

## HYPERTENSION AND DIABETES MELLITUS AMONG THE NORTHERN RAILWAY EMPLOYEES: A DESCRIPTIVE STUDY

Shatrughan Pareek\*<sup>1</sup>, Vinay Kumar<sup>2</sup>, Dr. Supurna Sen Roy<sup>3</sup>, Sapna Pareek<sup>4</sup> and Anupam Pareek<sup>5</sup>

<sup>1</sup>Shatrughan Pareek (Nursing Superintendent, N.W.R. Divisional Hospital, Bikaner, Rajasthan).

<sup>2</sup>Dr. Vinay Kumar (Chief Medical Director, N.R. Head Quarter, Baroda House, New Delhi).

<sup>3</sup>Dr. Supurna Sen Roy (ACMS, NR Divisional Hospital, Delhi).

<sup>4</sup>Sapna Pareek (Nursing Tutor, Govt. College of Nursing, Churu, Rajasthan).

<sup>5</sup>Anupam Pareek (Nursing Tutor, Govt. College of Nursing, Bikaner, Rajasthan).

Received date: 08 March 2019

Revised date: 29 March 2019

Accepted date: 19 April 2019

\*Corresponding author: Shatrughan Pareek

Shatrughan Pareek (Nursing Superintendent, N.W.R. Divisional Hospital, Bikaner, Rajasthan).

### ABSTRACT

**Introduction:** Non-communicable diseases are major public health issues for all communities around the globe. Hypertension and Diabetes mellitus (DM) are most common non-communicable diseases. Hypertension and DM have increased drastically in last 20 years at world level. Hypertension and diabetes mellitus are related with the life style changes. The side effects of diabetes mellitus include chronic damage to vital organs. India is becoming the diabetes hub of the world. **Methodology:** Research approach adopted for the study was Survey. The study has been done from January 2016 to July 2017 at Northern Railway divisional hospital, Delhi. Total of 1547 Railway employees were selected for the study by convenient sampling. Data collection was done from periodic medical examination (PME) books. **Results:** The study revealed that the prevalence of pre-hypertension and hypertension are 7.24% and 23.98% respectively. Prevalence of Pre-diabetes and DM are 12.05% and 08.45% respectively. Age group (45-60 years) has the most cases of hypertension and diabetes. There were no significant associations among hypertension and diabetes with selected sociodemographic variables. **Conclusions-** Hypertension and diabetes mellitus are growing epidemic. The burdens of Non communicable disease are increasing in India. Railway employees are prone to hypertension compared to diabetes mellitus. Age is an independent factor. Hypertension and diabetes cases were more common in 46-60 years age group. There is need of sound educational, screening and awareness program to identification and management of the non communicable diseases.

**KEYWORDS:** Non-communicable diseases, Hypertension, Diabetes mellitus, Northern Railway employees, Prevalence.

### INTRODUCTION

Non-communicable diseases (NCDs) are major public health concern for the world.<sup>[1]</sup> NCDs are long term diseases, are not passed from individual to individual.<sup>[2]</sup> Diabetes mellitus (DM) is a chronic disease that occur either ineffective use of Insulin by the body or insufficient production of insulin by pancreas. Increased blood sugar level is a common effect of diabetes mellitus. Cardiomyopathy, Neuropathy, Nephropathy, Retinopathy and lower limb amputation are the possible complications of continuous high blood sugar level. During pregnancy, uncontrolled blood sugar levels increase the risk of still birth and other fatal complications.<sup>[2,3]</sup> World health organization has rated

hypertension as one of the most causes of premature death.

Hypertension and diabetes are major causes of morbidity and mortality in Indian population.<sup>[4]</sup>

In India, the prevalence of hypertension has been estimated to be 3% to 34.5% in males and 5.8% to 33.5% in females. It is estimated that by the end of 2025, the prevalence rate of hypertension in Indian men and women will be 22.9% and 23.6% respectively.<sup>[5]</sup> Non-communicable diseases are emerged as major health and public issues at global level. The global prevalence of diabetes is around 8.8% and it will be increased up to 9.9% in 2045. In the world, India has the largest number of adults suffering from diabetes. The

prevalence of diabetes in urban areas is three times higher than rural area of India. The prevalence of hypertension among adults in India is high. The prevalence rates in rural and urban area are 10% and 25% respectively.<sup>[6]</sup> The incidence rate of diabetes and Pre-diabetes is higher among Asian Indians. Indians has increase insulin resistance, which make them prone to DM type-2. Diabetes mellitus is increasing drastically in Indians, so in few years India will be “Diabetes capital of the World”.<sup>[7,8]</sup> In India, more than 69 million people are affected with diabetes and in 2040; this figure will cross 140 million. Nearly 25% of Indians are unaware of diabetes mellitus.<sup>[9,10]</sup> In India, diabetes and hypertension are the main non-communicable diseases leading towards morbidity and mortality.<sup>[11]</sup> The significant increase in hypertension and diabetes cases is also affecting the economy of the developing countries. Hypertension and diabetes have major role in morbidity and mortality so researcher selects this topic to assess the prevalence of altered level of blood pressure and blood sugar among railway employees.

**MATERIAL AND METHODS**

Present study was conducted at OPD, Northern Railway division hospital, Delhi during January 2016 to July 2017. Survey approach was selected for the present study. A total of 1547 Railway employees were selected by convenient sampling for the present study. Sampling

was performed among railway employees attending OPD for periodic medical examination at Northern railway division hospital, Delhi. Both male and female were included in the study. Data collection was done from Periodic medical examination books. Data was collected by using demographic profile and WHO scales for blood pressure and blood sugar level.

**Ethical consideration**

Ethical clearance was obtained from the Institute Ethics Committee. The study participants were railway employees attending OPD. The obtained findings were used for the research purpose only.

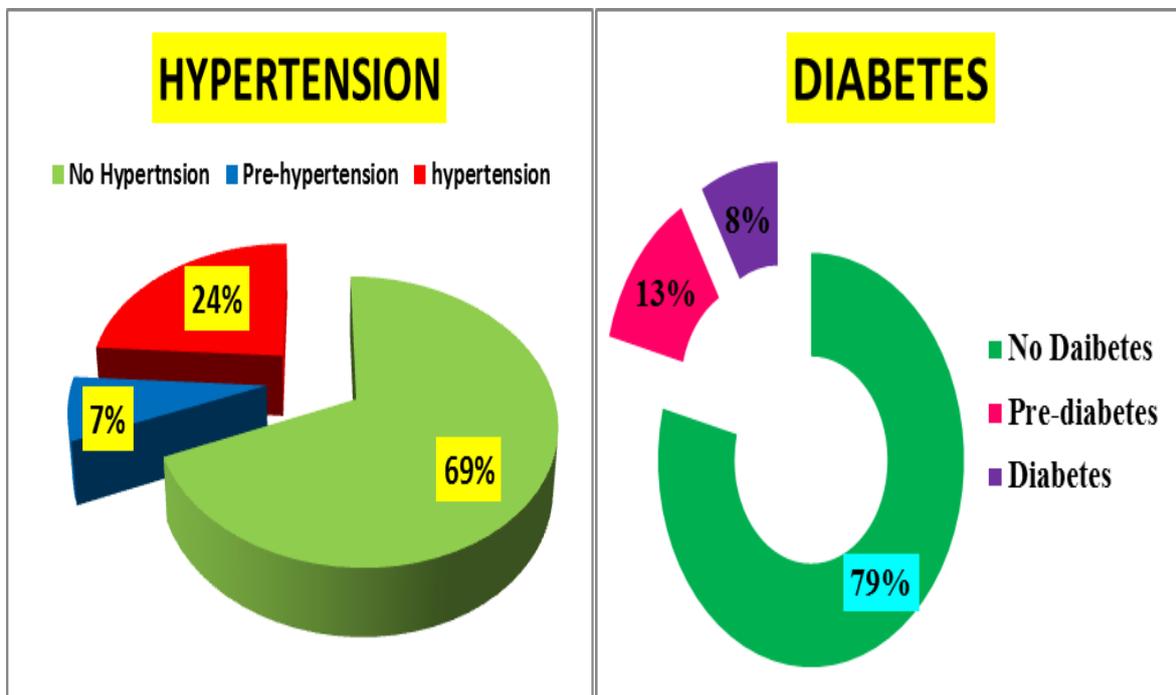
**RESULTS**

**Table -1: Frequency and percentage distribution of demographic characteristics. N=1547.**

Sample characteristics	Frequency (%)
<b>1. GENDER</b>	
Male	1523(98.45)
Female	24(01.55)
<b>2. AGE</b>	
18-25 Years	64(04.13)
26-35 Years	213(13.48)
36-45 Years	526(34.00)
46-60 Years	744(48.09)

**Table 2: Altered level of Blood pressure and Blood sugar. N=1547.**

S. No.	Category	No. of employees	Percentage	
1	Hypertension	Pre-hypertensive	112	07.24%
		Hypertensive	371	23.98%
2	Diabetes	Pre-diabetes	197	12.73%
		Diabetes	128	08.27%



**Table 3: Association between of altered level of bold pressure and demographic variables. N=1547.**

Demographic variables	Altered blood pressure	Non-hypertensive	Chi-square ( $\chi^2$ )
AGE GROUP			
1. 18-25 years	04	60	<b>2.341(NS)</b>
2. 26-35 years	47	166	
3. 36-45 years	91	435	
4. 46-60 years	341	403	
GENDER			
1. Male	478	1045	<b>1.847(NS)</b>
2. Female	5	19	

(NS= not significant at 0.05 level of significance)

**Table 4: Association between of demographic variables altered level of bold sugar. N=1547.**

Demographic variables	Altered blood sugar	Non-diabetes	Chi-square ( $\chi^2$ )
AGE GROUP			
18-25 years	00	64	<b>2.153(NS)</b>
26-35 years	24	189	
36-45 years	133	393	
46-60 years	168	576	
GENDER			
Male	319	1204	<b>1.739(NS)</b>
Female	6	18	

(NS= not significant at 0.05 level of significance)

Result in present study; total 1547 employees were selected for the study. Distribution age and sex of the Railway employees was done in table -1. It shows that almost all participants were male. Majority of them were in the age group of 46-60 years. According to table -2, 112 (7.24%) employees out of 1547 have Pre-hypertension and 371(23.98%) employees had hypertension. Out of 1547 railway employees, 197 (12.73%) employees have Pre-diabetes and only 128(08.27%) employees were suffering from diabetes. In table 3&4, majority of altered level of blood pressure and blood sugar were in the age group of 45-60 years. There was no significant association among altered level of blood pressure and blood sugar with demographic variables.

## DISCUSSION

Non -communicable diseases are increasing with a great pace at global level. Hypertension is increasing drastically among Indian population. Diabetes mellitus is among the major concern for the world. Pre-diabetes and diabetes are increasing more rapidly in developing countries.

The present study communicated that prevalence of pre-hypertension and hypertension among railway employees is 7.24% and 23.98% respectively. Gupta VK et al (2018) conducted a study among tribal population of central India. The study revealed that prevalence of hypertension was 27.1% which is compare more than present study findings.<sup>[12]</sup> Another study was conducted by Radhkrishanan et al found 31.1% prevalence of hypertension which was higher than our findings.<sup>[13]</sup>

A population based study was conducted among Mizo population revealed that prevalence of hypertension was 15.9% which was less than present study findings.<sup>[14]</sup> In this study, there are no association among demographic variables and pre-hypertension and hypertension.

Prevalence of DM is higher in lower and middle- income countries compare to high-income nations. Rapid urbanization, life style changes, obesity and higher resistance to insulin make Indians prone to DM,<sup>[15]</sup> Shatrughan Pareek (2017) conducted a study among railway employees. The study communicated that prevalence of pre-diabetes and diabetes was 12.05% and 8.45% respectively. The findings are nearly equal to present study.<sup>[16]</sup> Ravikumar P. et al (2011) reported that prevalence of pre-diabetes was 13.2% in urban societies; the present study also revealed that prevalence of Pre-diabetes among Northern railway employees was 12.73%.<sup>[17]</sup> The prevalence of pre-diabetes was comparatively higher, which was supported by other studies in India<sup>9</sup>. Tripathy JP et al (2017) a large community based study was conducted in India showed that prevalence of DM was 8.3% which was nearly equal to present study.<sup>[18]</sup> Association of age group with altered blood pressure and blood sugar levels were not statistically significance. Hypertension and diabetes are preventable diseases so the early detection and appropriate management will be helpful in reduction of the non communicable diseases. It may be helpful in decreasing the burden of NCDs among railway employees. Higher prevalence of altered blood pressure and blood sugar level also affects the nation's economy.

## ACKNOWLEDGEMENT

I am thankful to my faculties, my family member and my friends for their patience and support in completing my research study.

**Conflict of interest:-** There was no conflict of interest.

**Source of funding:-** Self funded.

## CONCLUSION

Present study was conducted with aim to assess the prevalence of altered level of blood pressure and blood sugar among Railway employees. Pre-hypertension, hypertension, pre-diabetes and diabetes assessment were done by using WHO scale for blood pressure and blood sugar level.

Non communicable diseases are increasing drastically in India. Railway employees are also at risk of developing hypertension and diabetes. Altered blood sugar and blood pressure level may lead to various diseases so there is a need to develop non-communicable diseases control and management programmes for its prevention and early detection. Awareness and health education regarding hypertension and diabetes management will be helpful in decline the prevalence of hypertension and diabetes among railway employees. It will be directly helpful in reducing the disease burden and treatment cost of these non-communicable diseases.

## REFERENCES

1. Global status on Non-communicable diseases 2014. World Health Organization. Geneva, 2015.
2. Linda SW and Paula DH. Understanding Medical Surgical Nursing. Jaypee Brothers medical publishers, 2015; 1: 914-939.
3. Global report on Diabetes. World Health Organization. Geneva, 2016.
4. Hariharan S, Umadevi R, Stephen T, Pradeep S. Burden of diabetes and hypertension among people attending health camps in an urban area of Kancheepuram district. *Int J Community Med Public Health*, 2018; 5: 140-3.
5. Singh MK et al. an epidemiological study of prevalence of hypertension and its risk factors in a rural community of Nellore, Andhra Pradesh, India. *Int J community Med Public health*, 2016; 3(12): 3408-3414.
6. George M, Ramesh N, Gopal S, Mohan V, Fathima FN. Diabetes and hypertension - A comprehensive assessment among workers in selected tea plantations, South India. *Int J Med Sci Public Health*, 2018; 7(12): 1005-1010.
7. Anjana RM, Pradeep GR, Deepa m et al. ICMR-INDIAB collaboration study group. Prevalence of diabetes and pre-diabetes in urban and rural Indians. *Diabetologia*, 2011; 54(12): 3022-3027.
8. V. Mohan, S. Sandeep, R. Deepa, B.Shah and C. Varghese. Epidemiology of DM type-2 diabetes: Indian scenario. *Indian journal of Medical Research*, 2007; 125: 216-230.
9. Ahuja MMS. Siraji L, Garg VK et al. prevalence of Diabetes in North India (Delhi region). *Hormone and metabolic research*, 1974; 4: 321-324.
10. Kumar A. India towards diabetes control: key issues. *Australian Medical journal*, 2013; 6: 524-531.
11. Babu GR et al. Association of obesity with hypertension and type 2 diabetes mellitus in India: A meta-analysis of observational Studies. *World J Diabetes*, 2018; 15(1): 1-52.
12. Gupta VK, Rai N, Toppo NA, Kasar PK, Nema P. An epidemiological study of prevalence of hypertension and its risk factors among non migratory tribal population of Mawai block of Mandla district of central India. *Int J Community Med Public Health*, 2018; 5: 957-62.
13. Radhakrishnan S, Ekambaram M. Prevalence of diabetes and hypertension among a tribal population in Tamil Nadu. *Arch Med Health Sci.*, 2015; 3(1): 66-71.
14. Borah PK et al. prevalence and risk factors of hypertension among Mizo population: a population-based epidemiological study from North East India. *Current Sciences*, 2018; 115(10): 1947-1949.
15. Directorate General Health Services Ministry of Health and Family Welfare. National Programme for prevention and control of Cancer, Diabetes, Cardiovascular Diseases & Stroke Operational Guidelines (2013–17). New Delhi, 2013.
16. Shatrughan Pareek .Prevalence of Pre-diabetes and Diabetes mellitus among the Northern Railway Employees: A retrospective study. *Int. J. Adv. Nur. Management*, 2017; 5(4): 347-350.
17. Ravikumar P, Bhansali A, Ravikiran M, Bhansali S, Walia R, Shanmugasundar G, et al. Prevalence and risk factors of diabetes in a community-based study in North India: the Chandigarh Urban Diabetes Study. *Diabetology and Metabolic syndrome*, 2011; 37(3): 216–21.
18. Tripathy JP, J. S. Thakur, Gursimer Jeet, Sohan Chawla, Sanjay Jain, Arnab Pal et al. Prevalence and risk factors of diabetes in a large community based study in North India: results from a STEPS survey in Punjab, India. *Diabetology and Metabolic syndrome*, 2017; 9: 8.