Original Article

Prevalence of Hypertension among Doctors Working in Rajshahi Medical College and Hospital

Anik Barua[1*]
Shahin Mahmuda[2]
Latifa Hosna[2]
Effat Ara Lipi[2]
Farjana Akter Benu[3]

[1]Department of Physiology
Marine City Medical College
Chattogram, Bangladesh.

[2]Department of Physiology
Rajshahi Medical College
Rajshahi, Bangladesh.

[3]Department of Microbiology
BGC Trust Medical College
Chattogram, Bangladesh.

*Correspondence to:
Dr. Anik Barua
Assistant Professor
Department of Physiology
Marine City Medical College
Chattogram, Bangladesh.
Mobile : +88 01682 67 62 83
Email : baruaanik181@gmail.com

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Abstract

Background: *Hypertension (HTN) is a major public health problem in developed and developing countries. This is associated with oxidative stress and also a common cause of Cardiovascular Disease (CVD) amounting to 30% of worldwide death rate. The main objective of this study was to find out the proportion of hypertension among doctors working in Rajshahi Medical College and Hospital.*

Materials and methods: *A cross-sectional type of descriptive study was conducted in Physiology Department in collaboration with Biochemistry Department of Rajshahi Medical College, Rajshahi during period of January 2022 to December 2022. The sample size was 248 and purposive sampling technique was applied. Data were collected from the respondents through a semi-structured questionnaire after taking informed written consent.*

Results: *The study was carried out on doctors aged 25-60 years where 126 (50.80%) were female and 122 (49.20%) were male. Among 248 respondents, 27% were hypertensive, 46% were pre-hypertensive and 27% were normotensive.Among the respondents, who were under antihypertensive medication, 23.08% were in uncontrolled state and respondents who were not under antihypertensive medication, 13.39% were newly diagnosed hypertensive. Risk factors such as prehypertension, less physical exercise, overweight and family history of hypertension, diabetes mellitus, coronary heart disease were very common among the doctors.*

Conclusions: *The study showed that physicians had higher proportion of hypertension. Among the participants, there was an unexpectedly low awareness rate and inadequate blood pressure regulation.*

Key words: Cardiovascular disease; Hypertension; Stroke.

INTRODUCTION

Hypertension is the most widely dominant, largely preventable risk factor for cardiovascular disease accounting for half of deaths due to ischaemic heart disease and stroke.[1] Throughout the world, about 7.6 million premature deaths yearly and 6% of the global burden of disease are ascribable to hypertension.[2] Rise of blood pressure more than the standard cut-off for hypertension (SBP 140/DBP 90 mm Hg) is also associated with increased risk of myocardial infarction and stroke.[3]

According to JNC 8 (Joint National Committee), hypertension is considered to be present if any of the following conditions are met: systolic blood pressure ≥140 mm Hg, diastolic blood pressure ≥ 90 mm Hg, or reported use of a medication for hypertension. Stage 1 hypertension is considered if blood pressure is 140/90 mm Hg or higher. Stage 2 hypertension is considered if blood pressure is 160/100 mm Hg or higher.[4]

There are two types of hypertension. One is called primary hypertension and another is secondary hypertension. A few number of patient (Approximately 5%) are said to

have secondary hypertension resulting from underlying renal or adrenal disease as for example, primary aldosteronism, cushing syndrome, pheochromocytoma etc. However approximately 90 to 95 % of hypertension is idiopathic – so called essential HTN. Even without knowing the specific lesions, it is reasonable to suppose that multiple small changes in renal sodium homeostasis and / or vessel wall tone or structure act in combination to cause essential hypertension.[5]

Essential hypertension is appropriately referred as the silent killer, because it is usually asymptomatic and frequently goes undiagnosed. All of the body's organs could be damaged by uncontrolled hypertension. The rate of atheroma development in human subjects is also strongly influenced by blood pressure. Isolated systolic hypertension usually noticed in elderly subjects can be ascribed to atherosclerosis induced stiffening of aorta and major arteries. The autopsy investigations on human coronary arteries and aortas gathered from different regions of the world came to the conclusion that atherosclerosis is more extensive and severe in hypertension individuals than in normotensive individuals. In the high-pressure regions of the circulation, atheromas manifest earlier and more frequently.[6]

The prevalence of hypertension is high and rising in Bangladesh. A study showed the overall weighted pooled prevalence of hypertension was 20.0% among the Bangladeshi adult population.[7] Since 2003, hypertension has been identified as the primary global risk factor for morbidity and mortality in the World Health Organization's Global Burden of Disease Study. While hypertension is not a cancer-causing factor like smoking, it is the strongest or one of the strongest risk factors for nearly all inherited cardiovascular diseases, including coronary disease, left ventricular hypertrophy, valvular heart disease, cardiac arrhythmias like atrial fibrillation, cerebral stroke, and renal failure.[8] The main objective of this study was to find out the proportion of hypertension among doctors working in Rajshahi Medical College and Hospital.

MATERIALS AND METHODS

This study was a cross sectional type of descriptive study. This study was conducted in the Department of Physiology, Rajshahi Medical College in collaboration with Department of Biochemistry, Rajshahi Medical College during the period from January to December 2022, Rajshahi. The study population was doctors aged 25 to 60 years working in Rajshahi Medical College Hospital, Rajshahi. Doctors who are pregnant and not willing to take part in the study were excluded from the study. 248 respondents were included in this study by using purposive sampling technique. This study was approved by Institutional Review Board (IRB) and Ethical Review Committee (ERC) of Rajshahi Medical College, Rajshahi.

Blood pressure was measured in both arms (Brachial arteries) with the patient seated or lying down, supported their arm comfortably at about heart level, with no tight clothing constricting the upper arm. An appropriately sized cuff was applied to the upper arm with the center of the bladder over the brachial artery. The brachial pulse was palpated and then inflation of the cuff was done until the pulse was impalpable. The pressure on the manometer was noted; that was a rough estimate of systolic pressure. Inflation of the cuff was done for another 30 mmHg and listened through the diaphragm of the stethoscope placed over the brachial artery. The cuff was deflated slowly until hear a regular tapping sound (Phase 1 korotkoff sounds). That was the systolic pressure. Continued to deflate the cuff slowly until the sound disappear and recorded the pressure at which the sound completely disappeared. That was the diastolic pressure (Phase 5).

All participants were forbidden from drinking tea, coffee or carbonated beverages and from eating and smoking. Physical exercise or any heavy physical activity 30 minutes prior to blood pressure measurement was avoided. Patient was advised to take rest for 10 minutes before measurement of blood pressure and blood pressure was measured three times at 5 minutes interval. The first blood pressure measurement was discarded to avoid possible anxiety effect and the mean value of second and third measurement was considered for systolic and diastolic blood pressure. Participant who were on antihypertensive medication and had showed or name the antihypertensive medication was considered as aware and self-reported hypertensive, irrespective of their blood pressure status at the time of measurement.

Data analysis was done via Statistical Package for the Social Sciences (SPSS) software, version 24.0. Qualitative variables were described by frequency and percentage, while quantitative variables were described by the mean and standard deviation.

RESULTS

Table I Distribution of the respondents by their BMI (n=248)

BMI (kg/m^2)	Respondents	
	Frequency	**Percentage (%)**
<18.5 (Underweight)	2	0.81%
18.5 to 24.9 (Normal)	77	31.05%
25.0 to 29.9 (Overweight)	137	55.24%
30.0 to 39.9 (Obese)	32	12.90%
Total	248	100.00%

$\overline{X} \pm SD = 26.43 \pm 3.13$ kg/m^2

Regarding BMI of the respondents, it was observed that, 55.24% of the respondents were overweight, 31.05% had normal BMI, 12.90% were obese and only remaining 0.81% were underweight with mean BMI of the respondents 26.43 ± 3.13 kg/m^2 (Table I).

Table II Distribution of the respondents by their history of smoking, alcohol consumption and physical exercise (n=248)

Variables	Frequency	Percentage (%)
Smoking		
Current smoker	31	12.50
Ex-smoker	7	2.82
Non smoker	210	84.68
Alcohol consumption		
No	246	99.19
Yes	2	0.81
Physical exercise in the last 30 days		
None	62	25.00
Rarely/Occasionally	123	49.60
Regularly 1 or 2 times per week	54	21.77
Regularly 3 or more times per week	9	3.63

Out of 248 respondents, 84.68% of the respondents were nonsmoker, 12.50% were current smoker and 2.82% were ex-smoker. Considering alcohol consumption, it was found that 99.19% of the respondents were non-alcoholic and only 0.81% were alcoholic. Considering physical exercise in the last 30 days, it was found that 49.60% of the respondents did exercise rarely/occasionally, 25.00% did no exercise, 21.77% did exercise regularly 1 or 2 times per week and 3.63% did exercise regularly 3 or more times per week (Table II).

Table III Distribution of the respondents by their family history (n=248)

Family history	Frequency	Percentage
HTN		
Yes	149	60.08
No	99	39.92
DM		
Yes	158	63.70
No	90	36.30
Dyslipidemia		
Yes	80	32.26
No	168	67.74
Coronary heart disease		
Yes	102	41.13
No	146	58.87
Ischemic stroke		
Yes	51	20.56
No	197	79.44

Out of 248 respondents, 63.70% had family history of DM, 60.08% had family history of HTN, 41.13% had family history of coronary heart disease, 32.26% had family history of dyslipidemia and 20.56% had family history of ischemic stroke (Table III).

Table IV Distribution of the respondents by their blood pressure (n=248)

Category of blood pressure	Respondents	
	Frequency	Percentage (%)
Normotensive	67	27.00%
Pre-hypertensive	114	46.00%
Hypertensive	67	27.00%
Total	248	100.00%

Table IV showed the distribution of the respondents by their blood pressure. It was revealed that, 46.00% of the respondents were pre-hypertensive, 27.00% were normotensive and 27.00% were hypertensive.

Table V Status of blood pressure among the respondents who were under anti-hypertensive drug (n=39)

Status of blood pressure	Respondents	
	Frequency	Percentage (%)
Controlled	30	76.92%
Uncontrolled	9	23.08%
Total	39	100.00%

Status of blood pressure among the respondents who were under anti-hypertensive drug revealed that, 76.92% of the respondents were in controlled state and 23.08% were in uncontrolled state (Table V).

Table VI Blood pressure among the respondents who were not under anti-hypertensive drug (n=209).

Category of blood pressure	Respondents	
	Frequency	Percentage (%)
Normotensive	67	32.06%
Pre-hypertensive	114	54.55%
Hypertensive	28	13.39%
Total	209	100.00%

Blood pressure among the respondents who were not under anti-hypertensive drug revealed that, 54.55% of the respondents were pre-hypertensive, 32.06% were normotensive and 13.39% were newly diagnosed hypertensive (Table VI).

DISCUSSION

The study was carried out on doctors aged 25-60 years where 126 (50.80%) were female, 122 (49.20%) were male, and had an average age of 35.06 ± 8.27 years. Out of 248 respondents, 219 (88.30%) were married, 28 (11.30%) were unmarried and only 01 (0.40%) was widow. Among the respondents, 49.20% were post-graduate trainee, 29.80% were post-graduation completed doctor and 21.00% were MBBS graduate doctor. In our study, 95.60% of the respondents lived in urban area, 4.00% lived in rural area and only 0.40% were from semi-urban area.

Increased BMI is a risk factor for not only hypertension but also DM, osteoarthritis, dyslipidemia, and other comorbidities. In our study, 55.24% of the respondents were overweight, 31.05% had normal BMI, 12.90% were obese and only remaining 0.81% were underweight with mean BMI of the respondents 26.43 ± 3.13 kg/m². Our study nearly similar to a study done in Eastern India where 48.15% of the doctors had BMI ≥25 kg/m2 that is, in the overweight range.[9] In another study in India found that out of 120 participants, 65.8% had BMI within the normal range, 30.8% had BMI 25-30 and 3.4% of them had BMI 30-35 which findings were different from our findings.[10]

These difference might be due to urbanization and also regional variations of studies. Urbanization is associated with changes in dietary habits and with reduced physical activity that lead to overweight and obesity. In our study, majority of doctors lived in urban area and physical activity was found unsatisfactory among them. Such changes of lifestyle may contribute to overweight and obesity.

In this study, most (84.68%) of the respondents were non-smoker, 12.50% were current smoker and 2.82% were ex-smoker which is nearly similar to a study done in Lahore where 76.8% were non-smoker and 23.2% were smoker.[11] Dissimilar finding were found in a study done in China where 50.02% were smoker.[12]

In our study, most (99.20%) of the respondents were non-alcoholic and only 0.80% were alcoholic which was dissimilar with a study held in Northern Ethiopia where 77.3% were alcoholic.[13]

In our study, considering physical exercise in the last 30 days, it was found that 49.60% of the respondents did exercise rarely/occasionally, 25.00% did no exercise, 21.77% did exercise regularly 1 or 2 times per week and 3.63% did exercise regularly 3 or more times per week. Our study findings were nearly similar to the study done in Lahore and Northern Ethiopia where 80.5%, 86.9% had no physical activity and19.5%, 13.1% had physical activity respectively.[11, 13] Dissimilar findings were found in a study held in northeast China where 77.74% of respondents had physical activity.[12] These dissimilarities might be due to variations in the region and study population.

Positive family history of HTN, DM, coronary heart disease, dyslipidemia, ischaemic stroke are risk factors for HTN. In the current study, 63.70% had family history of DM, 60.08% had family history of HTN, 41.13% had family history of coronary heart disease, 32.26% had family history of dyslipidemia and 20.56% had family history of ischemic stroke. Nearly similar finding found in a study done in India where 77.78 % of the doctors had positive family history of HTN.[9] A study held in Lahore, reported that 84.5% had no family history of hypertension which finding was contradictory to our finding.[11] These dissimilarities may be due to regional variation.

In our study,out of 248 respondents, 114 (46.00%) respondents were pre-hypertensive, 67 (27.00%) were normotensive and 67 (27.00%) were hypertensive. Nearly similar finding were found

in studies done in India and Pakistan where prevalence of hypertension among doctors were 32.07%, 35.6%, 37.3% respectively.[14, 15, 11] A study done in South Africa reported that prevalence of hypertension was 52%.[16] This dissimilarity might be due to that study was conducted among nurses. Another study done in Yemen found that the prevalence of hypertension among the physicians was 13%.[17]

Study to study variations of proportion of hypertension might be due to hypertension depends on education level, marital status, occupation, smoking, central obesity and BMI. These factors vary from region to region in the world.

In the current study, among 67 hypertensive respondents, 58.21% respondents were under antihypertensive medication and 41.79% were not under antihypertensive medication. Respondents who were under antihypertensive drug, 76.92% respondents were in controlled state and 23.08% were in uncontrolled state.A study done in South Africa found that respondents who were aware and on treatment, only 38.1% had a controlled blood pressure which was contradictory to our finding.[16] In our study, among 248 respondents, 209 respondents were not under anti-hypertensive medication. Among them, 114 (54.55%) respondents were pre-hypertensive, 67 (32.06%) were normotensive and 28 (13.39%) were newly diagnosed hypertensive. A study done in South Africa reported that, 41% were unaware of their hypertension status but in our study only 13.39% were unaware of their hypertension.[16] These dissimilarities might be due to, they conducted the study among primary health care professional nurses in South Africa where unexpected low rate of awareness and suboptimal control of blood pressure among the participant was found.

Although awareness of lifestyle diseases was high among doctors, the study showed that physicians had higher proportion of hypertension. Positive family history of diabetes, hypertension, dyslipidemia, cardiovascular disease and ischemic stroke were present in a large percentage of doctors.

LIMITATIONS

- This was a cross-sectional type of study in doctors community of Rajshahi Medical College and Hospital with comparatively small number of sample size. So, the study result may not reflect the exact scenarios of the whole country.

- Purposive sampling technique was selected. So, selection bias could not be avoided.

CONCLUSION

In this study, the proportion of HTN was higher among doctors community of Rajshahi Medical College and Hospital, which would contribute in the future burden of CVD. Risk factors such as prehypertension, less physical exercise, overweight and family history of hypertension, diabetes mellitus, coronary heart disease were very common among the doctors. Doctors who have family history of HTN, dyslipidemia, DM and coronary artery disease should be more cautious and undergo routine check up to prevent HTN and for early diagnosis and treatment purpose.

RECOMMENDATIONS

Based on study findings, the following recommendations are made:

- Further studies should be carried out to explore the burden of hypertension among doctors using a large sample size.
- Doctors must be advised about healthy lifestyle modification such as quitting smoking, losing weight and engaging in regular physical exercise, healthy diet etc.
- Comparison of proportion hypertension between doctors and non-medical professionals should be done.
- To assess cardiovascular risk among doctors other investigations (eg. Fasting blood glucose, HbA1c, ECG, Echocardiography) should be done.

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DISCLOSURE

All the authors declared no competing interest.

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