



Research Article

Volume-06|Issue-04|2026

Usage of a Single Blood Pressure Measurement as a Screening Tool for Elevated Blood Pressure in Medical Students

Tina C. Mason MD MPH

Associate Professor, Wood College of Osteopathic Medicine, Marian University 3200 Cold Spring Road, Indianapolis, Indiana 46222, 317-822-6879,

Article History

Received: 16.07.2026

Accepted: 12.08.2026

Published: 31.08.2026

Citation

Mason, T. C. (2026). Usage of a Single Blood Pressure Measurement as a Screening Tool for Elevated Blood Pressure in Medical Students. *Indiana Journal of Multidisciplinary Research*, 6(4), 34-37.

Abstract: Care of the body, mind and spirit are the core philosophies of Osteopathic Medicine. Recent research regarding elevated blood pressure and associated cardiovascular risks are increasing in younger age groups. Medical students face unique stressors regarding academic workload and lifestyle choices. The aim of this observational study was to investigate the prevalence of elevated blood pressure using a 'single' measurement among first year Osteopathic medical students. 70 medical students participated in this study, 47 females and 23 males. 25 of the 70 systolic blood pressure readings were greater than 120-129 which met the definition of elevated blood pressure, noting a prevalence of 35.71%. Male gender blood pressures were significantly higher than female blood pressures. The value of outpatient blood pressure screening is well documented. The reliability of a single blood pressure measurement in clinical settings has been called into question. The findings of elevated blood pressure prevalence among our medical students reflect a need for flexible primary care.

Keywords: Blood pressure, medical students, cardiovascular risks, primary care

Copyright © 2026 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0).

INTRODUCTION

Hypertension is a growing global health concern affecting over 1.4 billion adults ages 30-79 (1). Its prevalence extends beyond the general population, encompassing younger people. Medical students are an often-over-looked at-risk group. Evidence from published data documents the demanding academic environment of a medical student with experience of elevated stress, irregular sleep patterns, advanced technology usage, sedentary behavior, poor dietary habits and limited time for self-care, all of which may contribute to elevated blood pressure. (2) Beyond personal health risks, unmanaged hypertension can impair cognitive performance, concentration and overall wellbeing, potentially affecting academic success and future clinical practice. (3) Early screening, stress management interventions and focused wellness programs within medical school schools may serve to mitigate modifiable risks. A single elevated BP reading should not direct immediate medical care, however it may be recognized as a 'red flag' if it meets certain thresholds or is accompanied by symptoms (4). Understanding health care needs of our medical students is essential not only for safeguarding the health of future physicians but also for promoting a culture of preventive care within the medical profession.

Background

Wood College of Osteopathic Medicine, Marian University is in Indianapolis, Indiana. Indiana

ranks 35th in the 50 states on Health System Performance per the Commonwealth Fund 2025 Scorecard. Key health findings contributing to this ranking include high rates of smoking, obesity and low public health funding. (5) Medical students regularly work with community-based organizations, faith-based organizations and non-profit groups to provide necessary primary care. In addition, they provide free care at a student-run clinic. Blood pressure measurements, heights, and weights are commonly performed by medical students.

National Health and Nutrition Examination Survey (NHANES) data from 2012–2023 highlight the prevalence of high blood pressure among adolescents and young adults in the United States. Findings indicate that 23% of adults ages 18–39 had high blood pressure, defined as systolic pressure of 130/80 mmHg or greater. Compared with older adults, this group was more likely to be uninsured, food insecure, and low income. Although medical students are often assumed to be young and healthy, they experience stressors that may increase their cardiovascular risk. Research on elevated blood pressure among American medical students remains limited. Several international studies have reported associations between elevated blood pressure, body mass index (BMI), and smoking among medical students. (6) This observational study is important because it encourages future health care providers to recognize their own health risks and the role of behavioral changes in both current and long-term health. It also underscores the need for access to primary care.

METHODS

All 162 first year medical students from Wood College of Osteopathic medicine were provided information about elevated blood pressure and long-term risks associated with hypertension. Institutional Review Board (IRB) at Marian University reviewed and approved the research proposal #25.195. This descriptive observational study collected BP readings from 70 students, 23 identified as male and 47 identified as female, using 1 non-identifying demographic variable: biological sex. Informed consent was obtained prior to BP measurement. iHealth automated blood pressure cuffs Model KN-550BT were validated using the Association for the Advancement of Medical Instrumentation (AAMI) standards. BP was measured by 2 trained first year medical students under the

supervision of a faculty physician. BP was measured using AHA's seated office blood pressure guidelines, participants were encouraged to rest in nearby comfortable seating for 5 minutes prior to the first measurement. Measurements were obtained using both right and left upper arm, the reading was calculated as the average of the two measurements. BP measurements were taken on 4 occasions; Days 1&2 (consecutive) were before the winter break and Days 3&4 (consecutive) were taken the first week after the winter break. To encourage student participation and reduce skepticism, information was not obtained about existing medical conditions, caffeine intake, energy drink consumption, tobacco usage, or recreational drug usage. All information was kept confidential and secure in the university.

AHA/ACC 2025 Guidelines

BLOOD PRESSURE CATEGORY	SYSTOLIC MM HG (UPPER NUMBER)	AND/OR	DIASTOLIC MM HG (LOWER NUMBER)
Normal	Less than 120	and	Less than 80
Elevated	120-129	and	Less than 80
High Blood Pressure (Hypertension) Stage 1	130-139	or	80-89
High Blood Pressure (Hypertension) Stage 2	140 or higher	or	90 or higher
Hypertensive Crisis	Higher than 180	and/or	Higher than 120

Table: Raw Data Summary

Day	Total BP Readings	Male	Female
Day 1	26	10	16
Day 2	35	10	25
Day 3	3	2	1
Day 4	6	1	5
Total	70	23	47

Blood Pressure Comparison (Male vs Female)

Summary: 70 total BP readings — 23 Male (32.86%) and 47 Female (67.14%).

Table: Systolic + Diastolic Averages

Day	Male Avg (Sys/Dia)	Female Avg (Sys/Dia)
Day 1	136.1 / 82.5	121.5 / 77.7
Day 2	134.4 / 86.5	122.5 / 82.5
Day 3	143.5 / 94.0	108.0 / 69.0
Day 4	138.0 / 98.0	121.8 / 79.4

Blood Pressure Comparison (Male vs Female)

RESULTS

The readings of both systolic and diastolic pressures were consistently higher in males, as documented among studies with college students (7). In 17 of the males and 8 of the females the BP readings trended toward Stage 1-2 hypertension. Males' readings trended toward Stage 1-2 hypertension using the one reading. The highest reading was 151/104 for a 1st year male student, and 141/102 for a female student.

DISCUSSION

This IRB approved observational study documents the prevalence of elevated blood pressure among first year medical students. 70 BP measurements were obtained, 23 males and 47 females. Elevated blood pressure was noted in 25 of the 70 students. 17 males and 8 females for a prevalence of 35.71%.

Our analysis of BP readings collected over 4 days demonstrates a consistent difference between male

and female participants. Males exhibited higher average systolic and diastolic values compared to females. Specifically, male participants showed systolic averages ranging from 134.4mmHg to 143.5 mmHg and diastolic averages from 82.5 mmHg to 98.0 mmHg. In contrast, female participants maintained lower systolic averages between 108.0mmHg and 122.5mmHg and diastolic averages between 69.0 mmHg and 82.5 mmHg. Studies have documented the risk of uncontrolled hypertension was higher among men compared with women at younger ages, after age 70 women were more likely to have uncontrolled hypertension relative to men. (8)

All students were informed of the BP readings and given a copy of the findings. Those with elevated readings were questioned regarding presence of headaches, chest pain, shortness of breath or other symptoms of hypertensive crisis. Every student was encouraged to contact their health care provider for continued care.

Hypertension is commonly thought of as a chronic illness affecting the elderly population. The CDC National Center Health Statistics report of 2015-2016 notes the prevalence of Stage 2 hypertension in adults 18-35 was 7.5%. Hypertension is a significant risk factor for ischemic heart disease, cardiovascular disease, chronic kidney disease, end-stage kidney disease and stroke. Elevated systolic blood pressure has been identified as the leading risk for disability-adjusted life years contributing to over 10 million deaths globally. (9) Risk factors for young adults include decreased physical activity, diabetes, depressive states and obesity are increasing in young adults (10). Medical students are a subset of this population; recent studies have presented data that medical students have a 2.4 times higher prevalence of stage 2 hypertension than the public (11).

CONCLUSION

Standard operating procedures for blood pressure measurement vary greatly. The validity of a single BP measurement has been questioned among health care providers; it may miss short term masked hypertension and over-diagnose hypertension due to white coat hypertension.

Our analysis of BP readings collected over 4 days demonstrates a consistent difference between male and female participants. Males exhibited higher average systolic and diastolic values compared to females.

These findings highlight the importance of continued monitoring, early intervention and targeted health education, this aligns with the holistic approach to chronic illness of Osteopathic Medical Schools.

Study Limitations

As a one-time descriptive observational study, we did not perform follow-up visits for BP measurement. The question remains: How many students with

hypertension may be missed with a single BP measurement and how many might be over diagnosed due to white coat hypertension? Casual inference cannot be drawn from one measurement; however, the findings of elevated BP readings demonstrate the need for continued surveillance.

We did not capture data regarding, 1) BMI, 2) ethnicity, 3) diagnosed medical conditions, 4) caffeine/energy drink consumption, 5) tobacco, recreational drug usage, 6) prescription medication, 7) sleep habits, 8) quality of food intake, 9) exercise

RECOMMENDATIONS/NEXT STEPS

1. BP machine 'stations' for self-monitoring (students have personal sphygmomanometers).
2. Health Clinic on site with evening/weekend hours
3. Availability of fresh food on medical school campus
4. Innovative exercise opportunities
5. Meditation/wellness rooms
6. Destigmatize Chronic illness

REFERENCES

1. U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. (2025, September 9). *[Title of webpage/report]*.
2. Al-Taha, A., Al-Delaimy, A., et al. (2020). Prevalence of hypertension among medical students and lifestyle determinants. *Iraqi Journal of Community Medicine*, 33(2), 103–111.
3. Fryar, C., Kit, B., et al. (2024). *NHANES/NCHS hypertension prevalence, awareness, treatment and control among adults age 18 and older: United States, August 2021–August 2023. NCHS Data Brief*.
4. Burkard, T., Mayr, M., Winterhalder, C., et al. (2018). Reliability of single office blood pressure measurements. *Heart*, 104, 1173–1179.
5. Radley, D., Kolb, K., & Collins, S. (2025). *2025 scorecard on state health system performance*. The Commonwealth Fund.
6. Malge, M., Waghmare, et al. (2024). Prevalence of prehypertension and hypertension in first year medical students and its relation with BMI of students. *Journal of Population Therapeutics & Clinical Pharmacology*, 31(3), 1–8.
7. Ferguson-Stegall, L., Shanley, B., Huch, A., et al. (n.d.). Hypertension in healthy college students: The Hypertension in Young Adults (HiYa) study. *ACSM*, 7(2), 1–5.
8. Yeo, W., Abraham, R., et al. (2024). Sex differences in hypertension and its management throughout life. *Hypertension*, 81(11), 2263–2274.
9. Centers for Disease Control and Prevention, National Center for Health Statistics. (2024). *Hypertension prevalence, awareness, treatment, and control among adults aged 18 and older: United States, August 2021–August 2023* (Data Brief No. 511).

10. Ley, A., Han, J., Hare, E. T., et al. (2023). Beyond burnout: A four-year survey of osteopathic medical student mental health and implications for the development of wellness and mental health programs. *Journal of Osteopathic Medicine*, 123(5), 225–233.
11. Mok, D., Bednarz, J., Zieren, J., et al. (2020). Double the prevalence of stage 2 hypertension readings in a small group of American pre-clinical medical students compared to young adults diagnosed with stage 2 hypertension in the United States. *Cureus*, 12(3), e7448.