



PREVALENCE OF HYPERTENSION AMONGST ADULT POPULATION IN URBAN SLUMS OF GUWAHATI CITY, ASSAM: A CROSS SECTIONAL STUDY.

Arunima Sarmah*	Post Graduate Student, Department of Community Medicine, Gauhati Medical College and Hospital *Corresponding Author
Jhankar Hazarika	Assistant Professor, Department of Community Medicine, Gauhati Medical College and Hospital
Kumaril Goswami	Assistant Professor, Department of Community Medicine, Gauhati Medical College and Hospital
Jutika Ojah	Professor & Head of the Department of Community Medicine, Gauhati Medical College and Hospital
Achyut Chandra Baishya	Professor, Department of Community Medicine and Principal cum Chief Superintendent, Gauhati Medical College and Hospital

KEYWORDS :

INTRODUCTION:

Non-communicable diseases (NCDS), also known as lifestyle diseases, have become one of the leading causes of deaths worldwide¹. Developing countries like India are likely to face an enormous burden of NCDS in future and of these diseases, hypertension is one of the most treatable causes of mortality and morbidity in the elderly population². About 20% of Indians suffer from a chronic condition and in 2017 an estimated 200 million persons were living with hypertension³. Most of the times people remain unaware of this condition due to the lack of recognizable signs and symptoms. Serious complications and mortality can occur if hypertension remains undiagnosed and untreated for longer time. Henceforth, consistency in screening for early diagnosis and adequate management with lifestyle modification is needed for effective reduction in the prevalence of the disease.

Medical care for hypertension is often delayed or is sought only for its complications such as stroke, heart attack, heart failure and kidney failure⁴. To lower hypertension burden, several strategies have been developed. Government of India has also introduced several initiatives such as 'National Programme for Prevention and Control of Non-Communicable Diseases (NP-NCD)', population level screening of hypertension and 'India Hypertension Control Initiative (IHCI)' to decrease the deaths and disability. Most of these strategies are focused on middle aged and older age group people. There is an increasing trend of hypertension among the people belonging to younger age group over the past decade⁵. Measures should be undertaken to diagnose hypertension and prevent or postpone its complications as the burden of hypertension is bound to increase due to increasing life expectancy rates.

Young hypertension is defined as the hypertension occurring in people <40 years age⁶. Almost one-third of young hypertension is caused by some underlying secondary factors⁷. Though secondary hypertension can be cured when compared with essential hypertension, which usually lasts lifelong, secondary hypertension causes severe end organ damage more than essential hypertension. Hence, to evaluate the younger population for suspected hypertension an integrated approach is required.

Health seeking behavior is defined as any activity undertaken by individuals who perceive themselves to have a health problem or to be ill to find an appropriate remedy. It is influenced by their economic instability, reduced physical endurance, social isolation, reduced cognitive ability, dependency and loneliness. This makes them more vulnerable to suffer or succumb to illnesses which may be treatable, or whose disability effects can be postponed. The decisions made by patients often encompass all available healthcare options such as visiting a public or private health facility, self medication, and use of home remedies. All adults > 18 years should be screened for raised BP since hypertension is considered as an iceberg disease. Almost three-fourths are not seeking care from health facility even after diagnosis leading to serious complications and end organ damage.

Rationale:

Currently, there is insufficient literature on the determinants of healthcare seeking behavior of hypertensive patients, their knowledge, perceptions, reasons for non compliance, access to medication and healthcare and ways in which they cope up with various systemic issues in daily practice. Understanding the healthcare seeking behavior and its determinants might help in devising new strategies to increase the treatment coverage rate. So, the current study is carried out to document the prevalence of hypertension and to understand the health seeking behavior among adults living in urban slums of Guwahati city.

AIMS:

- 1) To estimate the prevalence of hypertension among adults living in urban slums of Guwahati city
- 2) To determine various factors influencing hypertension among study population.
- 3) To determine the health seeking behavior among adults living in urban slums of Guwahati city

MATERIALS AND METHODS:

Study Design: Community based Cross Sectional Study

Study Area: The study was conducted in 10 urban slums of Guwahati city.

Study Period: 20th April 2023 to 20th June 2023

Study Population: all adults in the age group 18 to 60 years age residing in urban slums of Guwahati city.

Inclusion Criteria:

- 1) Willingness to participate in the study.
- 2) Diagnosed with hypertension for at least 5 years.

Study Sample: The study prevalence of hypertension is taken to be 33.3% based on a study named "Hypertension in the native rural population of Assam" by NC Hazarika et al 2004*. Taking absolute error of 10%, the sample size calculated to be 88 using the formula $N = 4pq/l^2$, the sample size rounded off to 90.

*Hazarika NC, Narain K, Biswas D, Kalita HC, Mahanta J. Hypertension in the native rural population of Assam. Natl Med J India. 2004 Nov-Dec; 17(6):300-4. PMID: 15736549.

Study Procedure: According to Guwahati Municipality Corporation in the year 2020, there are 100 registered slums in Kamrup metro (Guwahati City). Out of these slums, 10 slums were randomly selected for the study purpose. From each slum, 9 study population in the age group 18-60 years were selected. The study subjects were interviewed using pre designed semi structured schedule. Before conducting the study, verbal consent were taken from the study subjects. During the interview, BP measurement was done using a sphygmomanometer,

pulse rate were examined and prescriptions were reviewed. If no prescription is available, then the drugs taken by patient for treatment were taken into account.

Study Technique: Interview method

Study Tool: pre tested semi structured questionnaire.

RESULTS:

In our study, the overall prevalence of hypertension among 18-60 years old adults is found to be 26%. A total of 90 participants with hypertension between 18-60 years of age were included in the study. Out of the total study participants, 63.3% males and 36.7% females. The majority of participants (80%) belonged to the age group of 50-60 years. Most of the participants were married (75.5%). 44.4 % participants are skilled workers followed by semi-skilled workers (20%).

Most of the participants knew of hypertension as a disease of raised blood pressure. Common signs and symptoms experienced by hypertensive patients include headache, dyspnea, burning eyes, heaviness and palpitation. About 45% of the participants were not aware of any complications of hypertension. The majority of participants (55%) interviewed were knowledgeable about hypertension and its long term complications as an underlying cause for heart diseases.

In most cases, the diagnosis of hypertension was made when the participants visited the physician for some other health ailments. Participants's choice of a healthcare facility was decided by multiple factors like family support, treatment cost, distance to the health facility and transportation cost. Amongst the healthcare facilities utilized, most of the participants preferred to visit government hospitals (94.4%) followed by private hospitals (83.3%). Nearly, 55.5% of respondents reported taking alternative medications like Homeopathy. Some respondents (26.7%) were found taking medications prescribed to a relative or friend. 38.9% of respondents were prescribed medications by local pharmacists.

Our study identified some barriers to access healthcare services like cost of transport, unavailability of escort to accompany to the healthcare institution; loss of daily wages for a family member who chooses to accompany the patient etc. Respondents with low socioeconomic status, despite having access to healthcare services found it difficult to regularly visit a physician for follow-up of treatment.

Regarding adherence to treatment, 77.7% participants took their treatment regularly, 16.7% participants were on irregular treatment and 5.6% participants discontinued their treatment. Respondents preferred visiting a public health facility in comparison to a private health facility. The indifferent attitude and behavior of some private healthcare workers towards the patients were also seen as a contributing factor for utilizing public health facilities.

Regarding substance abuse among hypertensive patients, 88.9% participants chew betel nut followed by alcohol consumption which is 86.7%. and 85.5% participants smoked khaini.

Table 1: Characteristics Of Participants With Hypertension At Baseline (n=90)

Demographic Factors	n (%)
Gender	
Male	57 (63.3%)
Female	33 (36.7%)
Marital Status	
Married	68 (75.5%)
Separated/Divorced/Widowed	13 (14.5%)
Unmarried	9 (10%)
Education	
Illiterate	3 (3.3%)
Primary	28 (31.1%)
Middle Primary	19 (21.1%)
High School	15 (16.6%)
Matriculation	10 (11.1%)
Higher Secondary	8 (8.9%)
Graduation & above	7 (7.8%)

Occupation	
Unskilled	8 (9.0%)
Semiskilled	18 (20%)
Skilled	40 (44.4%)
Unemployed	14 (15.5%)
Homemaker	10 (11.1%)

Table 2-utilization Of Healthcare Services

Utilization Of Healthcare Services	Percentage (%)
Government hospitals	85 (94.4%)
Private hospitals	75 (83.3%)
Private practitioners	65 (72.2%)
Self medication	40 (44.4%)
Homeopathy	50 (55.5%)
Ayurvedic medicine	45 (50%)
Chemist shops	35 (38.9%)
Home remedies	30 (33.3%)
Others(from families, friends, relatives)	24 (26.7%)

Table 3: Adherence To Treatment

Patient adherence to treatment	Percentage (%)
Regular with treatment	70 (77.7%)
Irregular treatment	15 (16.7%)
Discontinued treatment	5 (5.6%)

Table 4: Hypertensive Patients With Substance Abuse.

Substance	Percentage (n %)
Chews betel nut	80(88.9%)
Tobacco:	
1)Smokeless tobacco	
a) Zarda	71(78.9%)
b) Khaini	77(85.5%)
c) Others(Gutkha)	65(72.2%)
2)Smoking tobacco	
a) Cigarette	75(83.3%)
b) Bidi	66(73.3%)
c)Cigar	35(38.9%)
d) Hukka	20(22.2%)
Alcohol	78(86.7%)
Drug abuse	
a) Injectable	5(5.55%)
b)Oral	10(11.1%)
Any other substance abuse	3(3.33%)

DISCUSSION:

The overall prevalence of hypertension in our study is found to be 26%. Our study provides an evidence of high burden of hypertension among adults living in urban slums of Guwahati city. A study done in the native rural population of Assam by N C Hazarika et al reported overall prevalence of hypertension of 33.3%. The prevalence reported by Raghupathy et al. was 29.8%. A national level survey done across 24 states and union territories of India by Sivasubramanian Ramakrishnan et al had found overall prevalence of hypertension was 30.7% and prevalence among women was 23.7%. A study done in the state of Maharashtra by Mahadev D Bhise et al reported overall prevalence of hypertension 25%. A study done among tribal population of Kashmir by Mohd Ashraf Ganie et al reported prevalence of hypertension of 41.4%. The difference in prevalence levels may be due to different geographical factors and may be due to differences in dietary pattern.

In our study, 63.3% males, 36.7% females. In a mixed method study conducted by Shubham Gupta et al (2020) among 100 hypertensive patients 38-76 years age in North India, 66% males, 34% females¹³. A study by Palanivel Chinnakali et al (2012) in rural Puducherry reported 24% males, 76% females¹⁴. In our study, 75.5% participants were married, 10% were unmarried whereas in a study conducted by Yuvaraj Krishnamoorthy et al (2022) among young adolescents and young adults in India reported 65.1% were married, 32.8% were unmarried¹⁵.

In our study, 31.1% participants were educated up to primary school and 16.6% participants had high school education and 7.8% participants were graduated and went for higher studies. A study conducted by Yingthing Cao et al (2021) among adults in Kerala reported 30.4% participants were educated up to primary school, 56.3% participants were educated up to secondary school and 13.3% participants were graduated and went for higher studies¹⁶. In a study conducted by Yuvaraj Krishnamoorthy et al (2022) which is an analysis of NFHS-4, 12.5% participants went to primary school, 54.6% were

educated up to secondary school and 13.4% participants were graduated and had higher studies¹⁵

In our study, 44.4% participants were skilled workers and 15.5% unemployed. In a study conducted by Miriam Karinja et al (2019) in selected rural districts in Kenya reported 13.8% participants were skilled workers and 39.3% participants were unemployed¹⁷. A study by Palanivel Chinnakali et al (2012) in rural Puducherry reported 50.5% were employed and 49.5% were unemployed¹⁴.

In our study, about 45% of the participants were not aware of any complications of hypertension. The majority of participants (55%) interviewed were knowledgeable about hypertension and its long term complications as an underlying cause for heart diseases. In a study conducted by Raghupathy Anchala et al (2014) reported 25% rural and 42% urban Indians were aware of their hypertensive status⁹. A study conducted by Yingthing Cao et al (2021) among adults in Kerala reported 54.4% participants were aware and 45.6% participants were not aware of hypertension and its complications¹⁶.

In our study, 94.4% participants reported using government hospitals for the management of hypertension followed by private hospitals which is 83.3%. In a study conducted by Shubham Gupta et al (2020) in rural population of North India, 48% participants use government hospitals for the management of hypertension followed by private hospitals which is 40%¹⁴. A study conducted by Yuvaraj Krishnamoorthy et al (2022) reported 51.3% participants visited government hospitals for the management of hypertension followed by private hospitals which is 45.5%¹⁴.

In our study, 88.9% participants chew betel nut, 86.7% participants consume alcohol and 85.5% participants smoke Khaini. A study conducted by Rakesh Kumar et al (2021) reported prevalence of tobacco use was 20.8% and prevalence of smoking was 15% and smokeless tobacco use was 7.2% among hypertensive patients¹⁸.

CONCLUSION:

This community based study has showed a high prevalence of hypertension among the adults in urban slums of Guwahati city. Hence, a holistic approach to screen all adults from 18-60 yrs age should be made for early diagnosis and early initiation of treatment to prevent the development of complications as burden of hypertension is bound to increase due to increasing life expectancy rates. This calls for public health education campaigns to promote awareness and measures to ensure the quality of healthcare services and their ease of accessibility for the management of hypertension to prevent long term complications.

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REFERENCES

- World Health Organization. Deaths from Cardiovascular Diseases and Diabetes [Internet]. WHO [cited 2021 July 1]. Available from: http://www.who.int/gho/ncd/mortality_morbidity/evd/en/
- Fuentes R, Ilmanien N, Laurikainen E, Tuomilehto J, Nissinen A. Hypertension in developing economies: A review of population-based studies carried out from 1980 to 1998. *J Hypertens* 2000; 18:521-9
- Lall D, Engel N, Devadasan N, Horstman K, Criel B. Challenges in primary care for diabetes and hypertension: An observational study of the Kolar district in rural India. *BMC Health Serv Res* 2019; 19:44
- Musinguzi G, Anthierens S, Nuwaha F, Van Geertruyden JP, Wanyenze RK, Bastiaens H. Factors influencing compliance and health seeking behaviour for hypertension in Mukono and Buikwe in Uganda: A qualitative study. *Int J Hypertens* 2018; 2018:8307591. doi: 10.1155/2018/8307591
- Joshi SR, Saboo B, Vadivale M et al. SITE investigators prevalence of diagnosed and undiagnosed diabetes and hypertension in India: results from the screening India's twin epidemic (SITE) study. *Diabetes Technol Ther* 2012; 14:8-15
- Sukor N. Clinical approach to young hypertension. *Brunei Int Med J*. 2013; 9(2):82
- Kamath SA. Young hypertensive: how and how much to investigate? *Med Update*. 2008; 18:570-7.
- Hazarika NC, Narain K, Biswas D, Kalita HC, Mahanta J. Hypertension in the native rural population of Assam. *Natl Med J India*. 2004 Nov-Dec; 17(6):300-4. PMID: 15736549.
- Anchala R, Kannuri NK, Pant H, Khan H, Franco OH, Di Angelantonio E, Prabhakaran D. Hypertension in India: a systematic review and meta-analysis of prevalence, awareness, and control of hypertension. *J Hypertens*. 2014 Jun; 32(6):1170-7. doi: 10.1097/HJH.000000000000146. PMID: 24621804; PMCID: PMC4011565.
- Ramakrishnan S, Zachariah G, Gupta K, Shivkumar Rao J, Mohanan PP, Venugopal K, Sateesh S, Sethi R, Jain D, Bardolei N, Mani K, Kakar TS, Kidambi B, Bhushan S, Verma SK, Bhargava B, Roy A, Kothari SS, Gupta R, Bansal S, Sood S, Nath RK, Tyagi S, Gupta MD, Girish MP, Kalra IPS, Wander GS, Gupta S, Mandal S, Senguttuvan NB, Subramanyam G, Roy D, Datta S, Ganguly K, Routray SN, Mishra SS, Singh BP, Bharti BB, Das MK, Kumar S, Goswami KC, Bahl VK, Chandra S, Banerjee A, Guha S, Deb PK, Chopra HK, Deedwania P, Seth A; CSI-Great India BP Campaign Investigators. Prevalence of hypertension among Indian adults: Results from the great India blood pressure survey. *Indian Heart J*. 2019 Jul-Aug; 71(4):309-313. doi: 10.1016/j.ihj.2019.09.012. Epub 2019 Sep 18. PMID: 31779858; PMCID: PMC6890959.
- Bhise MD, Patra S. Prevalence and correlates of hypertension in Maharashtra, India: A

- multilevel analysis. *PLoS One*. 2018 Feb 5; 13(2):e0191948. doi: 10.1371/journal.pone.0191948. PMID: 29401464; PMCID: PMC5798824.
- Ganie MA, Parvez T, Viswanath SA, Sreenivas V, Ramakrishnan L, Nisar S, Sahar T, Robbani I, Ali SA, Rashid A, Wani IA. Prevalence, pattern & correlates of hypertension among tribal population of Kashmir, India: A cross-sectional study. *Indian J Med Res*. 2021 Mar; 154(3):467-475. doi: 10.4103/ijmr.IJMR_48_19. PMID: 35345072; PMCID: PMC9131797.
- Gupta S, Virk A, Mittal A, Agarwal BK. Patterns and determinants of healthcare seeking behavior among hypertensive patients in a rural population of north India: A mixed-method study. *J Family Med Prim Care* 2020; 9:2830-6.
- Chinnakali P, Mohan B, Upadhyay RP, Singh AK, Srivastava R, Yadav K. Hypertension in the elderly: prevalence and health seeking behavior. *N Am J Med Sci*. 2012 Nov; 4(11):558-62. doi: 10.4103/1947-2714.103314. PMID: 23181226; PMCID: PMC3503373.
- Yuvaraj Krishnamoorthy and others, Prevalence of hypertension and determinants of treatment-seeking behaviour among adolescents and young adults in India: an analysis of NFHS-4, *Journal of Public Health*, Volume 45, Issue 1, March 2023, Pages e48–e56, <https://doi.org/10.1093/pubmed/fdac006>
- Cao Y, Sathish T, Haregu T, Wen Y, de Mello GT, Kapoor N, Oldenburg B. Factors Associated With Hypertension Awareness, Treatment, and Control Among Adults in Kerala, India. *Front Public Health*. 2021 Nov 1; 9:753070. doi: 10.3389/fpubh.2021.753070. PMID: 34790643; PMCID: PMC8591131.
- Karinja M, Pillai G, Schlienger R, Tanner M, Ogutu B. Care-Seeking Dynamics among Patients with Diabetes Mellitus and Hypertension in Selected Rural Settings in Kenya. *Int J Environ Res Public Health*. 2019 Jun 6; 16(11):2016. doi: 10.3390/ijerph16112016. PMID: 31174248; PMCID: PMC6603942
- Kumar R, Kant S, Chandra A, Krishnan A. Tobacco use and nicotine dependence among patients with diabetes and hypertension in Ballabgarh, India. *Monaldi Arch Chest Dis*. 2021 Aug 10; 92(1). doi: 10.4081/smonaldi.2021.1799. PMID: 34461701.