IAR-Medical Series
ISSN Print : 2709-3247 | **ISSN Online :** 2709-3255
Frequency : Bi-Monthly
Language : English
Origin : Kenya
Website : https://www.iarconsortium.org/journal-info/iarms

OPEN ACCESS JOURNALS

Research Article

Prehypertension among Medical Students and Its Correlation with BMI

Article History

Received: 25.03.2022
Revision: 30.03.2022
Accepted: 05.04.2022
Published: 10.04.2022

Author Details

Dr. Hanish Kumar Rana[1], Dr. Rajender Kumar[2] & Dr. Badal Katoch[3]

Authors Affiliations

[1]Medical Officer, MD Physiology, Telemedicine Hub, IGMC Shimla, H.P, India

[2]Senior resident , MD Physiology, Department of Physiology, IGMC Shimla. H.P, India

[3]Junior Resident, MD Physiology, Department of Physiology, IGMC Shimla. H.P, India

Corresponding Author*
Dr. Badal Katoch

How to Cite the Article:
Hanish Kumar Rana, Rajender Kumar & Badal Katoch (2022); Prehypertension among Medical Students and Its Correlation with BMI. *IAR J. Med Ser. 3*(2) 23-25

Abstract: Hypertension is an iceberg disease with high morbidity and mortality and is a silent threat to the health of the people both in developed and developing countries. The root cause of hypertension may present since childhood. Excess adiposity is the single most powerful risk factor for higher BP and contributes to more than half of the risk for developing hypertension. Hence early detection and intervention may prevent long term co-morbidities. The present study was designed with an aim to find the prevalence of prehypertension in medical students. And the co-relation of prehypertension with the BMI.

Keywords: Prehypertension, BMI.

INTRODUCTION:

Hypertension is an iceberg disease with high morbidity and mortality and is a silent threat to the health of the people both in developed and developing countries[i]. The consequences of hypertension (myocardial infarction, stroke, and heart failure) are predicted to be the leading global cause of death and are one of the major health issues worldwide. Prehypertension is defined as Systolic Blood Pressure of 120-139 mmHg and Diastolic Blood Pressure of 80-89 mmHg[ii]. The aim of the JNC-7 was to increase awareness of near-abnormal levels of BP [iii] so that such "prehypertensive" would initiate lifestyle changes to delay development of frank hypertension. A large proportion of pre-hypertensive have at least one cardiovascular risk factor and there is a moderate to high risk of pre-hypertensive progressing to hypertension. Excess adiposity is the single most powerful risk factor for higher BP and contributes to more than half of the risk for developing hypertension. Hence early detection and intervention may prevent long term co-morbidities[iv].

A recent meta-analysis of 18 prospective cohort studies showed that prehypertension increases the risk of cardiovascular disease by relative risk (RR) of 1.55, the risk of coronary heart disease by RR of 1.5 and that of stroke by an RR of 1.71; an enhanced risk (RR of 1.46) was noticed even in the lower range of prehypertension[v].

The present study was designed with an aim to find the prevalence of prehypertension in medical students. And the co-relation of prehypertension with the BMI.

METHODOLOGY

The study was conducted on randomly selected 208 medical students of IGMC Shimla. The mean age of the study group was 19.89 ± 0.91 years. Out of 208 students,96 were male (46.15%) and 112 (53.84%) were female. Height was measured without shoes to the nearest 0.1 cm by using a portable stadiometer. Weight was measured in light clothing and bare feet to the nearest 0.5 kg using Excel simplified digital weighing scale calibrated against a set of standard weights. BMI was calculated by Quetelet's Index as weight in kilograms divided by height in meters squared. **Blood Pressure** was measured according to the Eighth Joint National Committee on Detection, Evaluation, and Treatment of High blood pressure guidelines.[vi] Then the students are divided in two groups i.e. normal BMI and raised BMI (≥ 25). Also total number of prehypertensive students (according to JNC guideline[vii]) were identified.

Statistical Analysis:

Mean +/- SD (Standard Deviation) of continuous variables were analysed by paired and unpaired T-test using SPSS software, version 26. Categorical variables such as Hypertension, were analysed using percentages and proportions and their association was analysed using the chi-square test. P<0.05 was considered as statistically significant. Two-tailed significance tests were used for all analyses.

RESULTS:

208 medical students of IGMC Shimla were selected randomly for the study. Mean age of the study population was 19.89 ± 0.91 years. Out of total , 96 (46.15%) were male and 112 (53.84%) were female as shown in Figure 1.

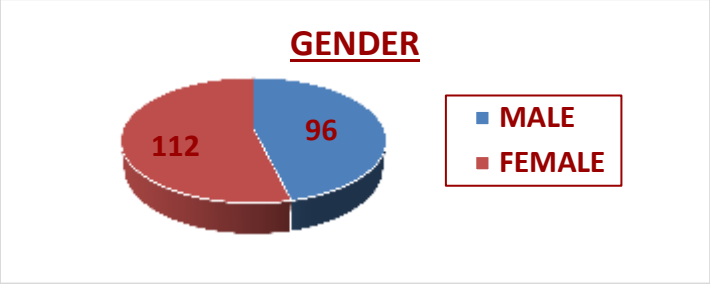

Figure 1

54 male students and 52 female students were falling in Prehypertensive criteria. Hence the prevalence of Prehypertension was found to be 50.96 (male>female) as depicted in Figure 2.

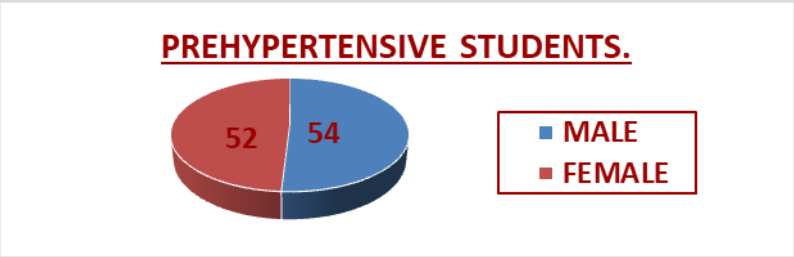

Figure 2

Further, the mean systolic BP in students group having normal BMI was 117.82 ±8.834 mm of Hg and mean diastolic BP in the same group was 76.75 ±5.072 mm of Hg.

In the second group having raised BMI, mean systolic BP was 125.26 ±8.702 mm of Hg and mean diastolic BP was 82.96 ±7.001 mm of Hg. Statistically the difference of mean was highly significant p<0.005 as shown in Table 1

Table 1

B.P.	MEAN OF BP WITH NORMAL BMI	MEAN OF BP WITH RAISED BMI	t VALUE	p VALUE
SBP	117.82 ±8.834	125.26 ±8.702	-7.335	.000**
DBP	76.75 ±5.072	82.96 ±7.001	-5.819	.000**

Also, we found significant correlation between BMI and raised BP as depicted in table 2

Table 2

PEARSON CORRELATION	r VALUE	p VALUE
BMI & SBP	.474	.000**
BMI & DBP	.582	.000**

DISCUSSION:

Hypertension is one of the earliest recorded medical conditions which has shaped the course of modern history. Hypertension is a serious medical condition and can increase the risk of heart, brain, kidney and other diseases. It is a major cause of premature death worldwide[viii]. Hypertension is the most important risk factor for chronic disease burden in India[ix]. Our study shows high prevalence of prehypertension in young adolescent age group, which if not dealt with at

this stage, will surely increase hypertension burden of our country, leading to increased morbidity and mortality. Kini S et al. also observed high prevalence of Prehypertension in young adults of coastal villages of Udupi district in southern India[x].

As discussed, excess adiposity is the single most important risk factor for hypertension. our study indicated strong association between hypertension and raised BMI. Similar conclusions have been observed in various other studies as well[xi,xii.].

CONCLUSION:

The prevalence of prehypertension among the medical students of Indira Gandhi Medical College and Hospital Shimla is 50.96% (male>female) & there is a significant correlation between BMI and raised BP. Hence, by targeting this single most risk factor in young adults via inclusion of Yoga and Pranayama, healthy diets, increased physical activity in college curriculums we can decrease the overall burden of hypertension.

REFERENCES

[i] Danasekaran R, Mani G, Annadurai K. Adolescent Hypertension: A Challenge for the Future. Bangladesh Journal of Medical Science. 2016 Apr 11;15(1):5-9.
[ii] Bell K, Twiggs J, Olin BR. Hypertension: The Silent Killer: Updated JNC-8 Guideline Recommendation. Albama Pharmacy Association; Summer 2015: Continuing Education; www.aparx. org:1-8
[iii] Liszka HA, Mainous AG 3 rd , King DE, Everett CJ, Egan BM. Prehypertension and Cardiovascular Mortality. Ann Fam Med 2005;3:294-9.
[iv] Prabhakaran D, Shah P, Chaturvedi V, Ramkrishnan L, Manhapra A, Reddy S. Cardiovascular risk factor prevalence among men in a large industry of northern India. Natl Med J India 2005;18:59–65. pmid:15981439
[v] Huang Y, Wang S, Cai X, Mai W, Hu Y, Tang H, *et al*. Prehypertension and cardiovascular disease: A meta-analysis. BMC Med 2013;11:177.
[vi]. Bell K, Twiggs J, Olin BR. Hypertension: The Silent Killer: Updated JNC-8 Guideline Recommendation. Albama Pharmacy Association; Summer 2015: Continuing Education; www.aparx. org:1-8.
[vii] Chobanian AV, Bakris GL, Black HR, Cushman WC, Green LA, Izzo Jr JL, Jones DW, Materson BJ, Oparil S, Wright Jr JT, Roccella EJ. Seventh report of the joint national committee on prevention, detection, evaluation, and treatment of high blood pressure. hypertension. 2003 Dec 1;42(6):1206-52.
[viii] www.who.int/health-topics/hypertension#tab=tab_1
[ix] Gupta R, Gaur K, Ram CV. Emerging trends in hypertension epidemiology in India. Journal of human hypertension. 2019 Aug;33(8):575-87.
[x] Kini S, Kamath VG, Kulkarni MM, Kamath A, Shivalli S. Pre-hypertension among young adults (20–30 Years) in coastal villages of Udupi District in Southern India: an alarming scenario. PloS one. 2016 Apr 29;11(4):e0154538.
[xi] Hossain FB, Adhikary G, Chowdhury AB, Shawon MS. Association between body mass index (BMI) and hypertension in south Asian population: evidence from nationally-representative surveys. Clinical hypertension. 2019 Dec;25(1):1-9.
[xii] Gus M, Fuchs SC, Moreira LB, Moraes RS, Wiehe M, Silva AF, Albers F, Fuchs FD. Association between different measurements of obesity and the incidence of hypertension. American journal of hypertension. 2004 Jan 1;17(1):50-3.