

**Original Research Article****Prevalence and factors affecting hypertension among Geriatric Patients Attending Outpatient Department of a Rural Health Training Center, Maner of IGIMS, Patna**

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Contact No. 7903856297, Email: [dr.skmailbox@gmail.com](mailto:dr.skmailbox@gmail.com)**Abstract**

**Background:** India, in the associated epidemiological transition, is facing a double burden of communicable and non communicable diseases. Old age is not a disease in itself, but the elderly are vulnerable to long term diseases of insidious onset like hypertension. Due to deficit of regular screening and unawareness about complications of long-term high blood pressure in old age in rural area the large number of population remain undiagnosed so they might suffer from the long term complications of hypertension.

**Objectives:** To evaluate the Prevalence and determinants of hypertension among elderly individuals attending outpatient department of Rural Health Training Center, Maner of IGIMS, Patna

**Methods:** This hospital based cross-sectional study was conducted during September 2017 to February 2018 among 640 elderly patients, aged 60 years or above, who attended first time at the Out Patient Department of Rural Health Training Center, Maner of IGIMS, Patna. And fulfilled inclusion criterion.

**Results:** Prevalence of high blood pressure among study participants was 50 %. High blood pressure is more

prevalent in age group above 80 years and it was statistically significant ( $p$  value $<0.05$ ). Prevalence of hypertension in male and female participants was 42.32% and 55.49 % respectively, Inverse association was observed with alcohol and smoking. People belong to lower socio-economic status was more (54.76%) hypertensive followed by middle and upper ( $P <0.05$ ).

**Conclusions:** Our findings emphasize that hypertension is an important public health problem among the geriatric population and that there is definite need for regular screening for hypertension. Geriatric health care should be integrated in the general health system up to primary health care level.

**Keywords:** Geriatric patients, Hypertension, Outpatient department, Prevalence.

## Introduction

Aging is a universal process. In the words of Seneca "old age is an incurable disease". But more recently Sir James Sterling Ross commented "you do not heal old age, you protect it, you promote it and you extend it". These are in fact the principles of preventive medicine.<sup>1</sup>

A man's life is normally divided in to five main stages namely infancy, childhood, adolescence adulthood and old age. Ageing is an integral part of the growth and development which is terminated by death. The elderly people are the precious asset for any country. With their rich experience and wisdom they contribute their strength for the substance and the progress of the nation.<sup>2</sup> Total population in India is 1028.61 million and old age population ( $\geq 60$  years) is 7.46% that is 76.73 million (NFHS III). About 48.2% of elderly persons were women-out of whom 55% were widows. A total of 73% of the elderly persons were illiterate and dependent on physical labor. One third was reported to be living below the poverty line (i.e. 33% of the older persons were in vulnerable situation without adequate food, clothing or shelter). About 90% of elderly were from the unorganized sector i.e. they have no longer sources of income.<sup>3</sup>

Non communicable diseases (NCDs) such as hypertension account for increasing morbidity and mortality among the elderly. Hypertension is a major risk factor for coronary artery disease and stroke.<sup>(4,5)</sup> Globally, 7.5 million deaths and 57 million DALYs are lost annually due to hypertension.<sup>(6)</sup> Many developing countries including India are passing through a demographic transition with a gradual increase in the life expectancy of the people.<sup>(7)</sup> The proportion

of elderly population aged 60 years and above has gone up to 8.6% as per the current sample registration system report.<sup>(8)</sup> The prevalence of NCDs such as Hypertension, diabetes and stroke is rising in most countries due to the increasing life expectancy of the people. Hypertension accounts for 57% and 24% of the stroke deaths and coronary heart disease (CHD) deaths in India.<sup>(9)</sup> Prevention and treatment of hypertension is an important public health issue. There is a paucity of data on the prevalence of hypertension and its determinants among the elderly and this study was done to assess the same among elderly

## Objective

To evaluate the Prevalence and determinants of hypertension among elderly individuals attending outpatient department of Rural Health Training Center, Maner of IGIMS, Patna

## Materials and Methods

This institution based cross-sectional study was conducted in a span of 6 Months during September 2017 to February 2018 on morbidity pattern among elderly study participants aged 60 years and above attended out patients department of Rural Health Training center, Maner of IGIMS, Patna.

The study population was including 640 elderly patients, who attended first time during the study period at the Out Patient Department (OPD) of Rural Health Training Center. The analysis was done on the basis of new patients only; if the same patient came for consultation for more than one time for a particular illness then he/she was considered once. The study population consisted of elderly patients fulfilling inclusion and

exclusion criteria as well as providing informed written consent to participate in the proposed study. Inclusion criteria for recruitment of participants were, elderly patients those who are attending the first time OPD and given written informed consent, willing to participate and who has given written consent. We excluded patients who were severely ill, did not consent to the study and those who did not fulfill the inclusion criteria.

### Measurement tools

Initially blood pressure was measured by random zero mercury sphygmomanometer and stethoscope in sitting position in right brachial artery after 5 minute rest. A total of 3 measurements were taken during the interview at an interval of 10 minutes each. Mean of all three readings was taken for analysis. Korotkoff sound 1 and 5 were considered as systolic and diastolic blood pressure respectively. Pulse pressure was calculated as the difference between systolic and diastolic blood pressure. Measurement of blood pressure of all participants was done by single investigator. The Joint National committee<sup>7</sup> (JNC 7) classification for the hypertension were used in the study.<sup>10</sup>

### Data Processing and Analyses

Data were analyzed using Microsoft® Excel and Epi-Info 7. Tests of proportion and  $\chi^2$ -test was Used. A *p*-value of less than 0.05 was considered statistically significant.

### Ethical consent

Ethical consent was obtained from Institutional Ethical Committee

### Definition of prevalence of hypertension

All the study subjects who were detected hypertensive (as per JNC 7) at the time of measurement, irrespective of their past history, were considered to be the “cases” while calculation of prevalence of hypertension.

### Personal Habits

Smokers, alcohol consumers or tobacco chewers were defined as those who ever smoked, consume alcohol or chew tobacco in their lifetime (present as well as in the past).

Physical activity was assessed by inquiring about the average activity done during work and leisure time. According, a person was considered to be to sedentary when his work involved desk job, or mainly domestic activities like viewing television or reading and a person was considered to be active when he does home maintenance activities, washing linen/clothes by hand, cycling and carpentry.<sup>(11)</sup>

### Results

Overall prevalence of high blood pressure among study participants was 50 %. As shown in Table-2 High blood pressure is more prevalent in age group above 80 years and it was statistically significant (*p* value<0.05). Prevalence of hypertension in male and female participants was 42.32% and 55.49 % respectively and it was statistically significant (*p*<0.05).

Table 3 shows addictions among geriatric age group. Inverse association was observed with alcohol and smoking. 199(31.08%) of study subjects had ongoing habit of smoking, whereas 409 (63.9) never ever smoked. The prevalence of hypertension among those who smoke currently (42.71%) and those smoked in the past (34.37%) and who never smoked (54.76%). This difference was found to be statistically significant. Smokeless forms of tobacco like Gutka, Mava, Pan etc. was consumed currently by 199 (31.08%) study subjects. The prevalence of hypertension in those who current consumed smokeless tobacco (42.71%) was significantly higher than those who never consumed smokeless tobacco (54.76%). Current alcohol consumption is pretty low in our study (10.15%). 86.25% participants had never consumed alcohol in the past. People belong to lower socio-economic status was more (54.76%) hypertensive followed by middle and upper (*P* <0.05).

**Table- 1** Background characteristic of study population

Background characteristic	Number	Percentage
Age(year)		
60-69	523	81.71
70-79	114	17.81
≥ 80	03	0.46
Sex		
Male	310	48.43
Female	330	51.56
Education Status		
Illiterate	198	30.93
Literate	442	69.06
Socio-economic Status		
Lower	269	42.03
Upper	299	46.71
Middle	72	11.25
Religion		
Hindu	620	96.87
Muslim	20	3.12
Marital Status		
Married	461	72.03
Unmarried	10	1.56
Saperated/Divorced	10	1.56
Widow/widower	159	24.84
Living arrangement		
Living alone	75	11.71
Living with spouse	141	22.03
Living with children	104	16.25
Living with spouse & Children	320	50

**Table- 2** Prevalence of hypertension among study participants according to age and sex

Characteristics	Hypertension		Chi square test	P value
	Present	Absent		
Age				
60-69	185(45.23)	224(54.76)	$\chi^2=11.07$ df=2	<0.001
70-79	114(57.28)	85(42.71)		
≥80	21(65.62)	11(34.37)		
Sex				
Male	113(42.32)	154(58.55)	10.80	<0.001
Female	207(55.49)	166(44.5)	Df=1	

**Table-3** Addiction among study participants and its relation with hypertension (N=640)

Addictions	Hypertension		Chi square test	P value
	Present	Absent		
Smoking habit				
Never	224(54.76)	185(45.23)	$\chi^2=11.07$ df=2	<0.05
Current	85(42.71)	114(57.28)		
Past	11(34.37)	21(65.62)		
Alcohol consumption				
Current	28(43.07)	37(56.92)	$\chi^2=26.1$ df=2	<0.001
Past	0	23(100)		
Never	292(52.89)	260(47.1)		
Smokeless Tobacco use				
Never	224(54.76)	185(45.23)	$\chi^2=11.07$ df=2	<0.001
current	85(42.71)	114(57.28)		
Past	11(34.37)	21(65.62)		

**Table-4** Prevalence of hypertension in relation to Socio- demographic characteristics of study participants

Characteristics	Hypertension		Chi-square	P value
	Present	Absent		
<b>Socioeconomic status</b>				
Lower	224(54.76)	185(45.23)	$\chi^2=11.07$ df=2	<0.001
Middle	85(42.71)	114(57.28)		
Upper	11(34.37)	21(65.62)		
<b>Physical activity</b>				
Light	247(47.22)	276(52.77)	$\chi^2=9.836$ df=2	<0.007
Moderate	72(63.15)	42(36.84)		
heavy	1(33.33)	2(66.66)		

## Discussion

Hypertension is an important cause of morbidity and mortality in the elderly population and is a risk factor for many other diseases. Present study reports a prevalence rate of hypertension as 45% which compares well with other studies carried out by Kokiwar et al at rural community of central India (38.1%) and Agrawal et al from Rajasthan (42.1%).<sup>12,13</sup> In the study done by Swami et al revealed 58% of prevalence of hypertension in urban and rural areas of Chandigarh and among which 61.3% prevalence in urban geriatric subjects and 36.7% prevalence in rural elderly subjects.<sup>14</sup> Prevalence of hypertension in present study was as high as 48.5% in females compared to males 38.9%. Similar findings were reported by Hazarika NC et al and Malhotra P et al while Gupta R et al and Guang Hui Dong et al found it was more in males. Wilmanska et al and Gupta et al also observed the similar finding of high prevalence of hypertension in females (48.4%) than in males (47.5%).<sup>15-20</sup> Common observation from previous studies was that prevalence of hypertension increase with age.,16-20 Age probably represents an accumulation of environmental influences and the effect of genetically programmed senescence in body systems.

In present study there were more female than male (sex ratio 1.064). Similar gender composition was reported in study by Kalavathy MC et al., Baliga SS et al., Quasem I et al., Pooja and Yashoda Mittal.<sup>21-24</sup> Like other study done by Kalavathy MC et al., Quasem I et al., present study had maximum percentage of young old followed by old and very old. The majority of the subjects

were literate (69.06%) and most of them (46.71%) belong to middle SES and Hindu religion. Similar trend was observed in another study.<sup>21,23</sup>

## Conclusion

The prevalence of hypertension in the elderly population of this study is quite high, with increase in prevalence with advancing age. Specific screening programmes are needed for early detection and control to avoid further complications. IEC activities should be started to create awareness about healthy lifestyle and measures. It is very essential that geriatric health care should be integrated in the general health system up to primary health care level.

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## References

1. Prakash R, Chaudhry S, Singh U. A study of morbidity pattern among geriatric population inurban area of Udaipur Rajasthan. IJCM. 2004;29(1):35-40.
2. Singh C, Mathur JS, Mishra VN, Singh JB, Garg BS, Kumar A. Social problems of aged in a rural population. IJCM 1995;20(1-4):24-7.

3. Ingle G, Nath A. Geriatric Health in India: Concerns and Solutions. *IJCM*. 2008;33(4):214-8.
4. Mahmood SS, Levy D, Vasani RS, Wang TJ. The Framingham Heart Study and the epidemiology of cardiovascular disease: a historical perspective. *The Lancet*. 2014 Mar 21;383(9921):999-1008.
5. Russell V. Luepker. Heart Disease. In: Wallace RB. *Public Health and Preventive Medicine (Maxcy-Rosenau-Last Public Health and Preventive Medicine)*. 15th edn. McGraw Hill, 2007:1079.
6. Park, K. Non-communicable diseases. In Park, K. eds. *Park's textbook of Preventive and Social Medicine*. 24th edn. Jabalpur M/S BanarsidasBhanot, 2015:391-395.
7. Ponnappalli R, Ponnappalli KM, Subbiah A. Aging and the Demographic Transition in India and Its States: A Comparative Perspective. *International Journal of Asian Social Science*. 2013;3(1):171-93.
8. Census of India: *Sample Registration System*. Available at: [www.censusindia.gov.in/vital.../srs.../9chap%20%20-%202011.pdf](http://www.censusindia.gov.in/vital.../srs.../9chap%20%20-%202011.pdf) (Last accessed on January, 2017)
9. 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. *Journal of hypertension*. 2014 Jun 1;32(6):1170-7.
10. National High Blood Pressure Education Program. *The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure*. Bethesda (MD): National Heart, Lung, and Blood Institute (US); 2004 Aug. Classification of Blood Pressure. Available from: <http://www.ncbi.nlm.nih.gov/books/NBK9633/>.
11. Hypertension Study Group. Prevalence, awareness, treatment and control of hypertension among the elderly in Bangladesh and India: a multicentre study. *Bulletin of the World Health Organization*. 2001;79(6):490.
12. Agrawal H, Baweja S, Haldiya K, Mathur A. Prevalence of hypertension in elderly population of desert region of Rajasthan. *Journal of the Indian Academy of Geriatrics*. 2005;1:14-7.
13. Kokiwar PR, Gupta SS, Dudgive PN. Prevalence of Hypertension in Rural Community of Central India. *JAPI*. 2012;60:26-2.
14. Swami HM, Bhatia V, Dutt R. A community based study of the morbidity profile among the elderly in Chandigarh, *Bahrain Medical*. 2002;24(1):13-6.
15. Hazarika NC, Narain K, Biswas D, Kalita HC, Mahanta J. Hypertension in the native rural population of Assam. *Natl Med J India*. 2004;17(6): 300-4.
16. Malhotra P, Kumari S, Kumar R, Jain S, Sharma BK. Prevalence and determinants of hypertension in an un-industrialised rural population of North India. *J Hum Hypertens*. 1999;13(7):467-72.
17. Gupta R, Prakash H, Gupta VP, Gupta KD. Prevalence and determinants of coronary heartdisease in a rural population of India. *J Clin Epidemiol*. 1997;50(2): 203-9.
18. Dong GH, Sun ZQ, Zhang XZ, Li JJ, Zheng LQ, Jue Li, et al. Prevalence, awareness, treatment and control of hypertension in a rural Liaoning Province, China. *Indian J Med Res*. 2008;128:122-7.
19. Wilmanska J, Bien B, Wojszel B. Hypertension in the advanced old age: prevalence and treatment in comparative urban and rural survey. *Przegl Lek*. 2002;59(4-5):252-5.
20. Guptha PC, Pednekar MS. Hypertension prevalence and blood pressure trends in

- 88653 subjects in Mumbai, India. Journal of human hypertension. 2004;18:907-10.
21. Kalavathy MC, Thankappan KR, Sarma PS, Vasana RS. Prevalence, awareness, treatment and control of hypertension in an elderly community-based sample in Kerala, India. Natl Med J India. 2000 Jan-Feb;13(1):9-15.
22. Baliga SS, Gopakumaran PS, Katti SM, Mallapur MD. Treatment seeking Behaviour and Health care expenditure for hypertension among elderly in urban slum of Belgaum city. Natl J Community Med. 2013;4(2):227-30.
23. Quasem I, Hypertension Study Group. Prevalence, awareness, treatment and control of hypertension among the elderly in Bangladesh and India: a multicentre study. Bull World Health Organ. 2001;79:490-500.
24. Pooja, Yashoda Mittal. Prevalence of hypertension among rural population of Doiwala block, Dehradun, Uttarakhand India. Recent Res Sci Technol. 2013;5(1):