

Prevalence of Hypertension and Diabetes Mellitus in Political Cadres of Nepal

Vijaya Prasad Paudel

Chief Consultant Physician, Department of Medicine, Bharatpur Hospital, Chitwan, Nepal.

Correspondence

Dr. Vijaya Prasad Paudel
Chief Consultant Physician,
Department of Medicine,
Bharatpur Hospital, Chitwan,
Nepal.

Email:

dr.bijaypaudel@gmail.com

DOI: <http://dx.doi.org/10.3126/jcmsn.v13i3.17694>

Orcid ID: orcid.org/0000-0001-8204-2084

Article received: July 5th 2017

Article accepted: Oct 5th 2017

ABSTRACT

Background & Objectives: Hypertension and Diabetes Mellitus are both major modifiable risk factors leading to premature death due to cardiovascular and cerebrovascular diseases. Therefore, early diagnosis and treatment are must to reduce morbidity and mortality due to following diseases. Therefore authentic data on these issues are of great importance. The aim of this study was to address this gap and create awareness regarding essence of control of Diabetes and Hypertension among political cadres of Nepal as they play major role in policy making.

Materials & Methods: A descriptive cross-sectional study in the political cadres of Nepal was conducted at Pragna Bhawan, Kathmandu on 4th March, 2012 where delegates attended their 3rd National assembly. Standard criteria were used to describe both Hypertension and Diabetes and their respective goals. Awareness and treatment were based on self-report. **Results:** A total of 291 subjects were included in the study. The prevalence of hypertension was 44.32% while that of Diabetes was 18.56%. The current blood pressure of the study population was 50% within normal range and 50% of them was above normal range, body mass index of 35% was normal and rest was above normal range. 15% of the study population was known diabetic while 33% was known hypertensive. More than 50% of known diabetics had poor control over blood sugar and 72% of the known hypertensive had poor blood pressure control. **Conclusion:** The scenario of hypertension and diabetes control among the political cadres is not up to the mark. Most of those already having the disease have poor control of blood pressure and blood sugar level. From this, the situation obviously seems more warning in general population and needs well-designed assessment.

Key words: Awareness; Diabetes; Hypertension; Management; Prevalence.

Citation: Paudel VP. Prevalence of Hypertension and Diabetes Mellitus in Political Cadres of Nepal. JCMS Nepal. 2017;13(3):345-9.

INTRODUCTION

Hypertension:

It was estimated that nearly 1 billion people were living with hypertension in 2000 and the disease burden is predicted to affect 1.56 billion by 2025.¹ The peculiarity with hypertension is that the mortality and morbidity start to rise in linear pattern starting from 115/75 mm Hg,² so that there is no threshold of safe blood pressure. Small increment in blood pressure above 115/75 has been shown to substantial changes in cardio and cerebrovascular disease burden.³ The pharmacological interventions

along with lifestyle and behavioral changes can effectively reduce the cardiovascular events attributed to hypertension.⁴ Therefore timely diagnosis, treatment and control of hypertension in primary care are crucial for reducing disease burden as hypertension has been found to be a strong coronary risk factor.⁵ However, majority with hypertension, despite the available evidences, are not effectively treated and controlled to the recommended blood pressure goals.⁶ Most of the published studies from Nepal are focused on prevalence; studies on awareness, treatment and

control rate are lacking. The initial data of prevalence ranging from 5.3% to 9.9% in the different regions of the country were based on community prevalence study and level as defined by World Health Organization at that time.^{7,8} In contrast to this, more recent studies showed almost three times increase in prevalence.^{9,10} Regarding awareness and treatment, a study¹¹ recorded the awareness, treatment, and control rates of 41.1%, 26%, and 6%, respectively with the overall prevalence of 19.7%. As Nepal is a representative of Low income countries (LICs), we assume that the picture with prevalence, awareness, treatment and control in an educated group definitely will be better than on population level. Therefore, this study was designed to evaluate these issues in a well-educated group of Nepalese subjects.

Diabetes (diabetes mellitus) is classed as a metabolic disorder due to relative or absolute deficiency of Insulin hormone in the body. It is a major modifiable risk factor leading to premature death due to cardio and cerebrovascular diseases. As of 2016, 422 million people have diabetes worldwide¹², up from an estimated 382 million people in 2013 and from 108 million in 1980. The total number of people with diabetes is projected to rise from 171 million in 2000 to 366 million in 2030.¹² Type 2 Diabetes makes up about 90% of the cases. Some data indicate rates are roughly equal in women and men, but male excess in diabetes has been found in many populations with higher type 2 incidence, possibly due to sex-related differences in insulin sensitivity, consequences of obesity and regional body fat deposition, and other contributing factors such as high blood pressure, tobacco smoking, and alcohol intake.

The World Health Organization (WHO) estimates that diabetes mellitus resulted in 1.5 million deaths in 2012, making it the 8th leading cause of death. In 2014, the International Diabetes Federation (IDF) estimated that diabetes resulted in 4.9 million deaths worldwide.¹³ The greatest increase in rates has been seen in low- and middle-income countries. The fastest prevalence increase is expected to occur in Asia and Africa. The increase in rates in developing countries follows the trend of urbanization and lifestyle changes, including increasingly sedentary lifestyles, less physically demanding work and the global nutrition transition, marked by increased intake of foods that are high energy-dense but poor in nutrition.

MATERIALS AND METHODS

A Cross sectional study was designed. Subjects were various political cadres from Nepal. All the delegates attending the assembly were included in the study while other administrative officers, observers, security personnel and guest were excluded. Standard Proforma was used for data collection. Verbal consent for the use of clinical and demographic data was taken. Blood pressure was measured by the conventional auscultatory method with an aneroid sphygmomanometer with standard sized cuff (12 × 34 cm). The blood pressure measurement was taken in the seated position, quietly in a chair with feet on the floor and an arm support at the level of heart. Blood Sugar was measured by GOD/POD (Glucose oxidase/Peroxidase) method.

The definition of hypertension was adapted from the guidelines of the Seventh Report of the Joint National Committee (JNC 7) on Prevention, Detection, Evaluation and Treatment of High Blood Pressure that is, systolic blood pressure (SBP) ≥ 140 mm Hg or diastolic blood pressure (DBP) ≥ 90 mm Hg and/or concomitant use of antihypertensive medications.

For the diagnosis of Diabetes, previous history of Diabetes was considered. For the non diabetic patient if the random blood sugar was > 200 mg/dl, they were suspected of having Diabetes. Those having random blood sugar > 200 mg/dl were advised for fasting blood sugar next morning and to be informed to the study group. If fasting blood sugar level was more than 126 mg/dl and postprandial more than 200mg/dl they were considered as diabetic. In this way Diabetes was confirmed.

Simple statistical calculations using MS Excel 2010 were done and the studied parameters; prevalence, awareness, treatment and control, were expressed in percentages. No comparisons with other data were conducted. No interobserver and intraobserver variability were studied.

RESULTS

A total of 291 subjects were screened. Seventy eight percent of the population studied were males and only 22% were females. Total of 50.5% of the population had normal Blood Pressure (BP) while 24.4% had borderline BP. It was explored that 25.1% were Hypertensive. Among the hypertensive, 33.3% were known hypertensive under medication. Total of 27.8% of known

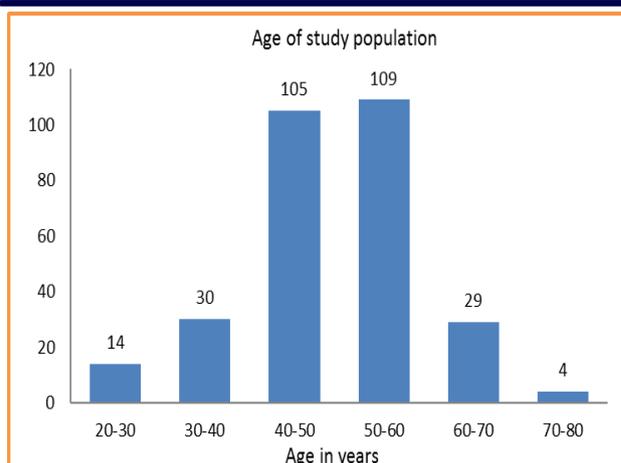


Figure 1: Age distribution of study group

hypertensive had good BP control while 42.3% had poor control over their BP.

Body mass Index (BMI) was also calculated based on height and weight of the subjects. Among them 46.7% were overweight, 15.8% obese and 2.1% had moribund obesity.

Prevalence of Diabetes was 18.56% among the study group. 46.7% of the known diabetics had good blood sugar control. On contrary, 33.3% of them had poor blood sugar control.

(Figure 1, Table 1 to 4)

DISCUSSION

This study revealed the actual scenario of

Table 1. Prevalence of Hypertension

	Total Subjects	HTN	Non HTN	Known HTN	New HTN
Number of Subjects	291	129 (44.32)	162(55.68)	97(33.33)	32(10.99)

Table 2. Prevalence of Diabetes

	Total Subjects	Diabetic	Non Diabetic	Known Diabetic	New Diabetic
Number of Subjects	291	54(18.56)	237(81.44)	41(15.46)	11(3.78)

Table 3. Association of BMI with Hypertension

BMI	Blood Pressure				Total
	Normal	Prehypertensive	Stage 1 HTN	Stage 2 HTN	
Normal	65	18	12	8	103
Overweight	61	42	20	13	136
Obese	19	10	10	7	46
Moribund Obesity	2	1	1	2	6
Total	147	71	43	30	291

Table 4. Correlation of BMI with Blood sugar status

BMI	Blood Sugar Status			Total
	Normal Sugar	Pre-diabetic	Diabetic	
Normal	87	9	7	103
Overweight	100	26	10	136
Obese	30	8	8	46
Moribund Obesity	5	0	1	6
Total	222	43	26	291

hypertension and Diabetes in various political leaders of Nepal. If the findings of the study by Chow et al,¹⁴ which had shown the low education was associated with lower rates of awareness, treatment, and control in Low income country, is taken into consideration, the actual scenario in general population seems alarming. Even on the well-educated group, the prevalence of Diabetes was 18.56% and that of Hypertension was 44.32% as shown in the current study is unique from various prospective.

The prevalence of hypertension in current study is comparatively in between if it is compared with other community based studies. The initial studies had shown lower prevalence of hypertension (5.3 to 9.9%).¹⁵ But the criteria used in these studies, WHO criteria practiced at that time where hypertension was defined as the blood pressure level $\geq 160/95$ mmHg, was higher than the current definition of $\geq 140/90$ mmHg and lower prevalence is justifiable to some extent. More recent community based studies showed higher prevalence of hypertension, defined as per JNC VII criteria; three times higher than previously recorded in suburban Kathmandu.⁹ A study reported the prevalence of pre-diabetes: diabetes in Nepal to be 19.5:9.5%.¹⁶ WHO South-East Asia Region Prevalence of diabetes has projected prevalence from 436000 in 2000 to 1328 000 in 2030.¹⁷ The Nepal Diabetes Association (NDA) had reported a year back that among people aged 20 years and older living in urban areas, 15% are affected by this disease. Among people aged 40 years and older in urban areas, this number climbed to 19%. Nepal is also facing the consequences of urban lifestyle leading to obesity and metabolic syndrome. Studies have shown prevalence of overweight and obesity in certain sections of the population to be as high as 32.9% and 7.2%, respectively.¹⁸ In a hospital based cross sectional study, the prevalence of metabolic syndrome in diabetes patients as per NCEP/ATP III and IDF criteria were 71% and 82%, respectively.¹⁹

The global diabetes prevalence in the age group 20 to 79 years were estimated to be 6.6% for the year 2010 which translates into 285 million people suffering from diabetes, according to international diabetes federation diabetes atlas.²⁰ The reasons for increasing prevalence are not clearly evident but changes in lifestyle and physical inactivity can be an important contributor. Low and middle income countries face the greatest burden of diabetes. Nepal is a developing country and people are

changing their lifestyle like anything, they like to work by not doing hard work, this are making people physically inactive which is risk factor for development of obesity as well as diabetes. The prevalence of diabetes is increasing day by day in Nepal may be due to urbanization. Mehta et al and Singh et al showed the prevalence of diabetes in urban area were higher in compare to the rural area.^{21, 22}

CONCLUSION

The study shows there was 18.56% prevalence of Diabetes while prevalence of Hypertension was 44.32%. Political leaders are considered as educated and well aware group on the basis of health in our country. Despite of which there is high prevalence of both the disease and there are significant new cases. This study shows that political leaders require high level of awareness on non communicable disease and require regular health check up respectively.

LIMITATIONS OF STUDY

This is a small study and it has some limitations. Participants were not chosen randomly and all those who came voluntarily were included in the study. Single random blood sugar level may not give definitive idea regarding accurate diagnosis and control status of Diabetes. Although blood pressure was measured twice when the first record was high, the impact of recently taken diet or smoking and other confounding variables were not taken into consideration.

CONFLICT OF INTEREST: None declared

REFERENCES

1. Kearney PM, Whelton M, Reynolds K, Muntner P, Whelton K, He J. Global burden of hypertension: analysis of worldwide data. *Lancet*. 2005;365:217–23. [https://doi.org/10.1016/S0140-6736\(05\)70151-3](https://doi.org/10.1016/S0140-6736(05)70151-3).
2. Lewington S, Clarke R, Qizilbash N, Peto R, Collins R. Age-specific relevance of usual blood pressure to vascular mortality: a meta-analysis of individual data for one million adults in 61 prospective studies. *Lancet* 2002; 360:1903–13. [https://doi.org/10.1016/S0140-6736\(02\)11911-8](https://doi.org/10.1016/S0140-6736(02)11911-8).
3. Law MR, Morris JK, Wald NJ. Use of blood pressure lowering drugs in the prevention of cardiovascular disease: meta-analysis of 147 randomized trials in the context of expectations from prospective epidemiological studies. *BMJ*. 2009;338:b1665. <https://doi.org/10.1136/bmj.b1665> PMID: 19454737.
4. Chobanian AV, Bakris GL, Black HR, Cushman WC, Green LA, Izzo JL Jr, et al. National Heart, Lung, and Blood Institute Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure; National High Blood Pressure Education Program Coordinating Committee. The Seventh Report of the Joint

- National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure: the JNC 7 report. *JAMA*. 2003;289:2560-72. <https://doi.org/10.1001/jama.289.19.2560>. PMID: 12748199.
5. Gautam MP, Gautam S, Ghimire U, Guruprasad S, Bhattacharya R, Subramanyam G. Endothelial dysfunction and the role of hypertension in Nepalese subjects with major coronary risk factors. *Nepalese Heart Journal* 2016;13(1):13-8. <https://doi.org/10.3126/njh.v13i1.14539>.
 6. Kearney PM, Whelton M, Reynolds K, Whelton PK, He J. Worldwide prevalence of hypertension: a systematic review. *J Hypertens*. 2004;22:11-9. <https://doi.org/10.1097/00004872-200401000-00003>. PMID: 15106785.
 7. Pandey MR, Dhungel S. Prevalence of hypertension in an urban community of Nepal. *Journal of Nepal Medical Association*. 1983;21:1-5.
 8. Pandey MR, Upadhyay LR, Dhungel S. Prevalence of hypertension in a rural community in Nepal. *Indian Heart J*. 1981;33:284-9. PMID: 7341401.
 9. Vaidya A, Pathak RP, Pandey MR. Prevalence of hypertension in Nepalese community triples in 25 years: a repeat cross-sectional study in rural Kathmandu. *Indian Heart J*. 2012;64(2):128-31. [https://doi.org/10.1016/S0019-4832\(12\)60045-5](https://doi.org/10.1016/S0019-4832(12)60045-5).
 10. Sharma SK, Ghimire A, Radhakrishnan J, Thapa L, Shrestha NK, Paudel N, et al. Prevalence of hypertension, obesity, diabetes, and metabolic syndrome in Nepal. *International Journal of Hypertension*. 2011;2011:821971. doi:10.4061/2011/821971. <https://doi.org/10.4061/2011/821971>.
 11. Sharma D, KC MB, Rajbhandari S, Raut R, Baidya SG, Kafle PM, et al. Study of Prevalence, Awareness, and control of Hypertension in a Suburban Area of Kathmandu, Nepal. *Indian Heart J*. 2006;58(1):34-7. PMID: 18984928
 12. World Health Organization, Global Report on Diabetes. Geneva, 2016.
 13. "Annual Report 2014" .IDF. International Diabetes Federation. Retrieved 13 July 2016.
 14. Chow CK, Teo KK, Rangarajan S, Islam S, Gupta R, Avezum A, et al for the PURE (Prospective Urban Rural Epidemiology) Study investigators. Prevalence, Awareness, Treatment, and Control of Hypertension in Rural and Urban Communities in High-, Middle-, and Low-Income Countries. *JAMA*. 2013;310(9):959-68. <https://doi.org/10.1001/jama.2013.184182>. PMID: 24002282.
 15. World Health Organization. Arterial Hypertension. Report of a WHO Expert Committee. WHO Technical Report Series 628. World Health Organization; Geneva, Switzerland: 1978.
 16. Ono K, Limbu YR, Rai SK, Kurokawa M, Yanagida J, Rai G, et al. The prevalence of type 2 diabetes mellitus and impaired fasting glucose in semi-urban population of Nepal. *Nepal Med Coll J*. 2007;9:154-6. PMID: 18092429.
 17. Country and regional data on diabetes. WHO South-East Asia region. Prevalence of diabetes in the WHO South-East Asia Region. [Internet]. http://www.who.int/diabetes/facts/world_figures/en/index_5.html. Accessed: 1st Aug 2017.
 18. Vaidya AK, Pokharel PK, Nagesh S, Karki P, Kumar S, Majhi S, et al. Association of obesity and physical activity in adult males of Dharan, Nepal. *Kathmandu Univ Med J*. 2006;4:192-7.
 19. Bhattarai S, Kohli SC, Sapkota S. Prevalence of metabolic syndrome in type 2 diabetes mellitus patients using NCEP/ATP III and IDF criteria in Nepal. *Nepal J Med Sci*. 2012;1:79-83. <https://doi.org/10.3126/njms.v1i2.6604>.
 20. Mehta RS, Karki P, Sharma SK. Risk factors, associated health problems, reasons for admission and knowledge profile of diabetes patients admitted in BPKIHS. *Kathmandu Univ Med J* 2006; 4:11-3.
 21. Mehta KD, Karki P, Lamsal M, Paudel IS, Majhi S, Das BK, et al. Hyperglycemia, glucose intolerance, hypertension and socioeconomic position in eastern Nepal. *Southeast Asian J Trop Med Public Health*. 2011;42:197-207. PMID: 21323183.
 22. Singh DL, Bhattarai MD. High prevalence of diabetes and impaired fasting glycaemia in urban Nepal. *Diabet Med*. 2003;20:170-1. https://doi.org/10.1046/j.1464-5491.2003.00829_4.x.