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Original Research Article

Assessment of risk factors for hypertension among undergraduate students in a medical college of Himachal Pradesh, India

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ABSTRACT

Background: Hypertension is a commonest cardiovascular disorder and is major cause of premature death worldwide. An estimated 1.28 billion adults aged 30-79 years worldwide have hypertension, most (two-thirds) living in low and middle-income countries. So present study was undertaken to assess the risk factors for hypertension among First year MBBS students so that suitable preventive measures may be undertaken.
Methods: It is cross sectional study conducted among first year MBBS students in DRKGMC Hamirpur. The duration of study is three months. The tools of study used were modified structured pretested self-administered questionnaire; WHO stepwise approach to chronic disease risk factor surveillance (STEPS). Weighing machine, measuring tape, digital BP apparatus and steadiometer.
Results: A total of 115 students of MBBS first year participated in the study. There were a total of 31.3% (36) boys and 68.7% (79) girls. Thirty three percent (38) had a family history of hypertension. 16.52% (19) had a BMI more than the normal. Among the study participants only 5 students (4.35%) used to consume alcohol and smoke cigarettes. Most of study participants consume fast food and junk food.
Conclusions: High prevalence of different modifiable risk factors for hypertension revealed among the study subjects.There is need to screen the modifiable risk factors from very early age.

Keywords: Hypertension, Risk factors, Salt, Medical students

INTRODUCTION

Hypertension is a commonest cardiovascular disorder and is major cause of premature death worldwide. An estimated 1.28 billion adults aged 30-79 years worldwide have hypertension. An estimated 46% of adults with hypertension are unaware that they have the condition.[1] In addition to overweight and obesity, diet, insufficient physical activity, excessive screen time (ST), and sleep disorders are associated with elevated BP in youth. Many people with hypertension do not notice symptoms and may be unaware there is a problem. Symptoms can include early morning headaches, nosebleeds, irregular heart rhythms, vision changes, and buzzing in the ears. More severe forms may exhibit fatigue, nausea, vomiting, confusion, anxiety, chest pain, and muscle tremors. If left untreated, hypertension can cause persistent chest pain (also called angina), heart attacks, heart failure, and an irregular heartbeat, which can lead to a sudden death. of risk factors for hypertension at very early age. The Primordial prevention for hypertension is to prevent the development of its risk factors. In India under the National program for prevention and control of non-communicable diseases the active screening for non-communicable diseases is done of all persons above the age of 30 years by using CBAC checklist but there is need to strengthen the program.[2]

Aim and objectives

So present study was undertaken to assess the risk factors for hypertension among first year MBBS and results of study could reflect the prevalence of risk factors for hypertension among other medical students and persons with similar age group. More over the Cohort of these MBBS students can followed up and if they develop risk factors and hypertension the appropriate primary and secondary prevention measures could be taken.

METHODS

Study type, location, participants and duration

Cross sectional study was conducted at Dr. Radha Krishnan Government Medical College (RKGMC), Hamirpur, Himachal Pradesh for a period of three months rom 1 August to 31 October. MBBS students studying in First Year at RKGMC, Hamirpur were selected as study participants.

Sample size

All students of first year MBBS. Out of all 120 students 115 students participated in study.

Tools of study

Modified structured pretested self-administered questionnaire; WHO stepwise approach to chronic disease risk factor surveillance (STEPS). Weighing Machine, Measuring tape, Digital BP apparatus and steadiometer. Blood Pressure measurement: Blood Pressure measured two times in Right arm.

Anthropometric measurements

Weight was measured by weighing machine having an accuracy of 0.1 kg and Height was measured by Steadiometer having an accuracy 0.1 centimetre. Body mass index was calculated by using formula (weight in Kg, Height in meters square). On the basis of BMI the study participants were classified in different categories as per WHO classification for Asia region. Waist circumference will be measured by Non stretchable measuring tape. A written valid consent was taken from all the 1st Year MBBS students before conducting the study. They were explained about the purpose of study.

Data collection and analysis

Data was collected in hard copies on structured questionnaire. The collected data was entered into Microsoft Excel. After cleaning for entry errors, it was analysed through epi-info version 7.2.6. The qualitative variables were expressed in terms of frequency and percentage. The quantitative variables were expressed in terms of Mean and standard deviation.

RESULTS

A total of 115 students of MBBS first year participated in the study. The mean age of participants was 19.68±1.46 years. Out of total, there were a total of 31.3% (36) boys and 68.7% (79) girls. Out of all, 84.34% (97) were staying at hostel whereas, 15.66% (18) were staying at their parental home. 33.1% (38) had a family history of hypertension.

Table 1: Sociodemographic profile of study participants (n=115).

Variables	Category	N	%
Sex	Male	36	31.3
	Female	79	68.7
Stay	Hostel/PG	97	84.34
	Parental home	18	15.66
Family history of hypertension	Yes	38	33.1
	No	77	66.9

Out of all the participants, 51.3% (59) had a normal Body Mass Index, 32.17% (37) had low and 16.52% (19) had a BMI more than the normal. The mean diastolic and systolic blood pressure of all the students were 66.43±8.55 and 112.82±11.95 mmHg respectively. Among all the students, 5 (4.35%) had a raised diastolic blood pressure and 29 (25.22%) had raised systolic blood pressure. Overall, 108 (93.9%) students were normotensive, 7 (6.1%) students were pre-hypertensive and none of them was having hypertension.

Table 2: Physical profile of study participants (n=115).

Variables	Category	N	%
Body mass index	Underweight	59	51.3
	Normal	37	32.2
	Overweight/obese	19	16.55
Systolic blood pressure	Normal	86	74.8
	Increased	29	25.2
Diastolic blood pressure	Normal	110	95.6
	Increased	5	4.4
Hypertension status	Normotensive	108	93.9
	Pre-hypertension	7	6.1
	Hypertension	0	0

Among the study participants only 5 students (4.35%) used to consume alcohol and smoke cigarettes. There was not a single participant who consumes substances other than tobacco and alcohol. Out of all participants, 37 (32.17%) were consuming fast food, 52 (45.22%) were consuming junk food and 33 (28.7%) were consuming high salt containing foods at least thrice a week. Among all the participants, 65 (56.52%) used to consume fruits, 92 (80%) consume green vegetables and 12 (10.43%) consume non-vegetarian foods at least thrice a week.

There was a total of 31 (26.96%) students who play an outdoor game, 100 (86.96%) who walk for a minimum of

30 minutes a day and 26 (22.61%) who practice stress relieving activities like yoga/exercises at least three times in a week.

Table 3: Behavioural profile of study participants (n=115).

Variables	Category	N	%
Consuming fast food	≤3 days in a week	37	32.2
	>3 days in a week	78	67.8
Consuming junk food	≤3 days in a week	52	45.2
	>3 days in a week	63	54.8
Consuming high salt Containing food items	≤3 days in a week	33	28.7
	>3 days in a week	82	71.3
Consuming fruits	≤3 days in a week	65	56.5
	>3 days in a week	50	43.5
Consuming vegetables	≤3 days in a week	92	80
	>3 days in a week	23	20
Consuming non-vegetarian Diet	≤3 days in a week	12	10.4
	>3 days in a week	103	89.6
Consume alcohol	Yes	5	4.4
	No	110	95.6
Smoke tobacco	Yes	5	4.4
	No	110	95.6

The mean time sitting or reclining per day was 8.77±4.72 hours for all the participants. There was a total of 58 (50.4%) students who were spending more than 8 hours per day in sitting or reclining.

Table 4: Behavioural profile of study participants for physical activity (n=115).

Variable	Category	N	%
Walk at least 30 minutes a day	≤3 days in a week	100	87
	>3 days in a week	15	13
Play outdoor games	≤3 days in a week	31	27
	>3 days in a week	84	73
Do stress relieving Activities like yoga	≤3 days in a week	26	22.6
	>3 days in a week	89	77.4
Time spent sitting and reclining daily	≤8 hours	57	49.6
	>8 hours	58	50.4

DISCUSSION

The risk factors for hypertension develop in early child hood such as lack of physical exercise, obesity, consumption of fast food and junk food. The primordial prevention can prevent the development of hypertension and its complications. There were a total of 31.3% (36) boys and 68.7% (79) girl. Similar trend was seen over the last five years (Admission year 2017 to 2021) that there were 82% girls out of total seats of different streams of medicine in Kerla.[3] Thirty three percent (38) had a family history of hypertension. Family studies have shown that children of two normotensive parents have three percent possibility of developing hypertension where as the possibility is forty five percent in children of two hypertensive parents.[4] Out of all the participants, 16.52% had a BMI more than the normal. Children in a 2017 review trusted source who lost weight by changing their diet and physical activity patterns, and who received education and counseling, demonstrated a decrease in blood pressur.[5] Among all the students, 5 (4.35%) had a raised diastolic blood pressure and 29 (25.22%) had raised systolic blood pressure. The study done by Midha T et al shown prevalence of Hypertension of 18.4%.[6] The one study done by Sharma et al among the school children of Himachal Pradesh also suggest the prevalence of pre hypertension and hypertension among school children is twenty percent.[7] The obesity is risk factor for hypertension. The relationship between excess adiposity and increased blood pressure is well established, and it is estimated that obesity accounts for 65–78% of cases of primary hypertension.[8] Among the study participants only 5 students (4.35%) used to consume alcohol and smoke cigarettes. There was not a single participant who consumes substances other than tobacco and alcoholMost of study participants consume fast food and junk food. Higher prevalence of Hypertension among junk food eaters could be due to their higher salt and fat content which make into action various systems of body and consequently leads to raised BP of both types. Abdominal obesity among participants who seldom consumed sweets was less than those who consumed daily.[9] Thirty three percent used to consume high salt containing foods at least thrice a week. Most of students consume fruits and vegetables less than three days a week. Liu et al showed that fruit intake of 240 g (3 servings/d) decreased the risk of hypertension by 6.0% (RR, 0.94; 96% CI, 0.93-0.96).[10]

Currently seventy three percent students who play an outdoor game more than three days a week and 77.4% practice stress relieving activities like yoga/exercises more than three times in a week. The study done by Ankolekar et al shows that Yoga and meditation improves the cardiovascular functions and normalize the high normal blood pressure of subjects with prehypertension. Hence, it can be a useful tool to keep the person healthy throughout the life if it is practiced regularly.[11] Despite the multitude of potential health benefits derived from regular physical activity, one-third of many adult populations (about 1.5 billion people globally) and four-fifths of adolescents do not adhere to minimum recommended levels of moderate-vigorous physical activity.[11] The studies suggest that even moderate increases in time spent in physical activity could be a potentially important strategy to reduce the prevalence of elevated BP. The yoga interventions lasting eight weeks or more, reduced SBP on average by 9.65 mmHg.[12] As the MBBS course progress there are long hours of study and emergency duties which leads to sedentary life style and stress of exams further exerbate the development of disease like hypertension. Since most of students are also engased in physical activities, Yogic practices and very few are smoker and consuming alcohol so they have to continue with these good health promotion activities.

CONCLUSION

Pre-hypertension, consumption of high salt containing food, less intake of fruits and vegetables, obesity, physical inactivity, consumption of alcohol and smoking are modifiable risk factors of hypertension in youth. There were also good habits among the MBBS students which needs to be continued in future also. The awareness activities for prevention and control of hypertension and other non-communicable diseases should be started from primary school level. There is need to robust implementation of screening programs for non-communicable diseases.

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REFERENCES

1. Hypertension. Available at: https://www.who.int/news-room/fact-sheets/detail/hypertension. Accessed on 22 December 2023.
2. Community-Based Assessment Checklist Form for Early Detection of NCDs and Tuberculosis. Available at: https://ntep.in/node/4746/CP-community-based-assessment-checklist-cbac-form-early-detection-ncds-and-tuberculosis. Accessed on 22 December 2023.
3. In Kerala, 65% MBBS students are girls. Available at: https://timesofindia.indiatimes.com/city/kochi/in-kerala-65-mbbs-students-are-girls-national-average-is-51/articleshow/96825598.cms. Accessed on 22 December 2023.
4. Park K. Textbook of preventive and social medicine. India: Banarsi Das Bhanot publishers; 2021.
5. Managing weight to control high blood pressure. Available at: https://www.verywellhealth.com/high-blood-pressure-genes-5270333#citation-18. Accessed on 22 December 2023.
6. Midha T, Nigam S, Martolia DS, Kaur S. Prevalence and determinants of hypertension in MBBS students of Govt. Medical College, Kannauj, Uttar Pradesh. Indian J Forensic Community Med. 2018;5(2):97-100.
7. Sharma P. Prevalance of Hypertension school among school children. Available at: https://indianpediatrics.net/oct2010/873.pdf. Accessed on 22 December 2023.
8. Shariq OA, McKenzie TJ. Obesity-related hypertension: a review of pathophysiology, management, and the role of metabolic surgery. Gland Surg. 2020;9(1):80-93.
9. Payab M, Kelishadi R, Qorbani M, Motlagh ME, Ranjbar SH, Ardalan G, et al. Association of junk food consumption with high blood pressure and obesity in Iranian children and adolescents: the CASPIAN-IV Study. J Pediatr. 2015;91(2):196-205.
10. Liu Q, Ayoub-Charette S, Khan TA, Au-Yeung F, Blanco MS, de Souza RJ, et al. Important food sources of fructose-containing sugars and incident hypertension: a systematic review and dose-response meta-analysis of prospective cohort studies. J Am Heart Assoc. 2019;8:e010977.
11. Hallal PC, Andersen LB, Bull FC, Guthold R, Haskell W, Ekelund U. Physical Activity Series Working G Global physical activity levels: surveillance progress, pitfalls, and prospects. Lancet. 2012;380:247-57.
12. Dhungana RR, Pedisic Z, Joshi S. Effects of a health worker-led 3-month yoga intervention on blood pressure of hypertensive patients: a randomised controlled multicentre trial in the primary care setting. BMC Public Health. 2021;21:550.

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