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PREVALENCE AND PERCEPTION OF HYPERTENSION AMONG CLINICAL MEDICAL STUDENTS AND HOUSE OFFICERS IN A TERTIARY CARE SETTING IN KARACHI

Dr. Ali Mustufa[*1], Dr. Ifrah Akbar[2], Dr. Batool Zehra[3], Dr. Sajal Nadeem[4]

[*1,2,3,4]*House officers, Jinnah Postgraduate Medical Center, Karachi*

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Corresponding Author: *
Dr. Ali Mustufa

Abstract

Background: *Hypertension is a leading non-communicable disease globally, often silent yet significantly contributing to cardiovascular morbidity and mortality. Early prevention and control are crucial, particularly among health professionals expected to model healthy behavior. However, studies suggest a disconnect between medical knowledge and personal health practices.*

Objective: *To assess the knowledge, risk perception, and lifestyle practices related to hypertension among final-year medical students and house officers at a tertiary care hospital in Karachi.*

Methods: *This descriptive, cross-sectional study included 247 participants from Jinnah Sindh Medical University (JSMU) and JPMC Hospital. A structured questionnaire assessed awareness and behavioral risk factors, while blood pressure was recorded using a sphygmomanometer. Data were analyzed using SPSS v26. Descriptive statistics, chi-square tests, and correlation analyses were performed to explore associations between knowledge, perception, and practices.*

Results: *Out of 247 participants (mean age 24.8 years), 18% were hypertensive (self-reported or measured), while 34% were in the prehypertensive range. Although 92% identified stress and salt intake as major risk factors, only 41% reported intentionally reducing salt in their diet. Daily physical activity averaged ~3000–4000 steps due to ward rotations, yet 68% did not consider it sufficient exercise. Significant gaps were observed between knowledge and actionable behavior ($p < 0.05$).*

Conclusion: *Despite high awareness of hypertension, many medical trainees fail to implement essential lifestyle modifications. Institutional wellness initiatives and integration of preventive health education into clinical training are recommended.*

INTRODUCTION

Hypertension, often termed the "silent killer," is a major modifiable risk factor for cardiovascular diseases, including myocardial infarction, heart failure, stroke, and chronic kidney disease.

Globally, it is estimated to contribute to over 7.5 million deaths annually, accounting for approximately 12.8% of all deaths worldwide [1]. In low- and middle-income countries like Pakistan, the burden of hypertension is rising due to rapid urbanization, dietary shifts, increased salt consumption, sedentary lifestyles, and chronic stress.

The overall pool prevalence of hypertension in Pakistan is 33%. [2] Hypertension is a major factor in diseases like; myocardial infarction, heart failure, and stroke. Therefore, it is crucial to control high blood pressure and prevent these outcomes. [3] Certain factors like age, smoking, kidney diseases, diabetes, family history, and obesity were closely associated with hypertension. These factors directly affect the diagnosis,prevention, treatment, and control of hypertension. [3] Upon observing, we noticed incautious behavior of the people towards hypertension. Hypertension goes undiagnosed for many reasons and the most common reason is lack of knowledge and awareness of hypertension and its complications. [4]

The prevalence of hypertension in Pakistan is reported to be around 33%, with many cases remaining undiagnosed or poorly controlled [2]. Importantly, recent evidence indicates that hypertension is no longer a disease of the elderly; younger adults, particularly those in

high-stress academic and clinical environments, are also increasingly affected. This emerging risk profile places medical students and house officers at the forefront of concern, not only due to occupational stress and disrupted lifestyle habits, but also because they represent future healthcare providers expected to model preventive behavior.

Despite their exposure to medical knowledge and clinical experience, medical trainees often demonstrate poor health practices. Studies from similar settings have shown that knowledge of hypertension does not always translate into appropriate self-care or lifestyle adjustments, such as reducing salt intake, monitoring blood pressure, or maintaining adequate hydration and physical activity levels [2,5]. This dissonance between awareness and behavior may be due to time constraints, academic pressure, and underestimation of personal risk.

The final year medical students at Jinnah Sindh Medical University (JSMU) and house officers at Jinnah Postgraduate Medical Centre (JPMC) operate in high-demand clinical environments that may compromise their health choices. Long clinical hours, skipped meals, low water intake, limited physical activity, and reliance on processed or canteen foods are common. Furthermore, anecdotal reports suggest that self-monitoring behaviors, such as routine blood pressure checks, are uncommon even among those with a family history of hypertension.

In this context, the present study aims to evaluate the awareness, risk perception, and lifestyle practices related to hypertension among final-year medical students and house officers at a tertiary care hospital in Karachi. The study further explores the correlation between medical knowledge and health behavior, identifying gaps that may be targeted through institutional health promotion and curriculum reform.

Methodology

Study Design

This was a descriptive, cross-sectional study conducted to assess the knowledge, risk perception, and lifestyle practices related to hypertension among clinical medical students and house officers.

Study Setting

The study was carried out at Jinnah Sindh Medical University (JSMU) and Jinnah Postgraduate Medical Centre (JPMC), Karachi. Participants included final-year MBBS students from JSMU and house officers posted in various departments of JPMC.

Study Duration

Data collection was conducted between **June and December 2023**. **Study Population**

The target population included:

- **Final-year MBBS students** (in clinical rotations)
- **House officers** undergoing internship at JPMC

These individuals were selected due to their dual exposure to medical knowledge and real-world hospital environments, providing an ideal setting to explore the relationship between awareness and health practices.

Inclusion Criteria

- Male and female participants aged **≥25 years**
- Enrolled as final-year MBBS students at JSMU and involved in clinical rotations or serving as house officers at JPMC
- Willing to provide informed consent

Exclusion Criteria

- Individuals with known **secondary hypertension** (e.g., renal or endocrine disorders)
- Participants who declined consent
- Male and female participants aged **< 25 years of age.**
- Students of JSMU not involved with clinical rotations.

Sample Size and Sampling Technique

A sample size of **247** was calculated using the **OpenEpi sample size calculator** for a population of approximately 900 eligible individuals (students and house officers), assuming:

- 95% confidence level
- 5% margin of error
- Expected hypertension-related knowledge prevalence of 50%

Participants were selected via **convenience sampling** across different departments and rotations.

Data Collection Tools and Procedure

Data were collected using a structured, pre-tested questionnaire consisting of:

- **Demographic details** (age, gender, weight)
- **Knowledge items** on hypertension (e.g., causes, complications, prevention)
- **Risk perception questions**
- **Lifestyle practices** (salt intake, physical activity, hydration, smoking, dietary habits)

Participants' **blood pressure (BP)** was measured using a manual sphygmomanometer on three different occasions (on alternating days) while following standard clinical protocols. Readings were categorized using the **JNC 8 guidelines**:

- Normal: <120/80 mmHg
- Prehypertensive: 120–139/80–89 mmHg
- Hypertensive: ≥140/90 mmHg

Each participant's **daily activity level** was estimated via self-reported steps during ward rotations (~3,000–4,000 steps/day), which were not considered equivalent to structured exercise.

Operational Definitions

- **Hypertension (measured):** Systolic BP ≥140 mmHg and/or diastolic BP ≥90 mmHg
- **Prehypertension:** BP between 120–139/80–89 mmHg
- **Knowledge Score:** Based on correct responses to selected validated items
- **Adequate Physical Activity:** ≥150 minutes of moderate-intensity activity per week (WHO standard) [1]

Ethical Considerations

- Ethical approval was obtained from the **Institutional Review Board (IRB) of JSMU.**
- Written **informed consent** was taken from all participants.
- Confidentiality and anonymity were ensured throughout the study.
- Participants found to have elevated BP were privately informed and advised to consult a physician for formal evaluation.

Data Analysis

Data were entered and analyzed using IBM SPSS Statistics Version 26. Descriptive statistics were computed for all variables. Categorical data were presented as frequencies and percentages. Chi-square tests were used to assess associations between categorical variables (e.g., knowledge vs. behavior). Correlation analyses were conducted to explore relationships between knowledge scores, BP status, and lifestyle practices. A p-value of **<0.05** was considered statistically significant.

Discussion

Table 1: Blood Pressure Category Distribution (n = 129)

BP Category	Frequency	Percentage
Normal	52	40.3%
Mild	37	28.7%
Moderate	27	20.9%
Severe	8	6.2%
Very Severe	1	0.8%
Invalid Entry	4	3.1%
Total	**129**	**100%**

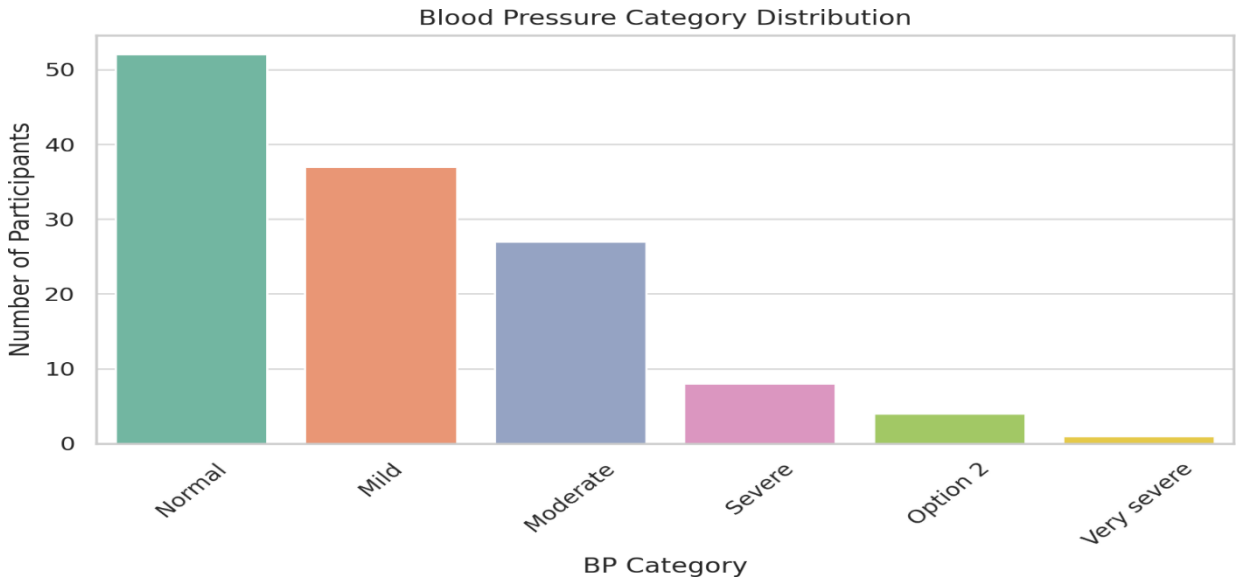

Table 2: Self-Reported Hypertension Status

Response	Frequency	Percentage
No	94	72.9%
Yes	24	18.6%
Maybe	9	7.0%
Don't Know	2	1.5%

Table 3: Preventive Measures Taken for Hypertension

Response	Frequency	Percentage
No	86	66.7%
Yes	22	17.1%
Sometimes	21	16.3%

Table 4: Physical Activity to Control Hypertension

Response	Frequency	Percentage
Yes	59	45.7%
No	70	54.3%

Table 5: Salt Preference in Diet

Salt Preference	Frequency	Percentage
Normal	82	63.6%
Less	42	32.6%
More	5	3.9%

This study investigated the knowledge, risk perception, and lifestyle practices related to hypertension among final-year medical students and house officers at JPMC Hospital, Karachi. The findings demonstrate a clear and concerning gap between clinical knowledge and its translation into preventive health behaviors among young medical professionals in training.

The data revealed that more than half (59.6%) of participants had elevated blood pressure, categorized as mild, moderate, or severe hypertension (Table 1). This is unexpected for a population presumed to be health-conscious and in a physically active phase of their careers. In contrast, only 18.6% self-reported being hypertensive (Table 2), suggesting a considerable proportion were either unaware of their elevated BP readings or did not perceive themselves to be at risk. This discrepancy underscores the need for routine BP screening, even among healthcare workers, to capture undiagnosed or masked hypertension.

Only 32.6% of participants reported actively reducing salt intake, while 63.6% followed a "normal" salt diet (Table 5), despite high awareness of its role in blood pressure elevation. Similarly, hydration was not mentioned in any open-ended responses, despite its known impact on blood volume and vascular health. This omission suggests a gap not in theoretical knowledge, but in the conscious application of physiological principles to personal health.

Family history of hypertension was reported by 45% of participants (Table 6), a known risk factor that often fails to prompt preventive behaviors, as also observed in regional studies [9,10]. The underutilization of preventive strategies may be attributed to the demands of clinical training, long hours, and the stress associated with final-year exams and house job rotations. When asked about lifestyle modifications, 66.7% of participants reported not engaging in any consistent preventive measures (Table 3), reflecting a wider phenomenon noted in the literature: the paradox of health knowledge without behavioral follow-through [5,8].

Although ward rotations ensured that students walked an estimated 3,000–4,000 steps daily, 54.3% of participants stated that they did not engage in structured physical exercise to manage blood pressure (Table 4). WHO guidelines recommend at least 150 minutes of

moderate-intensity physical activity per week—targets unlikely to be met by ward movement alone. Similar barriers were cited in earlier studies, including lack of time, fatigue, and academic pressure [11,14].

Smoking and dietary habits were additional areas of concern. Although only a minority reported smoking, many participants consumed processed foods and did not monitor their fat intake. This finding aligns with prior research linking sedentary behavior and poor diet among healthcare students to increased risk of early-onset hypertension [12].

The frequency of regular blood pressure monitoring and follow-up was significantly higher among female participants, with 57% reporting monthly measurements (Table 7), which may reflect differing attitudes toward preventive care by gender. This observation is consistent with previous studies in medical settings [6,13].

Perhaps most critically, stress was repeatedly cited as a major contributor to elevated blood pressure. As students transition into clinical roles, prolonged hours, high responsibility, and emotional exhaustion may exacerbate physiological and behavioral risk factors.

These results echo findings from Egyptian and Turkish cohorts linking stress, hypertension, and lack of self-care in medical students [10,14].

Collectively, these findings emphasize a need for curriculum reform and institutional support. Interventions such as structured wellness modules, routine health screenings, access to mental health services, and behaviorally informed health education may bridge the gap between knowledge and action. As future physicians, this cohort must not only manage non-communicable diseases in patients but must also embody and model preventive practices themselves.

Conclusion

The study reveals a discordance between knowledge and practice regarding hypertension among clinical medical students and house officers at JPMC. Although most participants were aware of risk factors, many failed to adopt essential preventive behaviors such as salt reduction, structured physical activity, and self-monitoring. A substantial number also had undiagnosed elevated blood pressure, raising concerns about self-awareness in a high-risk professional group.

These findings underscore the need to integrate structured wellness initiatives within medical training programs, including blood pressure screening, lifestyle counseling, and stress management. Reinforcing the translation of clinical knowledge into personal health action should be considered a foundational component of professional medical education.

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