores were influenced by gender, education, income, and medical care modality. The study also highlighted the importance of TV and periodicals as information sources for NCD prevention and control (Yi et al. 2023). A perspective based on the KAP model suggested that patients with chronic diseases are not only users but also sources of medical resources. This view proposed that understanding and leveraging the potential role of these patients in the prevention and control of chronic diseases could be key (Stachteas et al. 2022). A study focusing on Developmental Origin of Health and Disease (DOHaD) among medical students and residents in Obstetrics & Gynecology and Pediatrics found good knowledge and attitude but poor practice towards DOHaD. It underscored the need for improved education and training to translate knowledge into practice (Ku et al. 2023).

## **2.6. Application of KAP in HTN Prevention**

Studies using the KAP model have shown that increased knowledge about HTN correlates with better prevention practices (Machaalani et al. 2022). However, transforming knowledge into practice requires addressing attitudinal and systemic barriers (Chimberengwa and Naidoo 2019). While studies demonstrate that increased knowledge about HTN correlates with better prevention practices, there's often a significant gap between knowing and doing (Kebede, Taddese, and Girma 2022). Other studies show attitudinal and systemic barriers like cost, transportation, and lack of social support can hinder action (Bhandari et al. 2021). Additional studies highlight the need for interventions that address these barriers alongside knowledge dissemination, such as tailored education, community support groups, and mobile phone-based interventions (Bera, Mondal, and Bhattacharya 2023). Research emphasizes considering beliefs, motivations, and self-efficacy to promote lasting behavioral change (Wahyudi 2020). Moreover, another research underscores the importance of tailoring interventions to specific cultural contexts to improve trust, engagement, and ultimately, blood pressure control (Eze et al. 2023). These diverse studies showcase the complexities of

bridging the knowledge-attitude-practice gap in HTN prevention, highlighting the need for multifaceted interventions that address knowledge, attitudes, and systemic barriers while remaining culturally sensitive.

## **2.7. Theory of Planned Behavior (TPB)**

TPB is an integrated theory to explain human behavior based on three important psychological determinants (Wang et al. 2021). This popular theory is widely used to explain the rational way of decision-making and its link with the desired outcomes (Ajzen 2020). It's easy to explain the outcomes when the decision-making follows the rational way. TPB explains that human action is influenced by three major determinants (i.e. attitude, subjective norm and PBC) through intention and actual control behavioral can affect it externally (La Barbera and Ajzen 2020). TPB originated from the Theory of Reasoned Action (TRA) that was developed by Fishbein and Ajzen in 1967(Alhamad and Donyai 2021). Initially in TRA, they used only attitude and subjective norms to influence intention to get the particular behavior (Bagozzi 1992). Behavioral intent was central to achieving the particular action. They used four components in TRA: attitude, subjective norm, intention, and behavior (Kothe and Mullan 2014). They tried to describe the reasons behind the action through TRA. During the early 1970s, the theory was revised and expanded by Ajzen and Fishbein (Ajzen and Fishbein 1974). In 1988, TPB replaced TRA. The difference between the TRA and TPB lies in the control component of the TPB (Armitage and Conner 2001). The initial model of TPB was also focused on behavioral intent (Peters and Templin 2010). Behavioral intent is influenced by attitude, social influence, and self-control (Maffei et al. 2012). Five components were used to describe behavior at the initial stage of TPB: attitude, subjective norm, Perceived behavioral control (PBC), intention, and behavior (Li et al. 2023). Finally, the TPB model has been modified by adding actual behavioral control as an external factor between intention and behavior (Qalati et al. 2022). A total of six components are now in the TPB model to discuss individual behavior rationally. Each component is linked in sequence to get the behavioral outcomes. TPB serves to understand an individual's voluntary behavior. Over the past several years, researchers used TPB successfully to predict and explain a wide range of health behaviors in different contexts (Tapera et al. 2020; Rajeh 2022).

## **2.8. Application of TPB in HTN prevention**

The application of TPB in HTN prevention has revealed that personal attitudes towards health, social influences, and the perceived ease or difficulty of engaging in preventive behaviors play crucial roles in determining individuals' actions (Hardin-Fanning and Ricks 2016). A study used TPB to assess which factors influence self-care behaviors for controlling HTN. The results showed that group-specific behavioral barriers are important when improving self-care behaviors in patients with HTN. Perceived control over self-care behaviors is more important in vulnerable patients, such as the elderly and women (Pahria, Nugroho, and Yani 2022). Another study aimed to investigate the application of TPB in nutritional behaviors related to CVD among women in Fasa City, Fars province, Iran (Jeihooni et al. 2021). A study investigated the effect of education based on TPB in preventive behaviors of HTN in school female adolescent students. The results showed that using education based on TPB was effective in HTN prevention and increased attitude, perceived behavioral control, and behavioral intention in both nutrition and physical activity (Ghannem et al. 2001). A study was designed to test the efficacy of interventions to promote weight loss, sodium reduction, and the combination of weight loss and sodium reduction in decreasing diastolic BP, systolic BP, and the incidence of HTN during a 3- to 4-year follow-up period in moderately overweight men and women with a high-normal level of diastolic BP (L. Huang et al. 2020).

## **2.9. NCD 4 into 4 Model**

The NCD 4 into 4 model addresses four major non-communicable diseases (including CVDs like HTN) through four modifiable behavioral risk factors: unhealthy diet, physical inactivity, tobacco use, and harmful use of alcohol (Mendis 2017). Important studies regarding NCD identify tobacco and alcohol consumption, unhealthy diet, and insufficient physical exercise as key causes of common NCDs. The study highlights the role of urbanization and socioeconomic changes in promoting health-risk behaviors leading to CVDs and diabetes (Akseer et al. 2020). Moreover, other studies emphasize the preventability of most CVDs by addressing risk factors such as tobacco use, unhealthy diet, obesity, physical inactivity, and harmful use of alcohol (Ng et al. 2019). One more studio supports the 4-by-4 approach, focusing on the four major NCDs and their risk factors, and proposes an expanded 5-by-5 strategy for Africa, including neuropsychiatric disorders and transmissible agents (Reddy

2015). The research discusses the uneven global progress in CVD prevention, underscoring the significance of targeting major behavioral drivers like tobacco use, harmful alcohol use, unhealthy diet, and physical inactivity (Ding et al. 2020). Research identifies tobacco use, physical inactivity, harmful use of alcohol, and unhealthy diet as predominant risk factors among aviation sector employees. The study calls for health awareness and promotion activities focusing on these risk factors (Majić, Arsenović, and Čvokić 2023).

## **2.10. Application of NCD 4 into 4 Model in HTN Prevention**

Implementing this model in HTN prevention involves comprehensive strategies targeting diet, exercise, and lifestyle choices, demonstrating significant potential in reducing HTN prevalence (Whelton et al. 2018). A study found that a low caloric diet combined with exercise led to a decrease in blood pressure and improvements in biochemical parameters in overweight hypertensive adults (Attar et al. 2022). Another study emphasized the importance of a healthy lifestyle, including a healthy diet and regular exercise, for the primary and secondary prevention of stroke, a condition closely related to hypertension (Kaminsky et al. 2022). An investigation demonstrated that a combination of diet and exercise, akin to the Diabetes prevention Program, was effective in improving glucose homeostasis in prediabetic individuals, which is relevant for HTN prevention (Syeda et al. 2023). Another study showed the epidemiological evidence supporting the preventive and antihypertensive effects of major lifestyle interventions, including regular physical exercise, body weight management, and healthy dietary patterns (Charchar et al. 2023). A systematic review and meta-analysis found that healthy dietary patterns such as the DASH diet, Nordic diet, and Mediterranean diet significantly lowered both systolic and diastolic blood pressure (Sukhato et al. 2020). A study integrated existing recommendations with emerging research to provide an updated exercise prescription for adults with hypertension, emphasizing the critical role of physical activity in HTN management (Pescatello et al. 2015).

## **2.11. Previous Studies on Factors Related to HTN prevention Behavior**

Several studies have identified key factors influencing HTN prevention behaviors, such as socioeconomic status, education level, and access to healthcare services (Haung and Hong 2022; (Choi and Kim 2023). Understanding these factors is crucial for designing effective interventions. A study discussed HTN prevention and control strategies, emphasizing the importance of a usual source of care, adherence optimization, and reducing therapeutic

inertia, which are influenced by socioeconomic factors(Pathak et al. 2021).Researchers conducted a study in South Africa examining associations between patients' socioeconomic status and characteristics of primary healthcare facilities, and control and treatment of blood pressure in hypertensive patients(Madela et al. 2023).A study -investigated the association of HTN prevalence with various socioeconomic and geographical factors in China, highlighting the importance of demographic and socioeconomic factors in influencing HTN comorbidities(Gu et al. 2023).A study reviewed the global epidemiology of hypertension, focusing on the variations in risk factors like diet, obesity, and alcohol consumption across regions, and the impact of socioeconomic factors on HTN prevalence(Zeng et al. 2021).Researchers studied the association between individual education and HTN in a large sample of French adults, identifying behavioral, anthropometric, and socioeconomic risk factors as mediators(Neufcourt et al. 2020).

## **2.12. Conceptual Framework of HTN prevention Behavior of Rural Adults**

Drawing on the above models and theories, a conceptual framework for HTN prevention behavior in rural adults can be developed(Gallani et al. 2013; Yiga et al. 2022). This framework should consider the unique challenges and opportunities present in rural settings, such as limited healthcare access and traditional lifestyle practices(Carey et al. 2018; Huang et al. 2016).Reseaerchr developed a comprehensive media strategy to support HTN prevention in Punjab, India. This model merges traditional and modern communication tools, focusing on context-specific messages. It's a product of extensive literature review and expert consensus, involving medical professionals, public health specialists, communication experts, and hypertensive patients. This approach can be adapted to improve HTN services and generate administrative support for rural healthcare initiatives(Goel et al. 2021).A study highlighted the role of community health workers (CHWs) in facilitating healthy behaviors among rural patients. Their framework illustrates how CHWs, leveraging their cultural congruence, can build trust, provide social support, and assist with health behavior changes, especially in HTN management(Ndambo et al. 2022).Study focused on HTN awareness in Sikkim, India, revealing a gap in knowledge among the rural population. Their findings suggest the necessity for structured education programs about lifestyle modifications for HTN management, particularly addressing the needs of uneducated and rural populations(Boro and Banerjee 2022).A study conducted in Telangana, India, to determine the prevalence of HTN and its lifestyle risk factors in rural areas. They emphasized the

importance of targeted programs to modify lifestyle risk factors, such as tobacco use and physical inactivity, which are significant in rural settings(Prathyusha et al. 2016).A study explored the reasons for non-adherence to HTN treatment, categorizing them into predisposing, enabling, and reinforcing factors. They highlighted the role of factors like knowledge, beliefs, attitudes, and access to health services, which are particularly relevant in rural settings where cultural and lifestyle factors play a significant role(Musinguzi et al. 2018).Another study evaluated the feasibility of CVD prevention in rural Nigeria through a community-based health insurance program. Their study identified barriers such as limited human resources, affordability of tests, and drug supplies. This indicates the need for simple, scalable models for HTN care delivery in rural areas, which can be adapted to other rural settings(Hendriks et al. 2015).

## **Chapter 3: Methodology**

### **3.1. Study design**

This was a cross-sectional study among rural adults living in different socioeconomic statuses.

### **3.2. Study area**

Munshiganj district was randomly selected from Dhaka division and Gafargaon upazila was randomly taken from the Mymensingh division. Moreover, Rangpur district was randomly chosen from Rangpur division. The study was carried out in the conveniently selected rural areas of Gazaria, Gafargaon, and Badarganj upazilas. After selecting the upazila, one union from each upazila was randomly selected. After that, one ward was selected from each of the unions in the selected upazila.

### **3.3. Study population**

Gazaria, Gafargaon, Badarganj upazila each have around 2500 to 3,000 rural adults at the ward level according to recent data from election commission offices. A total of 355 rural adults were conveniently selected for the study.

### **3.4 Study period**

The study was conducted during the second half of 2023. After developing the questionnaire data were collected through face-to-face interviews. Data processing and analysis were performed after the data collection. Finally, the report was submitted at the end of December 2023.

### **3.5 Inclusion criteria**

- a. Permanent resident of that area
- B. Rural adults aged 18 and older without a history of HTN
- c. Willingness to participate

### **3.6 Exclusion criteria**

- a. Severely ill

### 3.7 Sampling procedure

The study samples were rural adults who met the inclusion criteria and they were selected by multi-stage sampling.

### 3.8 Study tool for data

A semi-structured questionnaire was developed covering socio-demographic characteristics, knowledge, attitude, motivation, self-control, and practice regarding preventing hypertension. The items on knowledge, attitude, motivation, and practice for preventing HTN were based on WHO's 4x4 model. The questionnaire was validated and tested for reliability before application on Likert scale.

The questionnaire had six parts. The important issues in the questionnaire were based on the major determinants from the KAP and TPB models. Items related to socio-demographic characteristics were included in the first part, which contained thirteen questions. The second part had items related to knowledge regarding HTN prevention and contained twelve questions. The third and fourth parts included items to describe attitude and practice and contained ten and six questions. The fifth part was for motivation to adopt healthy practices regarding HTN prevention and contained nine questions. The final part, related to self-control regarding HTN prevention, contained seven items.

### 3.9 Sample size

Statistically the following formula was used to calculate sample size.

$$n = \frac{z^2 p (1 - p)}{d^2}$$

n = asking sample size

z = level of confidence or level of significance

d = error

p = the proportion in the population possessing the characteristic of interest

It would be noted that 384 was the required number of sample size if simple random sampling technique was used. Considering 5% nonresponsive and/or missing cases the calculated sample size in each area is around 404.



Due to time limitations and feasibility, 355 respondents were taken as the sample size. Multi-stage simple sampling was done to select rural adults. As it was conducted in 3 upazilas, a total 355 respondents were conveniently taken from three areas.

### 3.10 Data collection

Data were collected through face-to-face interviews using pretested questionnaires in rural areas from three divisions. A total of 355 rural adults were conveniently selected through multi-stage sampling, and the first adult person to appear in each house was approached for an interview.

### 3.11 Data processing and analysis

The data entry was started immediately after the completion of data collection. Data processing and analyses were done using SPSS version 26. The data were analyzed according to the objectives of the study.

### 3.12 Research approach

Quantitative data were collected by house-to-house visits through face-to-face interviews of 355 rural adults. The table shows the ways of data collection.

Division	Upazila	Union	Face to face interview
Mymensingh	Gafargaon	Rawna	119
Dhaka	Gazaria	Baushia	115
Rangpur	Badarganj	Radhanagar	121
<b>Total</b>			<b>355</b>

**Table 3.12.1: Ways of Data Collection**

In this study both men and women were selected for quantitative information on the basis of research themes. Trained personnel described objectives, perspectives, benefits, risks and burdens of this study to rural adults in detail before initiation of data collection. Only rural adults, consistent with selection criteria, were included as research participants. The trained

personnel took informed consent from each of the selected research participants and collected necessary information following the questionnaire. Collected data were checked and verified at the end of work each day. Any inaccuracy and inconsistency were corrected in the next working day. All relevant documents including the questionnaire was kept under control of the investigator. This study did not involve any societal, mental or physical risk to the participants. The ethical issues were strictly maintained in this study based on standard ethical guidelines. No wage-compensation was given to the research participants.

### **3.13 Ethical consideration**

Informed consent was taken from the participants before any kind of data collection. Data was never given to any third party or any database and was only used for this research purpose.

## Chapter 4: Results

### 4.1. Socio-demographic characteristics and other background information

The study included rural adults ( $\geq 18$  years) of both genders. Less than one-tenth of the respondents (3.7%) were in the group of  $\leq 25$  years and less than one-third of the respondents (32.1%) were between 26 and 35 years. The mean age of the respondents was 41.48 years with standard deviation (SD) of 10.3 years. The minimum age of the respondents was 19 years and maximum age was 70 years [Table 4.1.1]. More than two-thirds (66.8%) of the respondents were males and the rest of them were females.

Majority (84.8%) of the respondents were Muslims and the rest of them were Hindus. More than one-third (49.9%) had monthly family income between 10,001 to 15,000 Taka and more than one-third of the respondents (33.5%) had family income more than 20000. The average monthly family income was 18,955 Taka with SD of  $\pm 8,760$  Taka. Minimum monthly family income of the respondents was 6,000 and maximum was 70,000 Taka [Table 4.1.1].

**Table 4.1.1 Distribution of age, sex, religion and family income of the respondents (n=355)**

Socio-demographic characteristics	Number	Percentage
<b>Age of respondents (years)</b>		
$\leq 25$	13	3.7
26-35	114	32.1
$\geq 36$	228	64.2
x SD 41.48 10.3 years (min-max:19-70 years)		
<b>Gender</b>		
Male	237	66.8
Female	118	33.2
<b>Religion</b>		
Islam	301	84.8
Hindu	54	15.2
<b>Monthly family income (Taka)</b>		
$\leq 10000$	59	16.6
10001-20,000	117	49.9
$> 20,000$	119	33.5
x SD 18,955 8,760 min-max: 6000-70,000)		

Among the respondents 2.5% were illiterate or without academic learning and nearly one-third of them (32.7%) were literate up to primary level. Only 23.7% rural adults were literate up to SSC and 16.9 were up to HSC and above. Men were more illiterate than their women counter-part. Among the respondents around 15.5% were farmers, more than 20% were day laborers and nearly one-fifth of them (20.3%) were housewives. Around 18% were involved in business. More than 10% of them were garments or factory workers and almost similar percentage of respondents was involved in government jobs. Lastly, less than 5% of the respondents were private employee and other occupation holder. More than half of the respondents (58.6%) of the respondents had the family size of 4 to 6 members and more than one-third of the respondents had higher than 7 family members. Rest of them (4.2%) had less than three family members. The average family size was 2.0 with SD of  $\pm 1$ [Table 4.1.2]. Minimum family size was 2 and maximum was 9. Less than 15% of respondents had HTN patients among their family members or relatives.

Table 4.1.2 : Distribution of educational and occupational status, family members and known case of HTN patient in family (n=355)

Socio-demographic characteristics	Number	Percentage
<b>Educational level of respondents</b>		
Illiterate	9	2.5
Primary	116	32.7
JSC	86	24.2
SSC	84	23.7
HSC and above	60	16.9
<b>Occupational status of respondents</b>		
Agricultural worker	55	15.5
Laborer	78	22.0
Housewife	72	20.3
Garments/Factory worker	41	11.5
Business	64	18.0
Government employee	29	8.2
Others	16	4.5
<b>Number of family members</b>		
≤3	15	4.2
4-6	245	69.0
≥7	95	26.8
x SD 4.8 1.1 (min-max: 2-9)		

#### 4.2. Distribution of individual item of health behavior regarding HTN prevention

A significant portion of the participants (47%) always follow a balanced diet, with 38% sometimes adhering to it, and only 15% never following it. Regular physical activity is practiced sometimes by the majority (53.2%), while only 15% always engage in it. A notable 31.3% never partake in regular physical activity. Maintaining a healthy body weight is not a consistent practice; 44.4% never do it, and only 18.6% always maintain it, with 37% sometimes achieving it. Stress management practices are largely neglected; a majority (55.3%) never practice it, and only 5% always do. A significant portion (39.7%) sometimes engages in stress management. Checking and monitoring blood pressure regularly is done by 16.7% of the respondents always, 52% sometimes, and 31.3% never. On the positive side,

16.7% have always avoided or quit tobacco use. However, a concerning 47.5% have never abstained from tobacco, and 35.8% sometimes avoid it.

**Table 4.2.1: Distribution** of indicators of health practices regarding HTN prevention among rural adults (n=355)

Follow the healthy practices	Always		Sometimes		Never	
	Number	Percentage	Number	Percentage	Number	Percentage
Follow a balanced diet	167	47	135	38	53	15
Regular physical activity	53	15	191	53.2	111	31.3
Maintain Healthy Body Weight	66	18.6	131	37	158	44.4
Practice Stress Management	18	5	141	39.7	196	55.3
Check and Monitor Blood Pressure	59	16.7	185	52	111	31.3
Never used Tobacco/Quit it	59	16.7	127	35.8	169	47.5

#### 4.3. Average scores and categorization of latent variables regarding HTN prevention

Practice regarding HTN prevention and its predictors in the hypothetical model were latent variables and assessed by using scales of different items. Total scores of all latent variables were categorized into three groups: poor ( $\leq 60\%$ ), fair (61-80%) and good ( $>80\%$ ). Practice regarding HTN prevention was assessed by six items based on the three dimensions. Mean score of health practice was 14.26 (SD $\pm$ 3.7) with minimum score of 7 and maximum of 22. It has a Cronbach's alpha of 0.8, indicating good internal consistency. Nearly half of them (42.5%) showed poor practice regarding HTN prevention and only 22.3% showed good level of health practice.

Knowledge or information regarding HTN prevention was assessed using twelve items based on three dimensions. The average knowledge score was 8.43 (SD $\pm$ 2.4). Minimum score of knowledge was 3 and maximum was 12. It has Cronbach's alpha of 0.7. Nearly half of them

(43.4%) showed poor knowledge and only 22.3% showed good level of knowledge. Attitude was assessed by ten items based on three dimensions. Mean score of attitude was 28.52 (SD±5.5) with minimum score of 16 and maximum of 38. This variable also has a good internal consistency with a Cronbach's alpha of 0.8. Nearly half of them (47%) showed poor attitude regarding HTN prevention and only 19.4% showed good attitude.

Motivation scale was nine itemed and its average score was 24.50 (SD±5.9) with minimum score of 12 and maximum of 35. Among the respondents less than half of them (45.4%) were found with poor motivation and only 18.3% shared a good level of motivation regarding HTN prevention. It has a high Cronbach's alpha of 0.9. Seven items were used to assess Self-Control. Average score of self-control was 20.23 (SD±4.0) with minimum score of 12 and maximum score of 28. Nearly half of them (49.3%) showed poor self-control and more than one-third (34.4%) showed fair self-control regarding HTN prevention. This variable has a Cronbach's alpha of 0.8.

**Table 4.3.1:** Level of scores of preventive behavior in HTN prevention and its predictors

Variables	Level of scores			x SD	Min-Max	Cronbach's $\alpha$
	Poor ( $\leq 60\%$ )	Fair (61-80%)	Good ( $> 80\%$ )			
Practice	42.5	35.2	22.3	14.26(3.7)	7-22	0.8
Knowledge	43.4	34.9	21.7	8.43(2.4)	3-12	0.7
Attitude	47	33.6	19.4	28.52(5.5)	16-38	0.8
Motivation	45.4	36.3	18.3	24.50(5.9)	12-35	0.9
Self-Control	49.3	34.4	16.3	20.23(4.0)	12-28	0.8

x Mean, SD Standard deviation

#### 4.4. Gender disparity in health practices regarding HTN prevention

Among the female respondents, the mean score of practice was 9.8. On the other hand, among The male respondents , the mean score of practice was 10.8. The average score of practice regarding HTN prevention showed difference between male and female ( $P < 0.05$ ).

Gender	N	Mean of practice	T	P value
Female	118	9.8	-2.4	0.02*
Male	237	10.8		

Table 4.4.1: Gender disparity with the mean score of practices

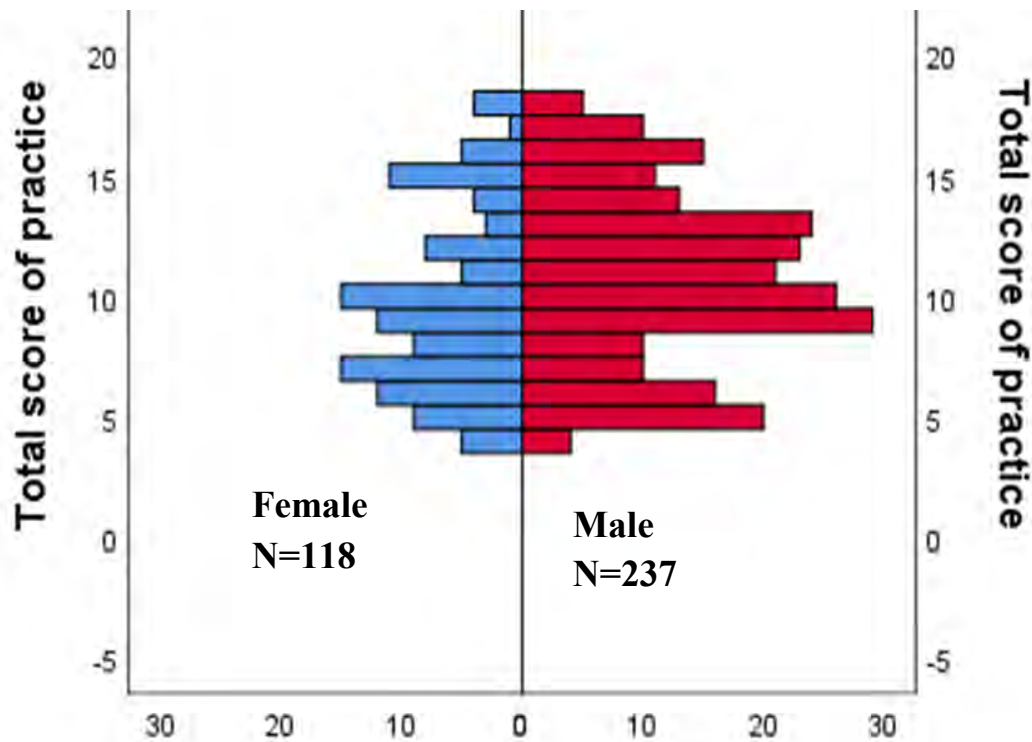


Figure 4.4.1: Gender disparity with practices



#### 4.5. Association of knowledge with HTN prevention health practices

Among the respondents with poor knowledge, the mean score of practice was 7.4. In the case of a fair knowledge, the average score of practice was 12.5. Among The respondents with good knowledge, the mean score of practice was 13.2 .Knowledge showed significantly association with practice regarding HTN prevention( $P<0.001$ ). The average score of practice regarding hTn prevention increased gradually with the level of knowledge.

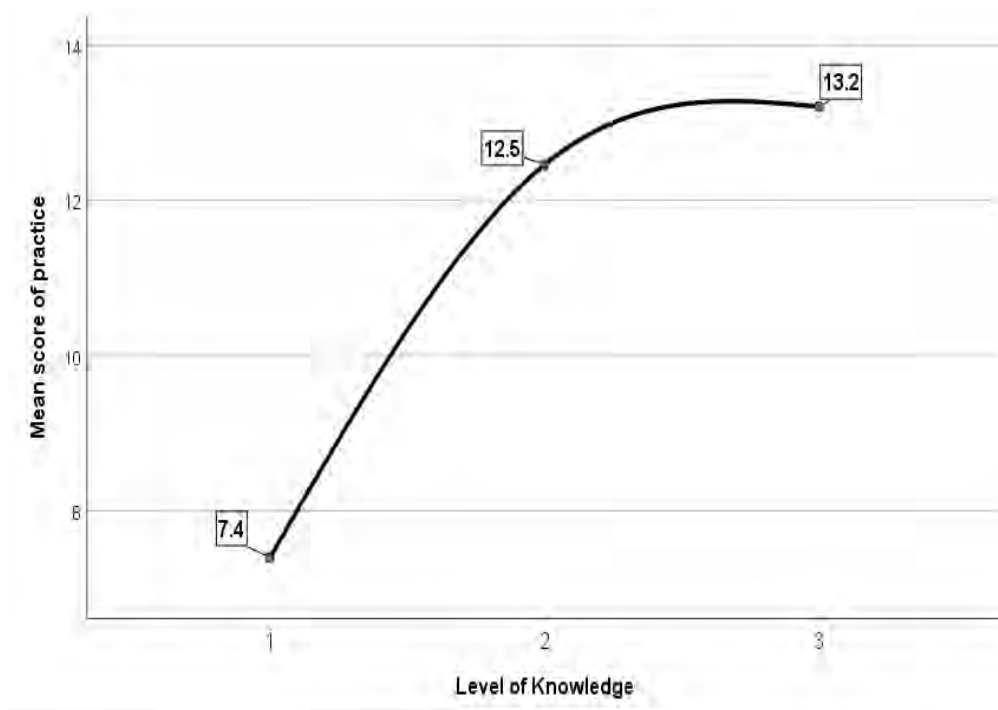
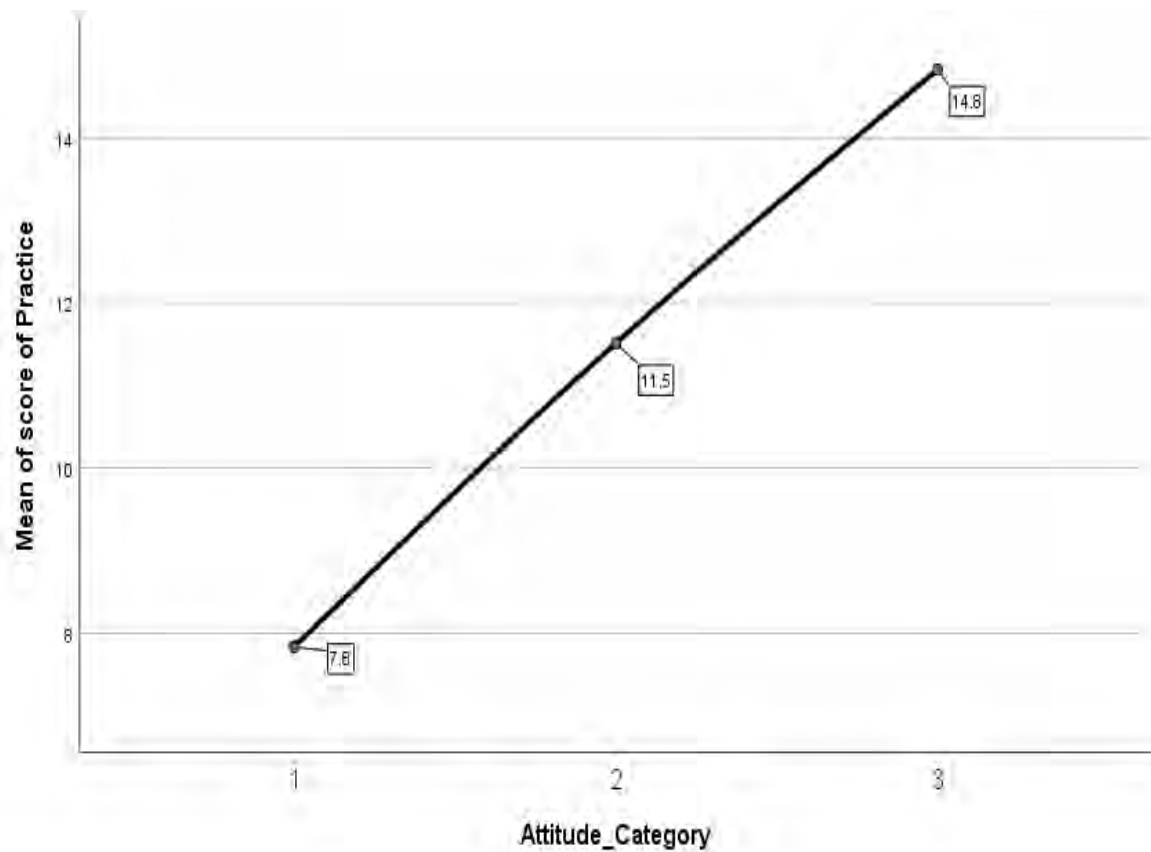


Figure 4.5.1: Association of Knowledge with practice

#### 4.6. Association of attitude with HTN prevention health practices

Among the respondents with poor attitudes, the mean score of practice was 7.8. In the case of a fair attitude, the average score of practice was 11.5. Among The respondents with good attitude, the mean score of practice was 14.8. Attitude was found significantly associated with practice regarding HTN prevention ( $P<0.001$ ). The average score of practice regarding HTN prevention increased gradually with the level of attitude.



**Figure 4.6.1: Association of attitude with practice**

#### **4.7. Significant factors predicting HTN prevention behavior of rural adults**

In the first model of background issues, the monthly family income of the respondents, educational level, and regional variation showed significance in predicting the health behavior of rural adults regarding HTN prevention. In the second model, besides socio-demographic factors, knowledge, attitude, and self-control were significant predictors of the outcome. Among the latent variables of second model, attitude and self-control were very highly significant ( $p < 0.001$ ) and knowledge was found to be highly significant ( $p < 0.01$ ) [Table 4.7.1 ].

**Table 4.7.1: Hierarchical regression analysis for significant factors**

Variable	Model1		Model2			
	<i>B</i>	<i>SE(B)</i>	<i>B</i>	<i>B</i>	<i>SE(B)</i>	<i>B</i>
Constant	4.78	0.73		-4.58	0.72	
Age	0.01	0.01	0.03	-0.01	0.01	-0.04
Gender	0.01	0.34	0.01	-0.52	0.24	-0.07*
Monthly income	0.00	0.00	0.32***	$5.13 \times 10^{-5}$	0.00	0.12**
Educational status	3.20	0.37	0.42***	0.63	0.30	0.08*
Region	0.81	0.33	0.10*	0.78	0.23	0.10**
Knowledge				0.22	0.08	0.14**
Attitude				0.19	0.04	0.29***
Motivation				0.01	0.04	0.01
Self-Control				0.33	0.06	0.36***
$R^2$	0.40			0.72		
$F$ for change	$R^2$ 47.4***			97.6***		

(†)Up to primary level, education was the reference group and for regional effect, Badarganj upazila of Rangpur was the reference group. Female was the reference for the gender group. One star (\*) for just significant ( $p < 0.05$ ), two stars (\*\*) for highly significant ( $p < 0.01$ ) and three stars (\*\*\*) for very highly significant ( $p < 0.001$ ).

## **Chapter 5: Discussion**

### **5.1 Discussion on Study Findings**

It had been almost 100 years since HTN was named a "silent killer," but it is still controlling our lives (Strandberg 2019). There had already been a number of cases (more than 1 billion) of HTN in different parts of the world as the "silent epidemic" continued to spread (Rosansky 2012). Like the COVID-19 epidemic, high blood pressure was a major health problem in Bangladesh (Mistry et al. 2022). There were more than 4.5 crore people in Bangladesh who had high blood pressure, which was about 25% of the country's total population (Barua et al. 2021). People with this disease were often not diagnosed, which added to a significant health burden in the country. HTN was more common in the coastal and eastern parts of Bangladesh, and it affected older people more than younger people (A. Hossain et al. 2022). Many people with high blood pressure did not know they had it, and less than half of those who did were identified and treated. In Bangladesh, many people with high blood pressure were not aware they had it. This showed that better screening and health promotion methods were needed, especially in coastal and northern areas. This was a very critical situation because high blood pressure increased the likelihood of heart diseases, which caused a significant number of deaths in the country each year. The study was primarily about how people in rural areas took care of their health to prevent high blood pressure. It used the major determinants from the KAP and TPB models to do this.

This study looked at the socioeconomic status, levels of education and job opportunities health habits, and the things that affect how rural adults prevent high blood pressure. The demographic study showed that most of the respondents were men (66.8%) and Muslims (84.8%) who were not affected by HTN. The ages of the respondents ranged from 19 to 70 years, with 41.48 years being the average age. The study also looked at the economic side of things. It found that the average monthly family income in the area was 18,955 Taka, which shows how economically diverse the area is. A study showed similar trends, indicating that lower income often correlates with poorer health habits and higher incidence of HTN (Schutte et al. 2021). This trend is consistent globally, as economic constraints can limit access to healthy food options and healthcare services.

The study showed a wide range of people with different levels of education and occupations. A small but important part of the population (2.5%) could not read or write, while a large

portion had at least a primary education level (32.7%). A study reported that higher educational levels were associated with better understanding and management of chronic conditions like HTN(Sun et al. 2022). This relationship highlights the importance of tailored health education programs in diverse educational settings. There were a lot of different jobs available. The most popular ones were farmers (15.5%), laborers (22%), and housewives (20.3%). The different jobs and levels of education showed that people in the neighborhood had different health and lifestyle habits. Research in a similar rural context revealed that occupation types could significantly influence physical activity levels and dietary habits, directly impacting blood pressure levels(Islam et al. 2023).

The study paid special attention to health habits that help keep blood pressure in check. It showed that people had different levels of adherence to good habits like eating well, being active, and dealing with stress. Concerningly, a lot of the people who took part forgot to keep an eye on their blood pressure and weight on a regular basis. Research in different rural settings has also highlighted how geographical and cultural differences can influence health behaviors and access to healthcare services, reaffirming the need for region-specific health strategies (Arcury et al. 2005). These results made it clear that people in the community need to be more aware of health issues and adopt better health habits.

The study also put the determinants into poor, fair, and good groups based on how well they prevented high blood pressure. This was done by looking at things like practice, knowledge, attitude, motivation, and self-control. The results showed that a lot of the people who took part had poor practices, understanding, and attitudes about preventing HTN. This is an important area for health education and intervention.

One interesting thing about the study was how different health habits are for men and women. The finding that women did not score as well on practice tests as men raises important questions about gender disparities in health practices. This suggests that underlying social and cultural factors may affect health habits differently for men and women. This is echoed in the literature, where studies have noted that cultural and social factors often lead to differing health behaviors and access to healthcare between genders (Everett and Zajacova 2015). These disparities can be attributed to traditional gender roles and responsibilities, which might limit women's time and resources for health management.

It was actually so difficult for rural adults to adapt the quick behavioral changes in such an emerging NCD disease due to limited accessibility of healthcare facilities.

Lastly, the study looked at how knowledge, attitude, self-control, and avoiding high blood pressure are related. It found that better health habits were linked to having more information and a positive outlook. This finding aligns with a observed research where they noted that when individuals have a thorough understanding of what HTN is, its causes, consequences, and the importance of its management, they are more likely to engage in health-promoting behaviors(Gong et al. 2020). This includes adhering to medication, following dietary recommendations, and maintaining regular physical activity.The link between knowledge and behavior is well-established in health behavior theories like the Health Belief Model, which posits that an individual's understanding of a health issue significantly impacts their motivation to take preventive action(Jones et al. 2014).Though in our studies we haven't found motivation as a significant health predictor. The reason behind it might be since all rural community healthcare has a limitation and due to lack of properly trained healthcare personnel also might be a reason of not motivation playing a factor to prevent HTN. The hierarchical regression study also showed that monthly income, level of education, and differences between regions were strong predictors of health behavior. These results could help researchers come up with more focused ways to help people in rural areas avoid getting high blood pressure.

## **5.2 Limitations of the study**

- 1) As it was a cross-sectional survey the study had few inherent limitations to describe the significance of predictors.
- 2) Sample size was not that big but multistage sampling was done to minimize regional variations and to make it more representatives.

## **Chapter 6: Conclusion**

### **Conclusion**

The study provided significant information about the current status of the health practices of rural adults regarding HTN prevention and its predictors. Using the determinants from KAP and TPB models to explore health practices regarding HTN prevention among rural adults makes the study more rational to conclude and suggest few recommendations to improve current health practices. The study was a cross sectional survey among 355 rural adults of Bangladesh. HTN prevention behavior of rural adults was not satisfactory in the most of the cases. Majority of them were more reluctant and irregular to check and monitor their blood pressure and maintain a healthy lifestyle and women were more vulnerable with their poor health practices regarding HTN prevention. The consistency of healthy practices was another public health concern. Not only individual issues but also community as well as organizational limitations were responsible for their poor health practices. Rural adults had lack of proper knowledge on HTN prevention and their poor attitude towards healthy practices would made them more vulnerable for HTN in future. Besides background issues, behavioral determinants like knowledge, attitude, self-control were significant to predict health practices regarding HTN prevention among rural adults.

The findings from the current study can be utilized for further studies also to understand the problems more to improve HTN prevention behavior of rural adults. Experimental study can be done in rural context to improve HTN prevention behavior of rural adults. HTN prevention behavior based on the KAP and TPB models has theoretical evidence that will be beneficial for other researchers at home and abroad. Ministry of Health and Family Welfare (MOHFW) should give more focus on health awareness program in rural areas to increase individual as well as community awareness about HTN prevention. Mass media can be utilized with more emphasis on HTN prevention. Social support should be ensured to prevent this silent epidemic. As the prevention is the best way to control HTN, it's urgent to ensure healthy life styles regarding HTN prevention. Adequate knowledge, positive attitude, proper motivation and better self-control can encourage rural adults more to ensure their healthy behaviors regarding HTN prevention.

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# Annexure



a) Gantt chart

Months ⇒	1 <sup>st</sup> and 2 <sup>nd</sup>				3 <sup>rd</sup> and 4 <sup>th</sup>				5 <sup>th</sup> and 6 <sup>th</sup>			
Weeks ⇒	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24
<b>Planning and development of questionnaire</b>												
<b>Pretesting and finalizing instruments</b>												
<b>Data collection</b>												
<b>Data entry &amp; analysis</b>												
<b>Report writing and editing</b>												
<b>Submission of final report</b>												
<b>Literature review</b>												

Figure A1: Time frame of the Project

b)Study places in map

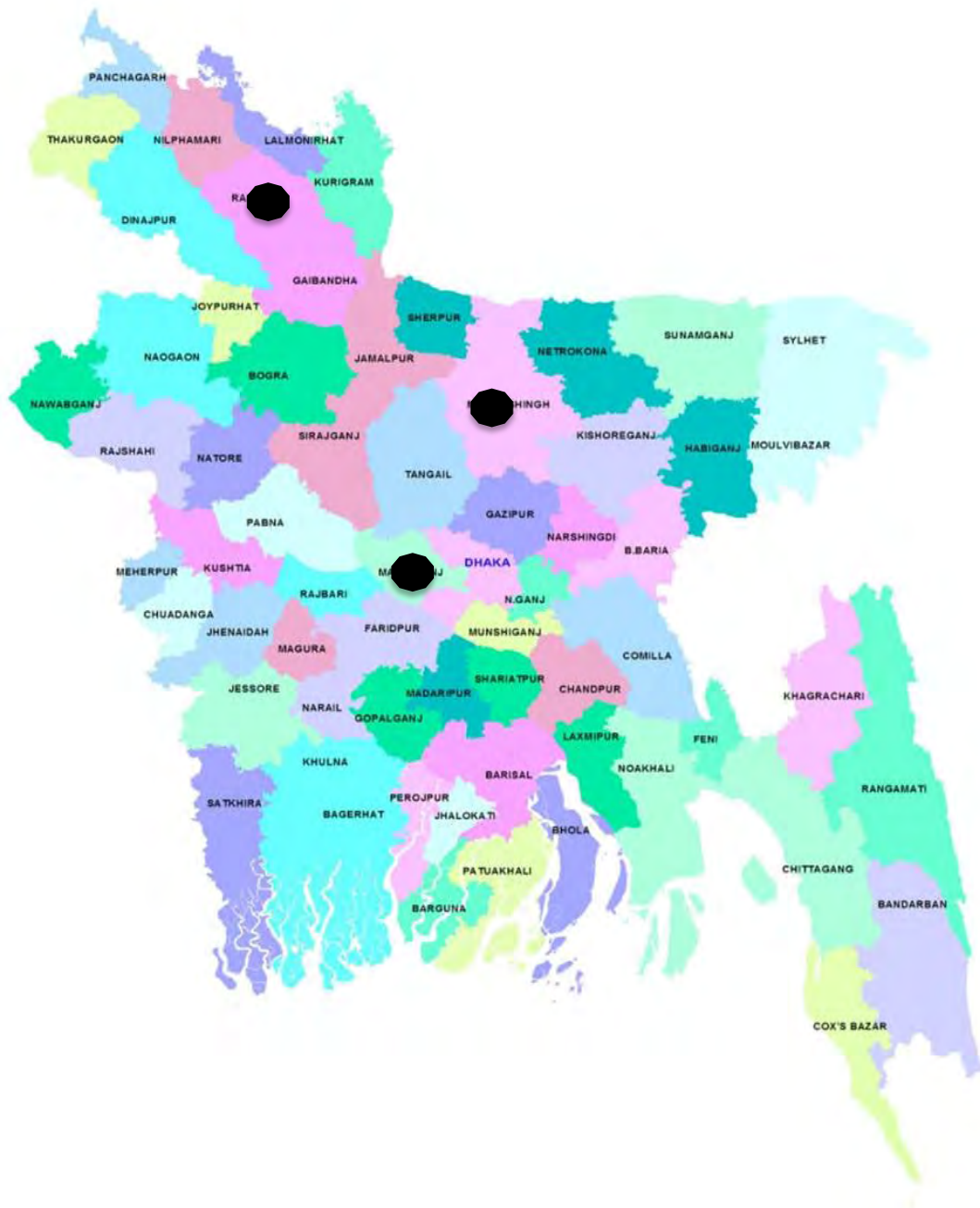
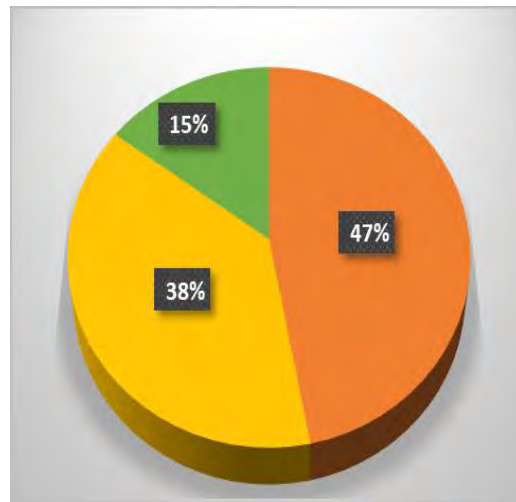


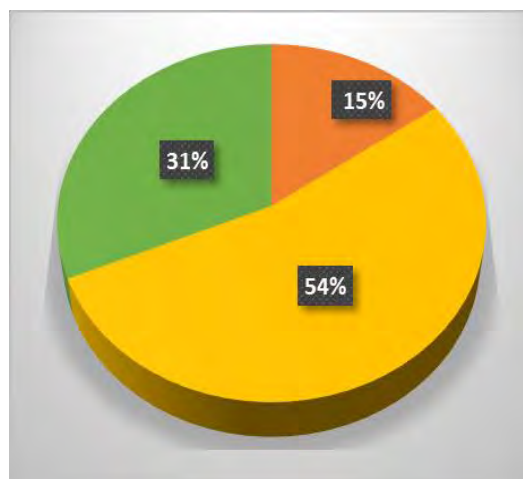
Figure B1: Study places(Rangpur,Munshiganj and Mymensingh district) in map

Source: <http://oldweb.lged.gov.bd/ViewMap.aspx>

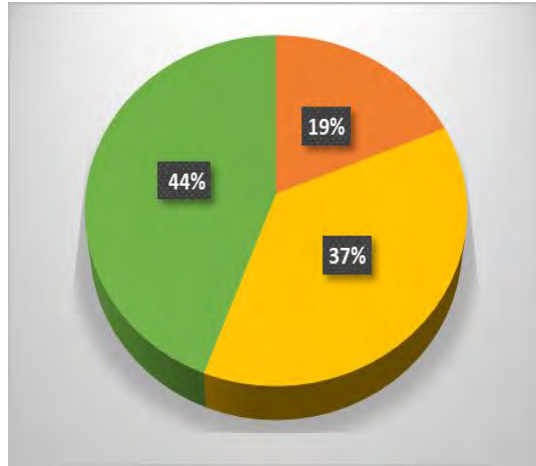
**c) Different Health practices percentage to prevent hypertension**



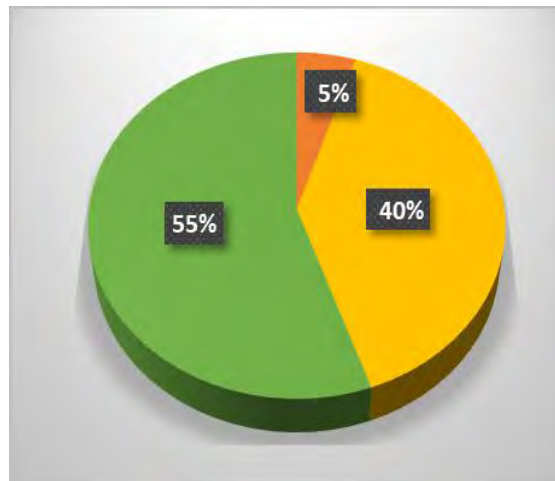
**Figure C1: Percentage of Following a Balanced Diet Percentage. [Always (orange),Sometimes (yellow) and Never (green)](N=355)**



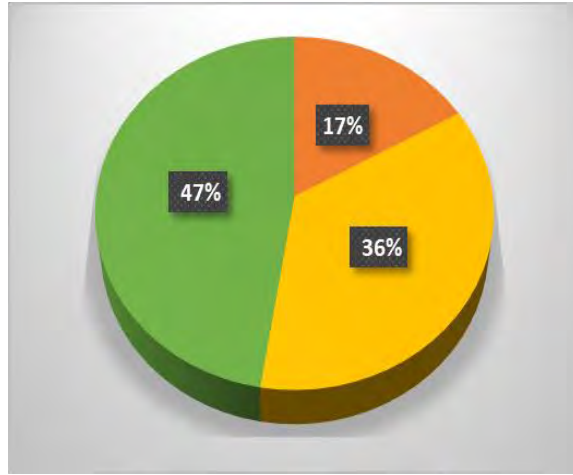
**Figure C2: Percentage of Regular Physical Activity [Always (orange),Sometimes (yellow) and Never (green)](N=355)**



**Figure C3: Percentage of Maintaining healthy body weight [Always (orange), Sometimes (yellow) and Never (green)] (N=355)**

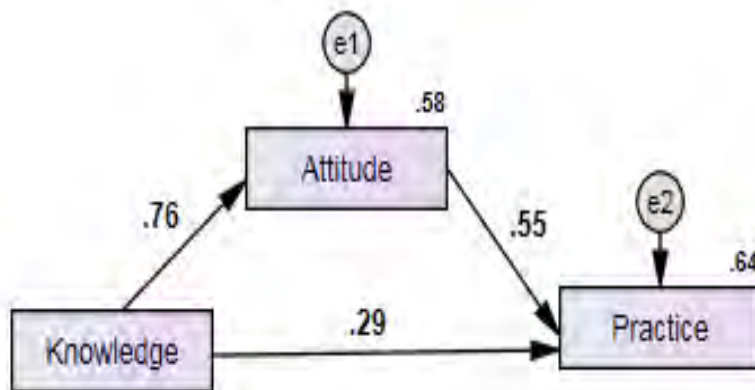


**Figure C4: Percentage of practicing Stress management [Always (orange), Sometimes (yellow) and Never (green)] (N=355)**

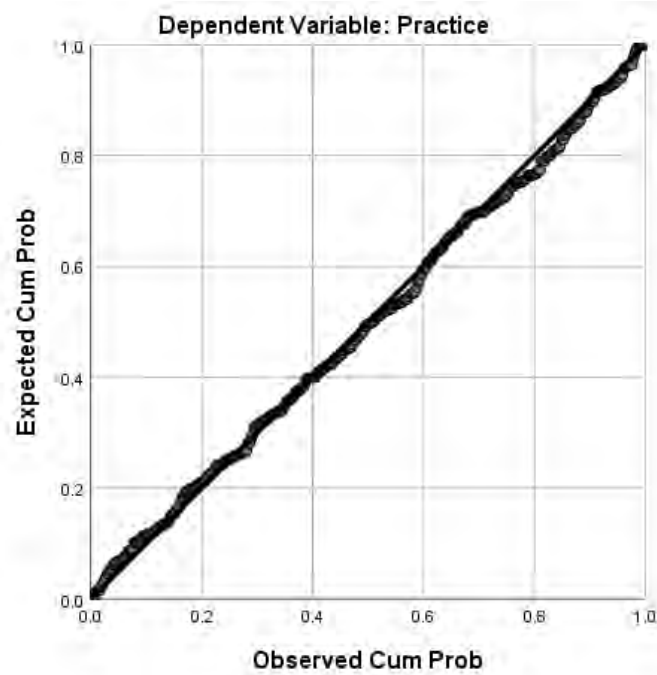


**Figure C5: Percentage of never using Tobacco or Tobacco like Materials [Always (orange),Sometimes (yellow) and Never (green)](N=355)**

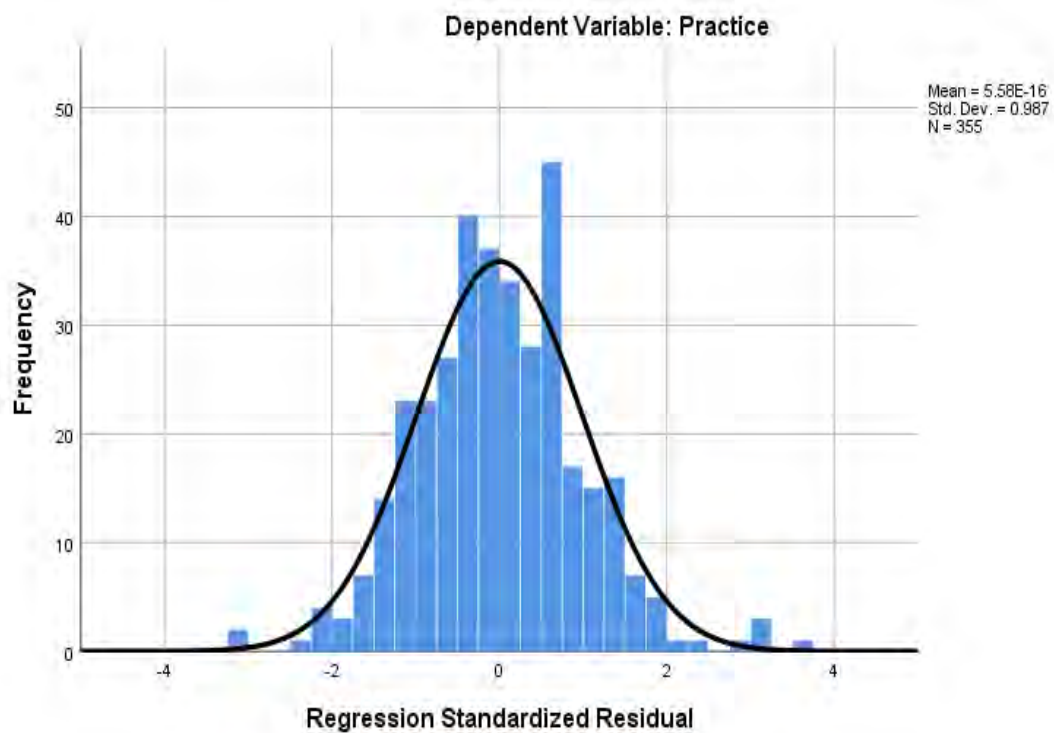
**d) Path relationships in KAP model of HTN prevention behaviour**



**e) Normal P-P Plot in regression model of HTN behavior**



**f) Histogram in regression model of HTN prevention behavior**





## Consent Form

### **Research Title: Health Practices among Rural Adults Regarding Prevention of Hypertension in Bangladesh**

Dear Participant,

We are student researchers from Brac University, conducting a thesis on "Health Practices among Rural Adults Regarding Prevention of Hypertension" in Bangladesh. Your participation in this study is voluntary and greatly appreciated.

**Objective:** This study examines rural adult Bangladeshi hypertension prevention practices. We collect this data to identify areas for improvement and design hypertension prevention programmes.

**Study Procedures:** If you agree to participate, you will be asked to do the following:

1. Answer a brief demographic questionnaire about your age, gender, occupation, and education.
2. Answer structured health and hypertension preventive questions. Your responses are anonymous and confidential.
3. Face-to-face interviews lasting 15 to 25 minutes will complete the procedure.

**Confidentiality:** Your study data will remain secret. The thesis will show aggregated data without identifying you. For privacy, no personal information will be disclosed and would not be submitted to Brac University or any other research organization.

**Voluntary Participation:** Participation in this study is voluntary. You can decline any question and stop answering questions at any time without giving a proper reason. Participation or non-participation will not influence your relationship with Brac University or other research organizations.

**Risks and Benefits:** This study is risk-free. Your participation may improve rural healthcare initiatives by increasing knowledge of hypertension prevention practices.

### **Contact Information:**

If you have any questions or concerns about the research, please feel free to contact the researcher,

Suhala Ashraf Zeba, Email- [suhala.ashraf.zeba@g.bracu.ac.bd](mailto:suhala.ashraf.zeba@g.bracu.ac.bd)

MD. Samiul Islam, Email: [md.samiul.islam2@g.bracu.ac.bd](mailto:md.samiul.islam2@g.bracu.ac.bd)

You may want also contact the supervisor, Dr. Munima Haque, Email: [munima.haque@bracu.ac.bd](mailto:munima.haque@bracu.ac.bd)

**Consent:**

I have read and understood the information provided in this consent form. I voluntarily agree to participate in the study on "Health Practices among Rural Adults Regarding Prevention of Hypertension" and consent to the use of the data collected for research purposes.

Do you agree to participate in this research?

YES

NO

**Participant's Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**(Or, if illiterate or unable to sign, a witness will sign on behalf of the participant)**

**Researcher's Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Note: A copy of this consent form will be provided to the participant for their reference.**



Serial No-

Title: "Health Practices among Rural Adults Regarding Prevention of Hypertension"

Domain A: Sociodemographic Status

Serial No.	Question	Responses
1.	Gender	<ul style="list-style-type: none"><li>• Male</li><li>• Female</li><li>• Other</li></ul>
2.	Age	-----
3.	Village Name	-----
4.	Marital Status	<ul style="list-style-type: none"><li>• Single</li><li>• Married</li><li>• Divorced</li><li>• Widowed</li><li>• Prefer not to say</li></ul>
5.	Education Level	<ul style="list-style-type: none"><li>• No formal education</li><li>• Primary school</li><li>• Secondary school</li><li>• Vocational/Technical training</li><li>• Bachelor's degree</li><li>• Master's degree or higher</li></ul>
6.	Occupation	<ul style="list-style-type: none"><li>• Agricultural worker</li><li>• Laborer</li><li>• Teacher</li><li>• Healthcare professional</li><li>• Office worker</li><li>• Entrepreneur</li><li>• Unemployed</li><li>• Other (please specify):</li></ul>

7.	Monthly Income	-----
8.	Religion	<ul style="list-style-type: none"> <li>• Islam</li> <li>• Hinduism</li> <li>• Buddhism</li> <li>• Christianity</li> <li>• Other (please specify): _____</li> </ul>
9.	Household Size	<ul style="list-style-type: none"> <li>• Less than 4 members</li> <li>• 4-6 members</li> <li>• 7-9 members</li> <li>• 10 or more members</li> </ul>
10.	Primary Decision Maker in the Household	<ul style="list-style-type: none"> <li>• Self</li> <li>• Spouse</li> <li>• Parents</li> <li>• Other family members</li> </ul>
11,	Disability Status	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
12.	Does anyone in your family have a history of hypertension?	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
13.	Are you suffering from any long-term disease (diabetes, stroke, kidney problems, cancer etc.)?	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>

**Domain B: Knowledge**

Serial No.	Statements	Yes	No
1.	Hypertension is a chronic condition characterized by high blood pressure.		
2	Hypertension is influenced by factors such as diet, physical activity, and stress.		

3.	A healthy diet, low in sodium and high in fruits and vegetables, can help prevent hypertension.		
4.	Regular exercise can help lower blood pressure.		
5.	Stress management techniques can contribute to the prevention of hypertension.		
6.	Excessive smoking can contribute to the development of hypertension.		
7.	The family history of hypertension increases the risk of developing the condition.		
8.	Hypertension can be completely cured with medication.		
9.	Hypertension is a condition that primarily affects older individuals.		
10.	Hypertension can increase the risk of other health conditions such as heart disease and stroke.		
11.	Hypertension is more common in individuals who lead sedentary lifestyles.		
12.	Obesity and being overweight are risk factors for hypertension.		

**Domain C: Attitude**

Serial No.	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	I recognize the potential risks and complications associated with hypertension, and I am committed to avoiding them.					
2.	I am willing to seek support from healthcare professionals in implementing hypertension prevention strategies.					
3.	I am willing to make sacrifices and adjustments in my lifestyle to lower my risk of hypertension.					
4.	I am open to trying new strategies or approaches to prevent hypertension.					

5.	I believe that preventing hypertension is a responsibility shared by both individuals and the community.					
6.	I actively seek information and resources on hypertension prevention to enhance my knowledge and understanding.					
7.	I am willing to actively engage in physical activities to prevent hypertension.					
8.	I believe that excessive alcohol consumption is harmful to my health.					
9.	I believe that adopting a healthy diet is essential for preventing hypertension.					
10.	I think that avoiding tobacco use is important for preventing hypertension.					

**Domain D: Practice**

<b>Serial No.</b>	<b>Practices</b>	<b>Always</b>	<b>Often</b>	<b>Some times</b>	<b>Rarely</b>	<b>Never</b>
1.	I consistently follow a balanced diet that is low in sodium and includes a variety of fruits and vegetables and limits my consumption of processed and high-fat foods.					
2.	I engage in regular physical activity for at least 30 minutes most days of the week.					
3.	I actively monitor and strive to maintain a healthy body weight.					
4.	I regularly practice stress management techniques, such as meditation, deep breathing, or relaxation exercises.					

5.	I constantly check and monitor my blood pressure levels.					
6.	I have never used tobacco (smoking or chewing) or successfully quit using it.					

**Domain E: Motivation**

<b>Serial no.</b>	<b>Motivation Statement</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
1.	The potential dangerous health consequences of hypertension serve as a strong motivation for me to prevent it.					
2.	I am dedicated and committed to making necessary lifestyle changes to lower my risk of developing hypertension.					
3.	I derive personal satisfaction and fulfillment from practicing behaviors that reduce the risk of hypertension.					
4.	The support and encouragement from my social circle motivate me to engage in practices for hypertension prevention.					
5.	I am driven by the desire to improve my overall well-being through hypertension prevention.					
6.	The recognition and rewards associated with practicing hypertension prevention fuel my motivation.					
7.	Hearing success stories of individuals who have successfully prevented hypertension inspires and motivates me.					

8.	I feel a strong sense of responsibility towards my own health and the health of my loved ones in preventing hypertension.					
9.	I discuss the negative effects of alcohol consumption with family and friends to motivate them for preventing hypertension.					

**Domain F: Self Control**

Serial No.	Self-Control Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	I can resist temptations and unhealthy food choices in order to maintain my blood pressure within a healthy range.					
2..	I am able to consistently engage in regular physical activity, even when faced with obstacles or distractions.					
3.	I can effectively manage stress and avoid turning to unhealthy coping mechanisms that may increase my blood pressure.					
4.	I am disciplined in regularly monitoring my blood pressure and taking necessary steps to control it.					
5.	I have the willpower to resist the use of tobacco products, knowing their harmful effects on hypertension.					

6.	I struggle with self-control when it comes to consistently following hypertension prevention practices.					
7.	I feel confident in my ability to prevent hypertension through responsible alcohol consumption.					

**Thank you**



### সম্মতিপত্র

**গবেষণার শিরোনাম:** বাংলাদেশে উচ্চ রক্তচাপ প্রতিরোধের বিষয়ে গ্রামীণ প্রাপ্তবয়স্কদের মধ্যে স্বাস্থ্য অনুশীলন!

প্রিয় অংশগ্রহণকারী,

আমরা ব্র্যাক ইউনিভার্সিটির শিক্ষার্থী হিসেবে, বাংলাদেশে হাইপারটেনশন প্রতিরোধ সম্পর্কিত গ্রামীণ প্রাপ্তবয়স্কদের মধ্যে স্বাস্থ্য অনুশীলন" শীর্ষক একটি গবেষণামূলক প্রবন্ধ রচনা করছি। এই অধ্যয়নে আপনার অংশগ্রহণ স্বেচ্ছাসেবী এবং ব্যাপকভাবে প্রশংসিত।

**উদ্দেশ্য:** এই গবেষণাটি গ্রামীণ প্রাপ্তবয়স্ক বাংলাদেশী উচ্চ রক্তচাপ প্রতিরোধ অনুশীলনগুলি পরীক্ষা করে। আমরা উচ্চ রক্তচাপ প্রতিরোধ প্রোগ্রামগুলি ডিজাইন করতে এবং এ ভয়ানক অবস্থায় উন্নতির ক্ষেত্রগুলি সনাক্ত করতে তথ্যগুলো সংগ্রহ করা।

**অধ্যয়ন পদ্ধতি:** আপনি যদি অংশীদারিত্বে সম্মত হন তবে আপনাকে নিম্নলিখিতগুলি কাজসমূহ করতে বলা হবে:

1. আপনার বয়স, লিঙ্গ, পেশা এবং শিক্ষা সম্পর্কে একটি সংক্ষিপ্ত সমাজতাত্ত্বিক প্রশ্নাবলীর উত্তর দিন।
2. সুগঠিত স্বাস্থ্য বিষয়ক এবং উচ্চ রক্তচাপ প্রতিরোধমূলক প্রশ্নের উত্তর দিন। আপনার উত্তরগুলি বেনামী এবং গোপনীয় থাকবে।
3. ১৫ থেকে ২৫ মিনিটের মুখোমুখি সাক্ষাৎকারে প্রক্রিয়াটি সম্পন্ন হবে।

**গোপনীয়তা:** আপনার অধ্যয়নকৃত তথ্য গোপন থাকবে। খিসিসটি আপনাকে সনাক্ত না করে সমন্বিত তথ্য প্রদর্শন করবে। গোপনীয়তার জন্য, কোনও ব্যক্তিগত তথ্য প্রকাশ করা হবে না এবং ব্র্যাক ইউনিভার্সিটি বা অন্য কোনো গবেষণা প্রতিষ্ঠানে জমা দেওয়া হবে না।

**স্বেচ্ছাসেবী অংশগ্রহণ:** এই অধ্যয়নটিতে স্বেচ্ছায় অংশগ্রহণ করবেন। আপনি চাইলে যেকোনো প্রশ্ন প্রত্যাখ্যান করতে পারেন এবং বিনা উপযুক্ত কারণ দর্শায় যে কোনও সময় প্রশ্নের উত্তর দেওয়া ত্যাগ করতে পারেন। অংশগ্রহণ বা অংশগ্রহণ না করা ব্র্যাক বিশ্ববিদ্যালয় বা অন্যান্য গবেষণা প্রতিষ্ঠানের সাথে আপনার সম্পর্কে প্রভাবিত করবে না।

**ঝুঁকি এবং উপকারিতা:** এই গবেষণাটি ঝুঁকিমুক্ত। আপনার অংশগ্রহণ উচ্চ রক্তচাপ প্রতিরোধ অনুশীলনসম্পর্কে জ্ঞান বৃদ্ধি করে গ্রামীণ স্বাস্থ্যসেবা উদ্যোগের উন্নতি করতে পারে।

**যোগাযোগের তথ্য:**

গবেষণা সম্পর্কে আপনার যদি কোনও প্রশ্ন বা উদ্বেগ থাকে তবে দয়া করে নির্দিষ্টায় গবেষকের সাথে যোগাযোগ করুন,



সুহালা আশরাফ জেবা,ই-মেইল- suhala.ashraf.zeba@g.bracu.ac.bd

মোঃ সামিউল ইসলাম,ইমেইল:md.samiul.islam2@g.bracu.ac.bd

আপনি চাইলে সুপারভাইজারের সাথেও যোগাযোগ করতে পারেন।

ডাঃ মুনিমা হক,ইমেইল:munima.haque@bracu.ac.bd

### সম্মতি:

আমি এই সম্মতি পত্রে প্রদত্ত তথ্য পড়েছি এবং বুঝতে পেরেছি। আমি স্বেচ্ছায় "বাংলাদেশে উচ্চ রক্তচাপ প্রতিরোধের বিষয়ে গ্রামীণ প্রাপ্তবয়স্কদের মধ্যে স্বাস্থ্য অনুশীলন" শীর্ষক গবেষণায় অংশ নিতে সম্মত হয়েছি এবং গবেষণার উদ্দেশ্যে সংগৃহীত তথ্য ব্যবহারে সম্মত হয়েছি।

আপনি কি এই গবেষণায় অংশগ্রহণ করতে রাজি?

হ্যাঁ

না

অংশগ্রহণকারীর স্বাক্ষর: \_\_\_\_\_

তারিখ:

(অথবা, যদি নিরক্ষর বা স্বাক্ষর করতে অক্ষম হয় তবে একজন সাক্ষী অংশগ্রহণকারীর পক্ষে স্বাক্ষর করবেন)

গবেষকের

স্বাক্ষর: \_\_\_\_\_

তারিখ:\_\_\_\_\_

দ্রষ্টব্য: এই সম্মতি ফর্মের একটি অনুলিপি অংশগ্রহণকারীকে তাদের রেফারেন্সের জন্য সরবরাহ করা হবে।

সিরিয়াল নং-

শিরোনাম: "বাংলাদেশে উচ্চ রক্তচাপ প্রতিরোধের বিষয়ে গ্রামীণ প্রাপ্তবয়স্কদের মধ্যে স্বাস্থ্য অনুশীলন"

ডোমেইন A: সমাজতাত্ত্বিক অবস্থা

ক্রমিক নং	প্রশ্নসমূহ	প্রতিক্রিয়াসমূহ
১.	লিঙ্গ	<ul style="list-style-type: none"><li>• পুরুষ</li><li>• নারী</li><li>• অন্যান্য</li></ul>
২.	বয়স	- -----
৩.	গ্রামের নাম	-----
৪.	বৈবাহিক অবস্থা	<ul style="list-style-type: none"><li>• একক</li><li>• বিবাহিত</li><li>• তালাকপ্রাপ্ত</li><li>• বিধবা</li><li>• বলতে চাচ্ছেন না</li></ul>
৫.	শিক্ষাগত যোগ্যতা	<ul style="list-style-type: none"><li>• প্রাতিষ্ঠানিক শিক্ষা নেই</li><li>• প্রাথমিক বিদ্যালয়</li><li>• মাধ্যমিক বিদ্যালয়</li><li>• বৃত্তিমূলক/ কারিগরি প্রশিক্ষণ</li><li>• স্নাতক পাশ</li><li>• স্নাতকোত্তর বা উর্ধ্বতর</li></ul>
৬.	পেশা	<ul style="list-style-type: none"><li>• কৃষিজীবী</li><li>• শ্রমিক</li><li>• শিক্ষক</li><li>• পেশাজীবী স্বাস্থ্যকর্মী</li><li>• অফিসকর্মী</li><li>• উদ্যোক্তা</li><li>• চাকরিশূন্য</li></ul>

		<ul style="list-style-type: none"> <li>• অন্যান্য হলে নির্দিষ্ট করে দিন):</li> </ul> <p>_____</p>
৭.	মাসিক আয়	<p>-----</p> <p>-----</p>
৮.	ধর্ম	<ul style="list-style-type: none"> <li>• ইসলাম</li> <li>• হিন্দুধর্ম</li> <li>• বৌদ্ধ ধর্ম</li> <li>• খ্রিস্টান ধর্ম</li> <li>• অন্যান্য হলে নির্দিষ্ট করে দিন:</li> </ul> <p>_____</p>
৯.	পরিবারের সদস্য সংখ্যা	<ul style="list-style-type: none"> <li>• ৪ জনের কম সদস্য</li> <li>• ৪-৬জন সদস্য</li> <li>• ৭-৯ জন সদস্য</li> <li>• ১০ বা ততোধিক সদস্য</li> </ul>
১০.	পরিবারের প্রাথমিক সিদ্ধান্ত গ্রহণকারী	<ul style="list-style-type: none"> <li>• নিজেই</li> <li>• স্বামী/স্ত্রী</li> <li>• পিতা/মাতা</li> <li>• পরিবারের অন্যান্য সদস্য</li> </ul>
১১.	প্রতিবন্ধী অবস্থা	<ul style="list-style-type: none"> <li>• হ্যাঁ</li> <li>• না</li> </ul>
১২.	আপনার কি বংশগতভাবে পরিবারে কারও কি পূর্বে উচ্চ রক্তচাপ ছিল?	<ul style="list-style-type: none"> <li>• হ্যাঁ</li> <li>• না</li> </ul>
১৩.	আপনি কি কোনো দীর্ঘমেয়াদী রোগে(ডায়াবেটিস,স্ট্রোক,কিডনি ইত্যাদি) ভুগছেন?	<ul style="list-style-type: none"> <li>• হ্যাঁ</li> <li>• না</li> </ul>

**ডোমেইন B: জ্ঞান**

ক্রমিক নং	মন্তব্যসমূহ	হ্যাঁ	না
১.	হাইপারটেনশন একটি দীর্ঘস্থায়ী অবস্থা যা উচ্চ রক্তচাপ দ্বারা চিহ্নিত।		
২.	উচ্চ রক্তচাপ ডায়েট, শারীরিক ক্রিয়াকলাপ এবং স্ট্রেসের মতো কারণগুলি দ্বারা প্রভাবিত হয়।		
৩.	একটি স্বাস্থ্যকর ডায়েট, সোডিয়াম কম এবং ফল এবং শাকসব্জী বেশি, উচ্চ রক্তচাপ প্রতিরোধে সহায়তা করতে পারে।		
৪.	নিয়মিত ব্যায়াম রক্তচাপ কমাতে সহায়তা করতে পারে।		
৫.	স্ট্রেস ম্যানেজমেন্ট কৌশলগুলি উচ্চ রক্তচাপ প্রতিরোধে অবদান রাখতে পারে।		
৬.	অতিরিক্ত ধূমপান উচ্চ রক্তচাপের বিকাশে অবদান রাখতে পারে।		
৭.	উচ্চ রক্তচাপের পারিবারিক ইতিহাস এই অবস্থার বিকাশের ঝুঁকি বাড়ায়।		
৮.	হাইপারটেনশন ওষুধের মাধ্যমে পুরোপুরি নিরাময় করা যায়।		
৯.	হাইপারটেনশন এমন একটি অবস্থা যা প্রাথমিকভাবে বয়স্ক ব্যক্তিদের প্রভাবিত করে।		
১০.	হাইপারটেনশন হৃদরোগ এবং স্ট্রোকের মতো অন্যান্য স্বাস্থ্যের অবস্থার ঝুঁকি বাড়িয়ে তুলতে পারে।		
১১.	হাইপারটেনশন এমন ব্যক্তিদের মধ্যে বেশি দেখা যায় যারা অলস জীবনযাপন করে।		
১২.	স্বথূলতা এবং অতিরিক্ত ওজন উচ্চ রক্তচাপের ঝুঁকির কারণ।		

**ডোমেইন C: মনোভাব**

ক্রমিক নং	মন্তব্যসমূহ	দৃঢ়ভাবে একমত	সহমত	নিরপেক্ষ	দ্বিমত	দৃঢ়ভাবে দ্বিমত
১.	আমি উচ্চ রক্তচাপের সাথে যুক্ত সম্ভাব্য ঝুঁকি এবং জটিলতাগুলি সনাক্ত করি এবং আমি সেগুলি এড়াতে প্রতিশ্রুতিবদ্ধ।					

২.	আমি উচ্চ রক্তচাপ প্রতিরোধ কৌশল বাস্তবায়নে স্বাস্থ্যসেবা পেশাদারদের কাছ থেকে সহায়তা চাইতে ইচ্ছুক।					
৩.	উচ্চ রক্তচাপের ঝুঁকি কমাতে আমি আমার জীবনযাত্রায় ত্যাগ এবং সামঞ্জস্য করতে ইচ্ছুক।					
৪.	আমি উচ্চ রক্তচাপ প্রতিরোধের জন্য নতুন কৌশল বা পদ্ধতি চেষ্টা করার জন্য উন্মুক্ত।					
৫.	আমি বিশ্বাস করি যে উচ্চ রক্তচাপ প্রতিরোধ করা ব্যক্তি এবং সম্প্রদায় উভয়েরই একটি দায়িত্ব।					
৬.	আমি আমার জ্ঞান এবং বোঝার জন্য উচ্চ রক্তচাপ প্রতিরোধসম্পর্কিত তথ্য এবং সংস্থানগুলি সক্রিয়ভাবে অনুসন্ধান করি।					
৭.	আমি উচ্চ রক্তচাপ প্রতিরোধের জন্য সক্রিয়ভাবে শারীরিক ক্রিয়াকলাপে জড়িত হতে ইচ্ছুক।					
৮.	আমি বিশ্বাস করি যে অতিরিক্ত মদ্যপান আমার স্বাস্থ্যের জন্য ক্ষতিকর।					
৯.	আমি বিশ্বাস করি যে উচ্চ রক্তচাপ প্রতিরোধের জন্য একটি স্বাস্থ্যকর খাদ্য ব্যবস্থা গ্রহণ করা অপরিহার্য।					
১০.	আমি মনে করি উচ্চ রক্তচাপ প্রতিরোধের জন্য তামাক ত্যাগ করা গুরুত্বপূর্ণ।					

**ডোমেইন D: অনুশীলন**

ক্রমিক নং	অনুশীলন	সবদা	প্রায়ই	মাঝেমধ্যে	কদাচিৎ	কখনো না
১.	আমি ধারাবাহিকভাবে একটি সুসম খাদ্যাভাস অনুসরণ করি যাতে সোডিয়াম কম থাকে এবং এতে বিভিন্ন ফল এবং শাকসব্জী অন্তর্ভুক্ত থাকে ও প্রক্রিয়াজাত এবং উচ্চ চর্বিযুক্ত খাবারের ব্যবহার সীমাবদ্ধ থাকে।					
২.	আমি সপ্তাহের বেশিরভাগ দিন কমপক্ষে ৩০ মিনিটের জন্য নিয়মিত শারীরিক ক্রিয়াকলাপে জড়িত থাকি।					
৩.	আমি সক্রিয়ভাবে শরীরের স্বাস্থ্যকর ওজন বজায় রাখার জন্য নিরীক্ষণ এবং চেষ্টা করি।					
৪.	আমি নিয়মিত দুশ্চিন্তা নিয়ন্ত্রণ কৌশলগুলি অনুশীলন করি, যেমন ধ্যান, গভীর শ্বাস প্রশ্বাস বা শিথিলকরণ অনুশীলন।					
৫.	আমি ধারাবাহিকভাবে আমার রক্তচাপের মাত্রা পরীক্ষা করি এবং পর্যবেক্ষণ করি।					
৬.	আমি কখনও তামাক ধূমপানের সাহায্যে বা চিবিয়ে ব্যবহার করিনি বা ব্যবহার করে থাকলেও সফলভাবে এটি ব্যবহার বন্ধ করেছি।					

**ডোমেইন E: অনুপ্রেরণা**

ক্রমিক ক নং	আনুপ্রেরণিক অভিব্যক্তি	দৃঢ়ভাবে একমত	সহমত	নিরপেক্ষ	দ্বিমত	দৃঢ়ভাবে দ্বিমত
১.	উচ্চ রক্তচাপের সম্ভাব্য স্বাস্থ্যের পরিণতিগুলি এটি প্রতিরোধের জন্য আমার জন্য একটি শক্তিশালী অনুপ্রেরণা হিসাবে কাজ করে।					

২.	হাইপারটেনশন হওয়ার ঝুঁকি কমাতে প্রয়োজনীয় জীবনযাত্রার পরিবর্তন করতে আমি নিবেদিত এবং প্রতিশ্রুতিবদ্ধ।					
৩.	হাইপারটেনশনের ঝুঁকি হ্রাস করে এমন আচরণগুলি অনুশীলন করে আমি ব্যক্তিগত সন্তুষ্টি এবং পরিপূর্ণতা অর্জন করি।					
৪.	আমার সামাজিক বৃত্তের সমর্থন এবং উৎসাহ আমাকে উচ্চ রক্তচাপ প্রতিরোধের অনুশীলনে জড়িত হতে অনুপ্রাণিত করে।					
৫.	আমি হাইপারটেনশন প্রতিরোধের মাধ্যমে আমার সামগ্রিক সুস্থতা উন্নত করার আকাঙ্ক্ষা দ্বারা চালিত।					
৬.	হাইপারটেনশন প্রতিরোধ অনুশীলনের সাথে যুক্ত স্বীকৃতি এবং পুরস্কারগুলি আমার অনুপ্রেরণাকে বাড়িয়ে তোলে।					
৭.	যারা সফলভাবে উচ্চ রক্তচাপ প্রতিরোধ করেছেন তাদের সাফল্যের গল্প শুনে আমি অনুপ্রাণিত এবং অনুপ্রাণিত হই।)					
৮.	হাইপারটেনশন প্রতিরোধে আমি আমার নিজের স্বাস্থ্য এবং আমার প্রিয়জনদের স্বাস্থ্যের প্রতি একটি শক্তিশালী দায়িত্ববোধ অনুভব করি।)					
৯.	আমি উচ্চ রক্তচাপ প্রতিরোধে তাদের অনুপ্রাণিত করার জন্য পরিবার এবং বন্ধুদের সাথে অ্যালকোহল সেবনের নেতিবাচক প্রভাব নিয়ে আলোচনা করি।					

**ডোমেইন F: আত্ম নিয়ন্ত্রণ**

ক্রমিক নং	আত্ম নিয়ন্ত্রণ অভিব্যক্তি	দৃঢ়ভাবে একমত	সহমত	নিরপেক্ষ	দ্বিমত	দৃঢ়ভাবে দ্বিমত
১.	আমার রক্তচাপ স্বাস্থ্যকর অবস্থায় নিয়ন্ত্রণে রাখার জন্য আমি অস্বাস্থ্যকর খাবারের পছন্দগুলির প্রতি আকৃষ্ট হওয়া এবং লোভ সংবরণ করতে পারি					
২.	বাধা বা বিভ্রান্তির মুখোমুখি হওয়া সত্ত্বেও আমি নিয়মিত শারীরিক ক্রিয়াকলাপে ধারাবাহিকভাবে জড়িত থাকতে সক্ষম।					
৩.	আমি কার্যকরভাবে দুশ্চিন্তা নিয়ন্ত্রণ করতে পারি এবং তা নিয়ন্ত্রণে অস্বাস্থ্যকর সমাধান যা আমার রক্তচাপ বৃদ্ধিতে ভূমিকা রাখতে পারে এমন পদ্ধতিতে যাওয়া এড়াতে সক্ষম।					
৪.	আমি নিয়মিত আমার রক্তচাপ পর্যবেক্ষণ এবং এটি নিয়ন্ত্রণে প্রয়োজনীয় পদক্ষেপ গ্রহণে শৃঙ্খলাবদ্ধ।					
৫.	উচ্চ রক্তচাপের উপর তামাকজাত দ্রব্যের ক্ষতিকর প্রভাব জেনে তামাকজাত দ্রব্যের ব্যবহার প্রতিরোধ করার ইচ্ছাশক্তি আমার আছে।)					
৬.	হাইপারটেনশন প্রতিরোধের অনুশীলনগুলি নিয়মিত অনুসরণ করার ক্ষেত্রে আমাকে নিজের সাথেই সংগ্রাম করতে হয়।					
৭.	আমি আত্মবিশ্বাসী যে হাইপারটেনশন প্রতিরোধে মদ্যপানে আত্মসংবরণ করতে সক্ষম।					

**ধন্যবাদ**