

## **A Study of Prevalence of Hypertension in Employees of Bangalore Metropolitan Transport Corporation (BMTc)**

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**Background and objective:** Hypertension is a major public health problem in developed as well as in developing countries. Most of the time it is diagnosed when the organ system has been damaged, hence it is known as silent killer. Another factor regarding hypertension is that once the person develops hypertension it persists throughout life because its etiopathogenesis is yet unknown. Hypertension is a major factor for cardiovascular mortality and it ranks fourth worldwide. Its prevalence is escalating in different geographical locations of the world, especially in India due to unfavorable modifications of the lifestyle and dietary habits. The only way to control and to prevent hypertension is to educate the people about risk factors and preventive strategies. The present study was planned with an objective to know the prevalence of hypertension in BMTc employees.

**Methods:** The study was cross sectional field based survey conducted in BMTc employees of Summanhalli Depot, Bangalore. Three readings of blood pressure were recorded, of either sex, between the age or 30-50, and their average was calculated. The duration of study was 6 months. The sample size was 535.

**Result:** The study revealed 14.02% prevalence of HTN in studied sample. Mild, moderate and severe grade of hypertension were found in 58.67%, 17.33% and 5.66% volunteers respectively. In the present study 8% and 30.67% volunteers were of ISH and IDH respectively.

**Interpretation and conclusion:** The prevalence was significantly higher in the aged volunteers.

**Keywords:** Hypertension, Prevalence, Unani medicine, Risk factors.

## Introduction

High blood pressure is an important public health problem in India. Recent studies have shown a high prevalence of hypertension among adults in both urban and rural areas<sup>1</sup>. Well co-ordinated national surveys are not reported from Subcontinent of India, but several small regional surveys have been reported in last two decades<sup>2</sup>. Hypertension is directly responsible for 57% of all stroke deaths and 24% of all coronary heart disease deaths in India<sup>3,4</sup>. It is also a leading cause of renal insufficiency and peripheral vascular diseases<sup>5</sup>. Hypertension is poorly controlled worldwide with less than 25% controlled in developed countries and less than 10% controlled in developing countries<sup>6</sup>.

The causal relationship of hypertension is yet to be established and also there is no clear-cut defined pathogenesis, because of this, the incidence of hypertension is increasing day by day. Awareness and treatment of hypertension varies considerably between countries and regions. In developed countries, there are approximately one half to two thirds of hypertensives in general population aware of their diagnosis and one third to one half receiving treatment. The level of awareness and treatment is much lower in the developing countries than the developed one<sup>6</sup>.

Field based studies on prevalence of hypertension are still scarce and more field based studies/surveys are required to highlight the problem precisely. In fact, prevalence of hypertension is increasing constantly due to the industrialization, urbanization and change of lifestyle<sup>3</sup>. Keeping the above potential of hypertension, the present study was conducted in high risk population i.e. BMTC (Bangalore Metropolitan Transport Corporation), Bangalore. They are more prone to expose to risk factors like cigarette smoking, alcohol intake, irregular dietary habits and stress etc., hence the present study was designed to find out the prevalence of hypertension in under study population and to impart the knowledge about the prevention of hypertension at individual and mass levels, for this purpose, oral presentations were organized during the study period.

Although the successful control of hypertension is achieved by medication, this is known as secondary prevention, but the ultimate goal in general is primary prevention<sup>7</sup>.

## Methodology

The study was conducted in BMTC Depot No. 31 (Summanhalli Depot.), after obtaining permission from Managing Director of BMTC, Bangalore. The present study was a cross sectional study and the duration was 6 months. The sample size was calculated as 535 as per formula  $N=4pq/L^2$  ( $p$ =present prevalence,  $q=100-p$ ,  $L=15\%$  of  $p$ ), used for the calculation of sample size determination in the health studies<sup>8,9</sup>, taking the prevalence rate as 25% and permissible error level as 15%.

For the assessment during the study, the physical instruments of high quality were used, like stethoscope and mercury sphygmomanometer. A schedule which was based on the demographic profile and risk factors of hypertension was administered to collect the relevant data.

Measurement of blood pressure (BP) was recorded by auscultatory method. Systolic blood pressure was marked at the point at which Korotkoff sound appears and the point at which the sound disappears was taken as diastolic blood pressure. As per WHO criteria, the subjects were categorized into mild, moderate and severe form: in addition to this third category of subjects was made who were on Anti-Hypertensive Drug (AHD)<sup>10</sup>.

The collected data and results were evaluated and presented in the form of tables and figures in accordance to the purpose of the study. It was a prevalence study and direct comparison with the previous studies was made.

### Observations and Results

TABLE 1 AND FIG. 1  
Distribution of Subjects According to Hypertension Status  
(n=535)

Hypertension status	No. of subjects	Percentage %
Normal	460	85.98
Hypertensive	75	14.02
Total	535	100

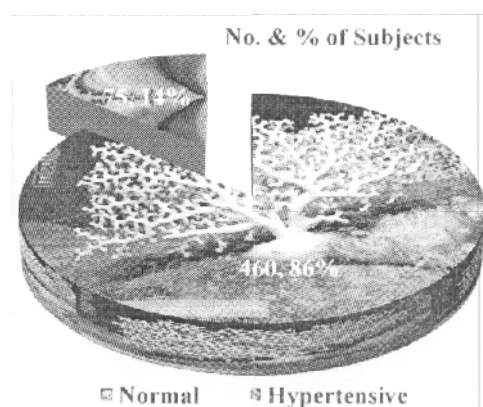
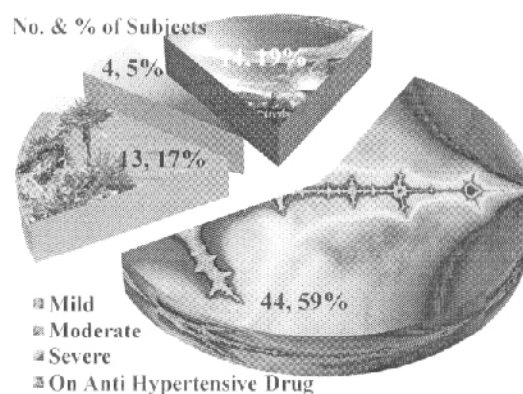


Fig. 1

**TABLE 2 AND FIG. 2**  
**Distribution of Hypertensive Subjects According to**  
**Grade of Hypertension (n=75)**

Grade of hypertension	No. of subjects	Percentage %
Mild	44	58.67
Moderate	13	17.33
Severe	4	5.33
On anti-hypertensive drug	14	18.67
Total	75	100



**Fig. 2**

**TABLE 3 AND FIG. 3**  
**Distribution of Hypertensive Subjects According to**  
**Characteristics of BP Reading (n=75)**

Characteristics of BP reading	No. of subjects	Percentage %
Isolated systolic hypertensive	06	8.00
Isolated diastolic hypertensive	23	30.67
Hypertensive (both)	46	61.33
Total	75	100

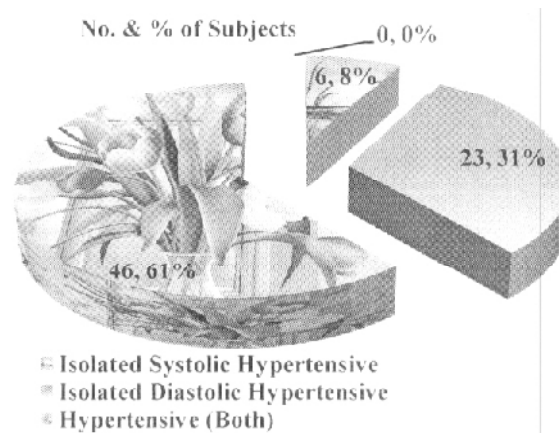


Fig. 3

## Discussion

In the present study 535 employees of BMTC were included. In the studied sample the prevalence of hypertension was found to be 14.02%. The observed prevalence was higher than WHO<sup>11</sup> criteria of the prevalence of hypertension, which is 11% in men and the reported prevalence of 13.1% in males from urban Chandigarh in Thakur<sup>12</sup> *et al.* study. The difference may be attributed to the different characteristics of under study population as well as WHO criteria, as HTN is more a lifestyle disorder.

In 2002 Gupta<sup>13</sup> *et al.*, reported higher prevalence from Jaipur i.e. 30% in males and it was age adjusted prevalence and Swami<sup>14</sup> *et al.*, reported 58% prevalence in a small sample size; such a high prevalence was probably because of the inclusion of more elderly subjects in reference study, but in present study, most of the subjects were of younger age groups and it is known fact that the incidence of hypertension increases with age.

In the present study, the observed prevalence was less than the reported national prevalence of 25%<sup>13, 15</sup> it may be due to small sample size in the present study and inclusion of a minor section of society of a region. The observed prevalence may not be the precise prevalence as only 1000 employees are working at study site out of more than one lac employees in BMTC.

In the present study, 58.7%, 17.3% and 5.10% hypertensive volunteers were of mild, moderate and severe grade hypertension respectively, while 18.7% were on AHD (anti-hypertensive drug) and their blood pressure was controlled but in the prevalence study, all new

and old (known cases) cases are included. Regarding the characteristics of BP reading in hypertensive subjects, 8% were found to be of isolated systolic hypertension (ISH), 31% were found to be of isolated diastolic hypertension (IDH) and 61% of both ISH and IDH. International Society of Hypertension mentioned that the IDH is more dangerous than the ISH.

### Conclusion

The present study reveals that overall 14.02% (75) of the employees of BMTC were hypertensive.

In the present study, 18.7% were on AHD and their blood pressure was controlled. In the present study 58.7% hypertensive were of mild grade, hence this demands urgent lifestyle modifications and change in dietary habit, so that transition to moderate HTN could be prevented because AHD has some of its own hazards. Though AHD successfully controlled the hypertension, but our aim is primary prevention.

### Recommendations

Hypertension is significantly prevalent among BMTC employees. These data definitely support for the prevention and management of hypertension, a better way to the said field, and to achieve the goal of primary prevention because a small reduction in average blood pressure of a population would produce a large reduction in the incidence of vascular complications such as stroke and coronary heart diseases on long term basis.

### REFERENCES

1. Gupta, P.C., Gupta, R. and Pednekar, M.S., (2004). Research letter: Hypertension prevalence and blood pressure trends in 88653 subjects in Mumbai, India, *Journal of Human Hypertension*, 18, pp. 907-910.
2. Siddarth, N.S., Anand, M.P., Billimoria, A.R., Munjal, Y.P., Kamath, S.A., Nadkar, M.Y. *et al.*, (2008). *API Textbook of Medicine*, Vol. 1, 8th Edn., Mumbai, Association of Physicians of India, pp. 531-533.
3. Todkar, S.S., Gujarathi, V.V. and Tapare, V.S., (2009). Period prevalence and socio-demographic factors of hypertension in rural Maharashtra: A cross-sectional study, *Indian Journal of Community Medicine*, 34(3), pp. 183-187.
4. Gupta, R., (2004). Trends in hypertension epidemiology in India, *J. Hum. Hypertens.*, 18(2), pp. 73-78.

5. Wenyue Pang, Zixu Li, Zhaoqing Sun, Liqiang Zheng, Xingang Zhang, Changlu Xu *et al.*, (2010). Prevalence of hypertension and associated factors among older rural adults: results from Liaoning Province, China, *Medical Principles and Practice International Journal of the Kuwait*, University Health Science Centre, 19(1), pp. 22-27.
6. Giuseppe, M., Guido, G. and Sverre, E.K., (2008). Epidemiology of Hypertension, Chapter in: *Manual of Hypertension of the European Society of Hypertension*, Part 2, London, Informa Healthcare UK Ltd., pp. 11, 13, 15, 98.
7. Park, K., (2009). *Textbook of Preventive and Social Medicine*, 20th Edn., Jabalpur, Banarsidas Bhanot, pp. 306, 319, 325-326.
8. Mahajan, B.K., (2006). *Methods in Biostatistics for Medical Students and Research Workers*, 6th Edn., New Delhi, Jaypee Brothers Medical Publishers (P) Ltd., pp. 92-94.
9. Rao, N.S.N. and Murthy, N.S., (2008). *Applied Statistics in Health Sciences*, 1st Edn., New Delhi, Jaypee Brothers Medical Publishers (P) Ltd., pp. 105-107.
10. Giuseppe Mancia, Guy De Backer, Anna Dominiczak, Renata Cifkova, Robert Fagard and Giuseppe Germano, (2007). Guidelines for management of arterial hypertension, *J. Hypertens.*, 25(6), pp. 1113-1118.
11. Gupta, R., Guptha, S., Gupta V.P. and Prakash, H., (1995). Prevalence and determinants of hypertension in the urban population of Jaipur in Western India, *J. Hypertens.*, 13(10), pp. 1193-1200.
12. Thakur, K., Malhotra, P., Walia, I. and Kumar, R., (1999). Health awareness and treatment compliance of high blood pressure among women in a peri-urban colony of Chandigarh, *India. J. Indian Med. Assoc.*, 97, pp. 217-219.
13. Gupta, R., Gupta, V.P., Sarna, M., Bhatnagar, S., Thanvi, J., Sharma, Y. *et al.*, (2002). Prevalence of coronary heart disease and risk factors in an urban Indian population, Jaipur Heart Watch-2, *Indian Heart J.*, 54(1), pp. 59-66.
14. Swami, H.M., Bhatia, V., Gupta, M., Bhatia, S.P. and Sood, A., (2002). Population based study of hypertension among the elderly in Northern India, *Public Health*, 116(1), pp. 45-49.
15. Gupta, R., Sarna, M., Thanvi, J., Rastogi, P., Kaul, Y. and Gupta, Y.P., (2004). High prevalence of multiple coronary risk factors in Punjabi Bhatia Community, Jaipur Heart Watch-3, *Indian Heart J.*, 56(6), pp. 646-652.