

Prevalence and Association of Hypertension among the Government Civil Employees of Bangladesh Armed Forces Attending BNS Patenga (Navy Hospital), Chattogram

*Alam MN¹, Aliuzzaman M², Islam MK³, Shourov MMH⁴

Abstract

Hypertension is a major risk factor for several cardiovascular diseases (CVD). A descriptive, cross-sectional study was conducted to estimate the prevalence of hypertension and its risk factors among the government civil employees of Bangladesh Armed Forces reported to BNS Patenga (Navy Hospital), Chattogram, Bangladesh, between January and June 2023. The study involved participants aged 25-60 years who are government civil employees working in Bangladesh Armed Forces in Chattogram area. This study was done using multi-stage random sampling. Data on age, gender, smoking habits, sedentary lifestyle, obesity, diabetes, dyslipidemia, physical activity, diet, extra salt use, family history of hypertension, cardiovascular disease and cerebrovascular disease, anthropometric measurements and blood pressure were collected using modified WHO-STEPPS protocol. Hypertension was defined according to JNC-8 guidelines. Multiple logistic regressions models were used to identify risk factors associated with hypertension. Data were collected with semi-structured questionnaire and checklist by face-to-face interview and reviewing medical records respectively. Data were analyzed by SPSS version 19.0. A total of 150 participated (128 male and 22 female). Among the study population, 17% had hyperlipidemia, 32% consume high caloric diet, 15% were overweight, 20% had smoking habit, 17% were working in stressful environment, 57% were sedentary worker, 19% having family history of hypertension. The overall age-adjusted prevalence hypertension among 150 participants was 27%, which was higher among males compared to females (25% in contrast to 2%). Bivariate analysis showed significant relationship of hypertension with age, BMI, no physical activity, tobacco use, extra salt intake, dyslipidaemia, stressful life, high calorie diet, diabetes, and family history of stroke/cardiovascular disease, hypertension, diabetes and dyslipidaemia. In the multivariate model, factors significantly associated with hypertension were older age (33%), smoking (26%), extra salt intake (35%), and high waist circumference (36%). The prevalence of hypertension was high among our study participants. Population-based intervention programs and policies for increased awareness about the risk factors, and life-style modification are essential for prevention of hypertension.

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Introduction

Cardiovascular disease is the leading cause of death worldwide, accounting for 30% of all deaths.¹ As an influencing factor of cardiovascular disease,² hypertension plays an important role in the occurrence and development of CVD.³ As shown in previous studies gender, age, lifestyle, obesity, diabetes mellitus, dietary structure, and other factors directly or indirectly affect the incidence and progress of hypertension.⁴ The prevalence pattern of hypertension in developing countries is different from that in the developed countries.

1. *Lt Col (Dr.) Mohammad Nurul Alam, Graded Specialist in Medicine, Hyperbaric & Under-water Medicine Specialist, Commanding Officer, BNS Patenga, Chattogram.
2. Col (Dr.) Md. Aliuzzaman, Senior Medical Officer, Medical Squadron, Bangladesh Air Force Base Zohurul Haque, Chattogram.
3. Maj (Dr.) Md. Khairul Islam, Medicine Specialist, BNS Patenga, Chattogram.
4. Maj (Dr.) Md. Mehedhi Hasan Shourov, Pathologist, BNS Patenga, Chattogram.

Address of Correspondence:
Email: dralam20057@gmail.com

In Bangladesh, a small but very populous and typical developing country, our clinical experience indicates that prevalence of hypertension has increased at a rapid rate among urban dwellers over the last few years.^{5,6} Hypertension is a common cause of morbidity all over the world defined according to JNC-8 as BP $\geq 140/90$ mmHg for the age <60 years and $\geq 150/90$ mmHg for the age ≥ 60 years. It may be a consequence of diet, obesity, family history of hypertension or presence of any secondary causes.^{7,8}

We proposed a study to identify the various risk factors for hypertension among government civil employees of Bangladesh Armed Forces. The result of the study is expected to suggest possible interventions based on their risk factors analysis.

Methods

A descriptive, cross-sectional study was conducted in the Department of Medicine at BNS Patenga Bangladesh Navy Hospital Chattogram between January to June 2023. A total of 150 government civil employees were enrolled in this study; all of them were more than 20 years old. Convenient Sampling technique was done. The participants were briefed properly, and informed consent was taken from them. Then data were collected with pretested semi-structured questionnaire and checklist by face-to-face interview and reviewing medical & laboratory records respectively. The following data was collected from the respondents: age, sex, education, occupation, sedentary life (no habit of regular physical exercise), body weight by BMI classification (18.5- <25 =normal, 25- <30 =overweight, >30 =obese), stressful life (pattern of job, working environment, working time, sleeping

pattern), family history (history of dyslipidaemia, CAD, CVD, hypertension etc.), intake of high caloric diet (>2500 kcal/day). For biochemical tests of all measurements were done in fasting condition in the pathology department of the above-mentioned hospital by automated blood analyser machine (Model: Dimension Xpand plus with HM, country of origin: USA). Blood pressure was measured at lying position. Hypertensive patient was identified based on JNC-8 as BP $\geq 140/90$ mmHg for the age <60 years and $\geq 150/90$ mmHg for the age ≥ 60 years.⁹

Data were analyzed by statistical software SPSS version 19.0. Descriptive type of statistics was done for dependent (hypertension) and independent (risk factors) variables using frequency distribution tables and graphs, mean, standard deviation. Inferential statistics were done for relationship among variables using Chi-square tests. Level of significance was at 5% for the selected risk factors and outcome variables. A p-value <0.05 was considered statistically significant. The study was approved by the Institutional Review Board of the BNS Patenga (Navy Hospital), Chattogram, Bangladesh.

Results

Among 150 participants, 90 patients (60%) were in ≥ 40 years age group. 128 were males (85%), while 22 were females (15%) (Table-I). The pattern of hypertension is summarized in (Table-II). Hypertension was detected in 40(27%), among them 37 were males and 3 females. Hypertension with hyperlipidaemia was found in 9(6%) and hypertension with diabetes mellitus in 12(8%). Among the participants having >40 years of age contribute highest number 30 ($n=150$) of hypertension, which is statistically significant (Table-III).

There is also significant relationship of hypertension with age, stress, smoking, family history of hypertension, CVD, DM, CAD, sedentary lifestyle, intake of high calorie food, obesity, DM, dyslipidaemia and extra salt intake and high waist circumference (Table-III).

Table-I: Demographic data of the study participants (n=150)

Variables	Frequency	Percentage
Age group (in years)		
21-30	15	10%
31-40	45	30%
41-50	78	52%
51-60	12	8%
Sex		
Male	128	85%
Female	22	15%

Table-II: Association between sex and hypertension (n=150)

Sex	Normal BP (<140/90 mmHg)	High BP (\geq 140/90 mmHg)
Male	91	37
Female	19	03
Total	110 (73%)	40 (27%)

Discussion

Our results found that the proportion of hypertension was higher among the age group more than 40 years (33%) in comparison to the other groups. A recent study found that highest rate of hypertension among 40 years and above age group of man and women, which is similar to our findings.¹⁰ It was also found that hypertension

Table-III: Association between blood pressure in contrast to risk habits (n=150)

Variables	Age >40 years	Smoking	Rich food or high calorie food	Sedentary life style	Obesity	Stress	Diabetes or Prediabetes	Dyslipidaemia	Extra Salt Intake	Family history of HTN, DM, Dyslipidaemia, CAD, CVD	High waist circumference
Total Population	90	30	48	86	22	26	28	26	32	29	22
% of total population	60%	20%	32%	57%	15%	17%	19%	17%	21%	19%	15%
% of HTN	33%	26%	33%	25%	36%	23%	43%	35%	34%	44%	36%
Normal BP (<140/90 mmHg)	60	22	32	64	14	20	16	17	21	16	14
High BP (\geq 140/90 mmHg)	30	08	16	22	08	06	12	09	11	13	8

Data were expressed as frequency and percentage. Chi-square test was performed to reach the P value; S=significant.

was higher (44%) among the participants who have family history of hypertension, hyperlipidemia, CVD, and CAD. It has been supported by previous study conducted among Chinese population.¹¹

Several previous studies among Asian population have found the similar results. In our study, dyslipidaemia group had more hypertension (35%) in comparison to non-dyslipidaemic group, and also among the diabetic group (43%) compared to non-diabetic group. Hypertension among the Asian populations is stated in many previous studies and found the similar results.¹²

We have found that the highest proportion of hypertension among the people have family history of HTN, DM, dyslipidaemia, CAD and CVD. A hospital based cross-sectional study reported that presence of family history is positively correlated with hypertension.¹³ With the course of time, western foods have been gaining attention and popularity among the Bangladeshi population that result in changes of their dietary pattern and make people obese and hyperlipidaemic which were found as strong risk factors to develop hypertension. Hence, it acts as one of the contributors to the hypertension in Bangladesh.

Additionally, the study was aimed to identify the various risk factors for hypertension with the purpose of suggesting possible interventions based on the risk factors analysis. About 12% of our study population had high TC, about 10% had high TG, about 13% had high LDL and about 08% had low HDL. An almost similar level of dyslipidemia was observed by one study among secretariat employees of Bangladesh.¹⁴ This status of hyperlipidaemia is a indicator that a

good number of our government civil employees are at risk of developing hypertension.

However, we found hypertensive subjects were significantly higher in 40 years and above age group. We would like to recommend government civil employees to maintain their BMI within normal range and to check blood pressure and FBS and lipid profile on a regular basis, so that they might be able to control the hypertension more efficiently.

We also recommend them to be cautious of calorie intake. Analysis also showed a significant prevalence of hypertension with age, diet, stress, smoking and family history of hyperlipidemia, HTN, DM, CVD and CAD.

Conclusion

This study concludes that hypertension is common among government civil employees. It is also revealed that there is an association of CAD with hypertension among them. Hypertensive patients are more susceptible to develop CAD and CVD. The observed prevalence of hypertension in this study suggests the need for a comprehensive national policy to control hypertension in Bangladesh. Further study is essential to ascertain the association and prevalence of hypertension among the civilian as well as government civil employees. We also recommend government civil employees to perform regular physical activity and grow the habit of low-calorie intake.

References

1. He J, Whelton PK. *Epidemiology and prevention of hypertension. Med Clin North Am. 1997;81(5):1077-97.*

2. Whelton PK. *Epidemiology of hypertension. Lancet.* 1994;344(8915):101-6.
3. World Health Organization (WHO). *A global brief on hypertension: silent killer, global public health crisis. World Health Day 2013.* Geneva, Switzerland: WHO; 2013.
4. Neupane D, McLachlan CS, Sharma R, Gyawali B, Khanal V, Mishra SR, et al. *Prevalence of hypertension in member countries of South Asian Association for Regional Cooperation (SAARC): systematic review and meta-analysis. Medicine.* 2014;93(13):e74.
5. Islam AK, Majumder AA. *Hypertension in Bangladesh: a review. Indian Heart J.* 2012;64(3):319-23.
6. Zaman MM. *Prevalence of hypertension in a Bangladeshi adult population. J Hum Hypertension.* 1999;13:547-9.
7. Gupta R, Deedwania PC, Achari V, Bhansali A, Gupta BK, Gupta A, et al. *Normotension, prehypertension, and hypertension in urban middle-class subjects in India: prevalence, awareness, treatment, and control. Am J Hypertens.* 2013;26(1):83-94.
8. Hypertension Study Group. *Prevalence, awareness, treatment and control of hypertension among the elderly in Bangladesh and India: a multicentre study. Bull World Health Organ.* 2001;79(6):490-500.
9. Khanam MA, Lindeboom W, Razzaque A, Niessen L, Milton AH. *Prevalence and determinants of pre-hypertension and hypertension among the adults in rural Bangladesh: findings from a community-based study. BMC Public Health.* 2015;15(1):203.
10. Das SK, Sanyal K, Basu A. *Study of urban community survey in India: growing trend of high prevalence of hypertension in a developing country. Int J Med Sci.* 2005;2(2):70-8.
11. Choudhury KN, Mainuddin AK, Wahiduzzaman M, Islam SM. *Serum lipid profile and its association with hypertension in Bangladesh. Vasc Health Risk Manag.* 2014;10:327-32.
12. Alamgir A, Akhter S. *Hypertension prevalence and related factors in an urban affluent community in Bangladesh. Bang J Med Sci.* 2005;11(1):22-5.
13. El-Reshaid K, Al-Owaish R, Diab A. *Hypertension in Kuwait: the past, present and future. Saudi J Kidney Dis Transpl.* 1999;10(3):357-64.
14. Islam SM, Mainuddin A, Islam MS, Karim MA, Mou SZ, Arefin S, et al. *Prevalence of risk factors for hypertension: A cross-sectional study in an urban area of Bangladesh. Glob Cardiol Sci Pract.* 2015;2015(4):43.