

Prevalence of Pre-Hypertension in Migrant Worker Population

Barde Pradip^{1*}, Shahi Mohit², Nayana Pawar³ and Akshay Bhagat⁴

¹Associate Professor, Department of physiology & Central Research Lab Incharge, Dr. Vasant Rao Pawar, Medical College, Hospital and Research Centre, Adgaon, Nashik, Maharashtra, India; bardepb@gmail.com

²Senior Lecturer Discipline of Molecular and Cellular Pathology, School of Biomedical Sciences, University of Queensland, Herston, Australia

³Department of Organon, Motiwala Homeopathy Medical College, Nashik Maharashtra, India

⁴Clinical Research Co-ordinator (CRC), Dr. Vasant Rao Pawar, Medical College, Hospital and Research Centre, Adgaon, Nashik

Abstract

Aim: To determine prevalence of Pre-hypertension in migrant worker population. **Methods and Materials:** An observational study were conducted on migrant workers from various types of working sites like construction, hotels and restaurants, industry in municipal limits of Nashik. Study Duration was six months with estimated sample size 1000. Body weight, height and blood pressure were recorded. **Result:** Of the 959 migrant workers (male and female) 809 (84.35%) belonged to 10-40 years age group, in which 22 % was female. We found that 30% of total population was overweight (BMI more than 25) and 63% workers are having abnormal blood pressure. The overall prevalence of hypertension in migrant population was 18.44%. 27% migrant populations were pre-hypertensive while 8% have Stage I Hypertension and 1% of total have Stage II hypertension. **Conclusion:** The prevalence of pre hypertension in migrant worker population was higher than prevalence in general population.

Keywords: Migrant workers, Prehypertention, BMI

1. Introduction

The prevalence of hypertension is increasing constantly, because of the changing life styles, the environment, industrialization, and urbanization. Migrant laborers in construction sector, hotel and industry involve many hazardous activities. Migrant labor in the industry is susceptible to various health and occupational hazards. There are about 37 million unorganized laborers in Maharashtra. As per census 2001, 29.90 million workers migrated for reasons of employment. The national prevalence of hypertension 29.8% (rural 27.6%, urban 33.8%) reported by Raghupathy Anchala⁶. Field-based studies on the prevalence of hypertension in migrant population are still scarce and more fields based studies are required to highlight problem of hypertension. Hence this field based cross-sectional study was undertaken.

2. Materials and Methods

This was an observational study, total 1000 subjects were

screened. Study center was MVP's Dr. Vasant Rao Pawar Medical College Hospital and Research Centre, Nashik. Study duration was six months. Migrant workers from various types of working sites like construction, hotels and restaurants, industry who gave informed consent were included in study. Migrant population at various construction sites, hotel and industrial area were screened for presence of hypertension using calibrated portable automated sphygmomanometer (NUTEC BP-09). Body weight, height and blood pressure were recorded. While recording the blood pressure subject was allowed to 5-minute rest in sitting position with arm supported on table, appropriate cuff size was used considering the mid arm circumference. Blood pressure was recorded by trained doctor on subject's dominant hand, 3 times with the interval of 5 min's. BMI percentage were calculated according to the proposed criteria of World Health Organization (WHO)⁴.

Migrants with Systolic Blood Pressure (SBP) ≥ 140 mm Hg and Diastolic Blood Pressure (DBP) ≥ 90 mm Hg were classified as hypertensive and those with SBP 120-139 and/or the DBP 80-89 mm Hg were considered to

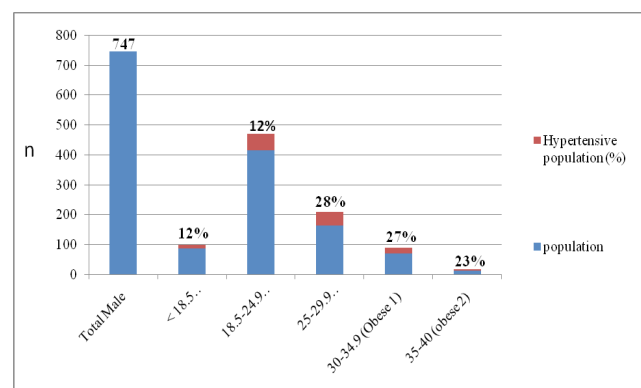
have pre hypertension. Isolated systolic hypertension was diagnosed when SBP was ≥ 160 mm Hg and DBP was < 90 mm Hg. Subjects with a SBP lower than 120 mmHg and a DBP lower than 80 mm Hg were considered as having a normal blood pressure¹⁰.

3. Result

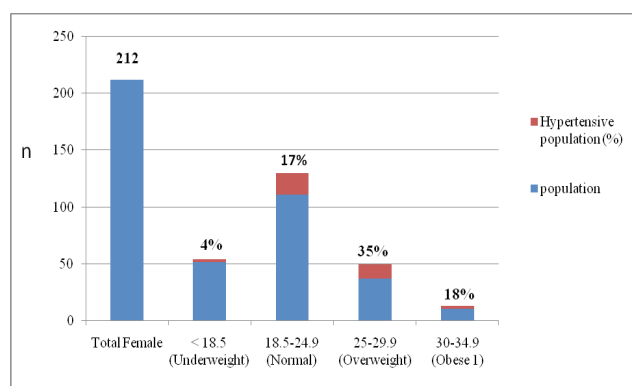
Total 1000 migrant workers were screened out of which, 959 were included in final analysis. 41 workers were excluded due technical failure of recording. Age range was 10 to 70 years. The maximum numbers of migrants were in the age group of 20 to 30 years. Among total migrant population there were 78% of males and rest were females. 30% of migrant's were overweight, 56% were within normal range, and 14% were underweight category according to BMI classification⁴.

Among the overall study populations only 37% migrants had normal Blood Pressure (SBP and DBP); 63% migrants had either prehypertension, hypertension including isolated systolic hypertension with elevated SBP and/or DBP. Also out of total population maximum migrants had SBP value within 120 to 130 mmHg and DBP value within 70 to 80 mmHg (Table 1).

The overall prevalence of hypertension in migrant population was 18.44%. Male 19.2%, female 16.74%. Isolated systolic hypertension (≥ 160 mmHg) was observed in 4% (Men 4.1%, Women 4.2%) migrant population. 27% migrant populations were pre-hypertensive (Graph 1(a) and 1(b)). 8% migrants had stage I hypertension, 1% had Stage II hypertension and 1% migrants were in hypertensive crisis⁵. In subgroup analysis of various BMI groups, apart from migrants with high BMI, 14% migrants with normal BMI and 10% migrants with low BMI had BP in hypertensive range. Among gender distribution 80 males, 34 females were hypertensive (BP $>140/90$ mmHg).



(a)



(b)

Graph 1. Gender and BMI distribution of hypertensive male migrant population. Each bar has total population of each category as well as hypertensive population expressed in percentage. (b) Gender and BMI distribution of hypertensive female migrant population. Each bar has total population of each category as well as hypertensive population expressed in percentage.

Table 1. Blood pressure classification

BP Classification	Systolic mm Hg (Upper #)	Diastolic (Lower #)
Normal	< 120 (n=351)	< 80 (n=582)
Pre-Hypertension	120 to 139 (n=425)	80 to 89 (n=256)
Stage I Hypertension	140 to 159 (n=137)	90 to 99 (n=81)
Stage II Hypertension	160 to 179 (n=30)	100 to 110 (n=10)
Hypertensive Crisis	>180 (n=10)	>110 (n=10)

4. Discussion

Our study showed the significantly low prevalence of hypertension in migrant population as compared to values of general population⁶ which may be due to physical activity and related backbreaking work. The prevalence of hypertension in normal and underweight category was 10% and 14%, which is less compared to general population, 35% and 29% respectively⁹. Further, within migrant population the blood pressure distribution as per weight shows high prevalence of hypertension in overweight migrants like that of general population.

But, Prevalence of Pre hypertension and obesity in migrant population was high as compared to its prevalence in general population^{7,8}. Obesity prevalence was 9.6% which was high in comparison with general population (6.8%) of India⁸. This may be due to faulty lifestyles, addictions and irregular health access and

needs to be explored further. Hypertensive crisis and stage II hypertension prevalence was 1% which equaled to its prevalence in general population which varied from 1-16 %.

5. Conclusion

Our study showed that prevalence of hypertension was less in migrant population as compared to general population but high prevalence of pre-hypertension along with obesity was observed in migrant population.

6. References

1. Joshi V, Patel C, Dhar L. Prevalence of hypertension in Mumbai. *Indian J Med Sci.* 2000; 54:380-3.
2. Das K, Sanyal K, Basu A. A study of urban community survey in India; Growing trend of high prevalence of hypertension in individuals. *International J of Med Sciences.* 2005; 2:70-8.
3. Malhotra P, Kumari S, Kumar R, Jain S, Sharma BK. Prevalence and determinants of hypertension in an unindustrialized rural population of North India. *J Hum Hypertens.* 1999; 13:467-72.
4. Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies. *The Lancet.* 2004; 363(9403):157-63.
5. The 1984 Report of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure. *Arch Intern Med.* 1984 May; 144(5):1045-57.
6. Anchala R, et al., Hypertension in India: A systematic review and meta-analysis of prevalence, awareness, and control of hypertension. 2014 Jun; 32(6):1170-5.
7. Gupta A, Singh RB, et al. Prevalence and risk factors for prehypertension and hypertension in five Indian cities. *Acta Cardiol.* 2011; 66(1):29-37
8. Kalra S, Unnikrishnan AG. Obesity in India: The weight of the nation. *J Med Nutr Nutraceut.* 2012; 1:37-41.
9. Abdulla K, Salahudeen, et al. Underweight rather than overweight is associated with higher prevalence of hypertension: BP vs BMI in haemodialysis population. *Oxfords Journals.* 2004; 19(2):427-32.
10. The seventh report of the joint national committee on prevention, detection, evaluation, and treatment of high blood pressure. US Department of Health and Human Services; 2003 Dec 02.
11. Gupta R. Meta-analysis of prevalence of hypertension in India. *Indian Heart J.* 1997; 49:337-8.
12. World Health Organization. Preventing chronic diseases: A vital investment. World Health Organization, Geneva, Switzerland: World Health Organization; 2005. WHO global report. Available from: http://www.who.int/chp/chronic_disease_report/en/
13. Garg C, Khan SA. Prevalence of obesity in Indian women. *Obes Rev.* 2010; 11:105-8.
14. Pednekar MS. Association of body mass index with all-cause and cause-specific mortality: Findings from a prospective cohort study in Mumbai (Bombay), India. *Int J Epidemiol.* 2008; 37:524-35.