



HYPERTENSION AND DIABETES BURDEN IN INDIAN POPULATION

Nitin Ranjan Gupta¹ and Seema Singh^{*2}

¹Associate Professor, Department of Internal Medicine, Hind Institute of Medical Sciences and Research, Ataria, Mau, Sitapur, UP, India.

²Professor and Head, Department of Physiology, Era's Lucknow Medical College and Hospital, Era University, Lucknow, U.P. India.

***Corresponding Author: Dr. Seema Singh**

Professor and Head, Department of Physiology, Era's Lucknow Medical College and Hospital, Era University, Lucknow, U.P. India.

Article Received on 19/08/2020

Article Revised on 09/09/2020

Article Accepted on 29/09/2020

ABSTRACT

India is experiencing a population transformation, and the number of elderly people is projected to grow both in actual numbers and in proportion. Elderly people are among the most vulnerable and high-risk populations of any population with respect to health status, and more so for non-communicable diseases. Estimating the prevalence of hypertension and diabetes in the elderly and associating with socio-demographic variables; and evaluating the diagnosis, care, and control status of those with hypertension and diabetes. Community based research was performed in Elderly people aged 60 and over were chosen by random selection of clusters. Information on self-reported illnesses, socio-demographic variables was gathered; blood sugar and blood pressure were measured fasting. We estimated the prevalence of diabetes and hypertension and tested the relation. A total of 220 elderly people took part in the study. 24.5 percent of diabetes was observed and 66.8 percent is hypertensive. In more than 25 percent independent hypertension was found. No statistically meaningful differential was found in both diabetes and hypertension by gender, age, income, and economic dependence. In a low-middle class population in Delhi, this research highlighted a major burden of non-communicable diseases among elderly persons. It also indicated a lack of knowledge of their medical conditions and the need for primary screening, diagnosis and care facilities.

KEYWORDS: Hypertension; Diabetes; Awareness.

INTRODUCTION

Overall, the speed of ageing is getting quicker than ever, this led to an increase in the elderly population (about 60 years) in 2015, 12% to a projected 22% in 2050.^[1] In India, the proportion of the elderly population rose from 1971 to 2011, from 5.3 to 8.6 points. There were about 104 million elderly Indians according to 2011 census. 73.3 million of those were in rural India.^[2] The South-East Asia Area (SEAR) suffers from a double disease burden; that of communicable diseases which remain a major public health issue, as well as non-communicable diseases which have emerged as one of the leading causes of death. According to the 60th round (2004) National Sample Survey, out of every 1000 elderly people living in rural India, 40 were estimated to be diabetic and 36 were estimated to be hypertensive.^[3] Hypertension and diabetes are high in geriatric population in all regional areas and in Indian sociodemographic groups.^[4,5] Hypertension and diabetes impact 1 billion people globally, and 422 million^[7] people worldwide. Hypertension prevalence of geriatric populations was found to be 67.2% in Delhi and 63.6% in Assam.^[8,9] Hypertension can cause cardiovascular disease, stroke, myocardial infarction, cardiac obstruction and chronic kidney disease.^[10] In the same

way, diabetes raises the risk of cerebrovascular coronary heart disease Nephropathy, peripheral artery disease, retinopathy, and neuropathy.^[11] According to the World Health Organisation (WHO), Hypertension is one of the most prominent global causes of premature death.^[12]

This research was therefore conducted in Lucknow rural area Uttar Pradesh, India population with the following objectives: to estimate the prevalence of diabetes and hypertension among elderly people and their interaction with socio-demographic variables and to evaluate the consciousness, care and control status of people with diabetes and hypertension.

MATERIALS AND METHODS

Ethical approval has been received from the Hind Institute of Medical Sciences Ethics Committee. Both the subjects had received informed written consent.

The sample population consisted of all individuals aged 60 years and over who lived in this area for more than 6 months and who were willing to attend. Many that were unable to talk and didn't have a credible informant were omitted. All elderly persons were recruited to study in the random basis. A trained investigator was gathering the information from the hospital. If after three visits a

person was not available, he/she was labelled as a non-respondent. As of 2019, data processing was conducted. Self-reported diabetes and hypertension were those diagnosed by a competent person and supported by empirical evidence.

Under stringent aseptic measures, fasting blood glucose was measured using an electronic glucometer (Accu-chek glucometer). An overnight pace of at least 8 hours was censured by asking the participant to remember the last meal at night before the test and to calculate blood glucose on an empty stomach. The calculation of blood pressure was performed using an automated sphygmomanometer in the right upper arm in the sitting posture with feet squarely on the ground and arm held at heart level. The systolic and diastolic blood pressure was measured from two readings taken at intervals of five minutes. Blood pressure indicates diurnal variance, so preferably blood pressure should have been checked at the same time of the day; however, the blood pressure was calculated at various hours of the day as the test was conducted by house-to-house visits. Participants were told a day before the visit about the collection of fasting blood samples and the appropriate precautions were explained.

According to the guidelines of the Joint National Committee VII, a systolic blood pressure of up to 140 mm Hg and/or a diastolic blood pressure of up to 90 mm Hg measured on two different occasions with a minimum time of at least five minutes between two measurements. For calculating the final blood pressure an average of two values was determined. Isolated hypertension has been characterised as ~140 mmHg systolic blood pressure.^[13] Participants who were still hypertensive and undergoing therapy were found to have regulated blood pressure if their systolic blood pressure was about 140 mm Hg and/or diastolic blood pressure was around 90 mm Hg. According to the requirements of the WHO-IDF 2005, diabetes mellitus has been described as fasting plasma glucose of up to 126 mg/dl for at least 8 hours overnight or a person taking diabetes mellitus treatment^[14] If the fasting blood glucose was < 126 mg/dl, participants who were still diabetic and receiving care were declared to be controlled.

RESULTS

A total of 220 patients were recruited for the study, resulting in a non-response rate of 17%. Of the participants in the sample, 129 were women (>58%) and 70% were with marital status.

Variables		Number of patients (%)
Age	≥60 years	220
Gender	Male	91 (41.36)
	Female	129 (58.63)
Living Status	Alone	10 (4.54)
	With family	210 (95.45)
Marital status	Single/separated	66 (30)
	Married	154 (70)

Blood sugar fasting for 200 participants could be achieved. Diabetes prevalence was found to be approx 24 per cent in this report. When examined by age, ethnicity, schooling, occupation and economic dependence, there was no statistically significant difference between those without diabetes.

Blood pressure was assessed among all participants in the study and (~67 percent) elderly people were found to be hypertensive. Hypertension was higher in women as compared to men, but gender, age, schooling and economic reliance did not show statistically significant status. More than 23 per cent of the elderly had diabetes in this study.

DISCUSSION

In India, hypertension and diabetes are the main causes of morbidity and mortality in the geriatric community, and are the risk factors for many other diseases including heart attack, stroke, renal failure, leg amputation, vision loss, blood vessels and peripheral nerve injury. This group based research was carried out among 220 elderly people in Lucknow rural area, Uttar Pradesh, India. The total hypertension prevalence was ~67 percent, which was higher than the Delhi study by Gupta *et al.*, which recorded a much lower prevalence (13 percent).^[15] Another urban slum research in Delhi recorded a prevalence of 39 per cent among the elderly.^[16] The explanations for these variations may be due to different time span, sample size and conditions of analysis. There was a void in this research about understanding, care and management of hypertension.

CONCLUSION

This study revealed an essential burden of non-communicable diseases among elderly people in a Lucknow rural area, Uttar Pradesh, India middle-class group. It also suggested the need for primary level programmes. Besides improving the health sector, there is a need to increase awareness of non-communicable diseases through effective education initiatives and even to help boost the health status of older people

CONFLICT OF INTEREST: There is no conflict of interest.

FINANCIAL SUPPORT: None.

REFERENCES

- Ageing and health [Internet]. Available from: <https://www.who.int/news-room/fact-sheets/detail/ageing-and-health>, 2019; 19.
- Census of India Website: Office of the Registrar General & Census Commissioner, India [Internet], 2019; 20. Available from: <http://www.censusindia.gov.in/2011-Common/CensusData2011.html>.
- Morbidity, healthcare and the condition of the aged, NSS 60th round National Sample Survey Organization. Ministry of Statistics and Programme

- Implementation, GOI, March 2006. [Internet], 2019; 12. Available from: http://mospi.nic.in/sites/default/files/publication_reports/507_final.pdf.
4. Geldsetzer P, Manne-Goehler J, Theilmann M, Davies JJ, Awasthi A, Vollmer S, *et al.* Diabetes and hypertension in India: A nationally representative study of 1.3 million adults. *JAMA Intern Med*, 2018; 178: 363-72.
 5. Kanaya AM. India's call to action-prioritize chronic cardiovascular disease. *JAMA Intern Med*, 2018; 178: 373-4.
 6. WHO Regional Office for South East Asia. Hypertension Fact Sheet. Available from: http://www.searo.who.int/linkfiles/non_communicable_diseases_hypertension-fs.pdf, 2017; 21.
 7. World Health Organization. Global Report on Diabetes. World Health Organization, 2016. Available from: http://www.apps.who.int/iris/bitstream/10665/204871/1/9789241565257_eng.pdf.
 8. Goswami AK, Gupta SK, Kalaivani M, Nongkynrih B, Pandav CS. Burden of hypertension and diabetes among urban population aged ≥ 60 years in South Delhi: A community based study. *J Clin Diagn Res*, 2016; 10: 01-5.
 9. Hazarika NC, Biswas D, Mahanta J. Hypertension in the elderly population of Assam. *J Assoc Physicians India*, 2003; 51: 567-73.
 10. Garg R. What health problems are associated with hypertension? *Indian J Clin Pract*, 2014; 25: 683-4.
 11. Corriere M, Rooparinesingh N, Kalyani RR. Epidemiology of diabetes and diabetes complications in the elderly: An emerging public health burden. *Curr Diab Rep*, 2013; 13: 805-13.
 12. Mackay J, Mensah G. Atlas of heart disease and stroke. Geneva: World Health Organization, 2004.
 13. The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. Available at www.nhlbi.nih.gov/files/docs/guidelines/jnc7full.pdf. Accessed, 2015.
 14. Definition and diagnosis of diabetes mellitus and intermediate hyperglycemia. Report of a WHO/IDF consultation. Available at https://www.idf.org/.../WHO_IDF_definition_diagnosis_of_diabetes.pdf. Accessed 7th Oct, 2015.
 15. Gupta HL, Yadav M, Sundarka MK, Talwar V, Saini M, Garg P. A study of prevalence of health problems in asymptomatic elderly individuals in Delhi. *Journal of Association of Physicians of India*, 2002; 50: 792-95.
 16. Singh AK, Mani K, Anand K, Aggarwal P, Gupta SK. Prevalence, awareness, treatment and control of hypertension among elderly persons in an urban slum of Delhi, India. *Indian Journal of Medical Specialities*, 2014; 5(1): 1.