



A HYPERTENSION AND OTHER MORBIDITIES AMONG CITY POLICEMEN IN NAGPUR: A CROSS SECTIONAL STUDY

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ABSTRACT **Introduction** - India is slowly and steadily acquiring the status of the global chronic disease capital. By 2025, India will have the dubious distinction of having 70 million diabetics, 213 million hypertensives.

Material and Methods - This cross-sectional study was conducted among police personnel. Calculated sample size was 94 with 10% absolute precision. The data collection was done between August 2016 and August 2017. The study included 3 police stations in the city as per convenience. All eligible policemen selected randomly and examined till sample size met.

Results - Prevalence of hypertension was 23.5%. Mean systolic blood pressure was 124.01 ± 11.61 (96-160), Mean diastolic blood pressure was 82.27 ± 7.69 (60-90). Other morbidities found were central obesity (65%), mental stress (51%), presbyopia (16.5%), etc.

Conclusion - Prevalence of hypertension was high. Other morbidities found were central obesity, mental stress, presbyopia, anaemia, musculoskeletal problems, etc.

KEYWORDS : Hypertension, Policemen

INTRODUCTION

Indian police personnel can be broadly categorized into constables, inspectors, and officers. The constables belong to the lowest strata; they obey commands of inspectors/sub-inspectors and impart assigned duties as part of police work. The inspectors are placed at the intermediate level; they are expected to investigate cases and registered first information report.[1]

They are also responsible for the law and order situation in their area of jurisdiction and the supervision of work at the police station. The officers (e.g., Circle Officers [Cos], Superintendent of Police [SP], Assistant Superintendent of Police [ASP], and Senior Superintendent of Police [SSP]) entertain administrative control over crime and law-and-order situation of the town. They also take care of public complaints and grievances and supervise the work of policemen subordinate to them.[1]

India is slowly and steadily acquiring the status of the global chronic disease capital. By 2025, India will have the dubious distinction of having 70 million diabetics, 213 million hypertensives.[2]

Cardiovascular diseases caused 2.3 million deaths in India in the year 1990; this is projected to double by the year 2020. Hypertension is directly responsible for 57% of all stroke deaths and 24% of all coronary heart disease deaths in India.[1]

Cardiovascular diseases including coronary heart disease, stroke, and hypertension are the leading causes of morbidity and mortality in both developed and developing countries.[3]

Elevated blood pressure (BP) has been linked to ischemic heart disease, peripheral vascular diseases, stroke, myocardial infarction, and renal failure.[4]

Individuals with hypertension possess twofold higher risk of developing coronary artery disease (CAD) and four times higher risk of congestive heart failure compared with normotensive subjects.[5]

The "Global Burden of Disease Study" has projected CAD and cerebrovascular disease as the leading causes of death worldwide by the year 2020.[6]

Hypertension is one of the major global risks factors, and its prevalence is rapidly increasing worldwide. Hypertension has been reported to be responsible for 57% of all stroke deaths and 24% of all cardiovascular deaths in East Asia.[7]

In addition, there is an increasing prevalence of hypertension in the Indian population, especially in the urban areas. This global risk factor affects all populations of the world including the special occupational

group, the policemen. Police work has been regarded as one of the stressful occupation in the world.[8]

AIM AND OBJECTIVE

To study the hypertension and other morbidities of city policemen.

MATERIAL AND METHODS

This cross-sectional study was conducted among police personnel.

Inclusion Criteria: Policepersons completed one year of job & willing to participate.

Exclusion Criteria: Policepersons who cannot be contacted for three successive visits.

Sample size: It was calculated by assuming prevalence of hypertension in police 42% from study of Almale BD, et al. An epidemiologic study of occupational stress factors in Mumbai police personnel. Indian Journal of Occupational and Environmental Medicine 2014; 18:109-12.[9] Calculated sample size was 94 with 10% absolute precision.

Data collection:

The data collection was done between August 2016 and August 2017. Permission was obtained from institutional ethical committee and from the Commissioner of police. The study included 3 police stations in the city as per convenience. All eligible policemen selected randomly and examined till sample size met. Policeperson who could not be contacted for three successive visits were excluded. Informed consent was taken before they participate in the study. Routine roll-call was selected as the most appropriate time to undertake the study to ensure most of participants were present. The aim of the study was explained to each respondent. Participants were contacted during routine roll call and some police personnel were contacted in evening. History was asked about present complaints, past history of any disease and hospitalization. They were examined and investigated for HT, DM, Anaemia, deafness and other problems.

Blood pressure was recorded using an aneroid sphygmomanometer of Diamond® brand by palpatory and auscultatory method at right arm with subject comfortably sitting in a chair and relaxed for five minutes. Two blood pressure readings were recorded in the sitting position 1 to 2 minutes apart and the mean of the two was considered for analysis. Hypertension was defined by JNC 8 criteria. Hypertension was defined as systolic blood pressure more than or equal to 140 mmHg and/or diastolic blood pressure more than or equal to 90 mmHg.

Those individuals already diagnosed as hypertensive and on treatment were labelled as known cases of hypertension. Estimation of haemoglobin was done by Sahli's method using hemoglobinometer.

Anaemia was classified as per WHO criterion. Haemoglobin % <12 gm% for non-pregnant females and <13 mg% for adult males were taken as cut off points to label subjects as anemic. Hearing test was done by Rinne test and Weber test for both ears with the help of tuning fork 512 Hz.

Ophthalmic examination was done with the help of torch in both eyes and those with known refractive errors were noted. Pilot study was carried out before main study to assess the feasibility and test the Proforma and necessary changes were made accordingly. Study subjects having any morbidities were prescribed appropriate treatment when required and appropriately referred to specialties for related therapy.

Statistical Analysis:

Data was analyzed and tabulated using frequency distribution tables and proportions.

The significance of difference between various factors analyzed using the Chi-square test.

RESULTS

Distribution of study subjects according to blood pressure level shows that most of the police persons had normal level of blood pressure followed by Pre-hypertensive level then Grade I level hypertension and Grade II level of hypertension i.e. 89(44.50%), 64(32.00%), 43(21.50%) and 04(02.00%) respectively. Most of the male police persons had Pre-hypertensive level followed by normal level of blood pressure then Grade I level hypertension and by Grade II level of hypertension i.e. 61(40.13%), 49(32.23%), 39(25.65%) and 03(01.97%) respectively. . Most of the female police persons had normal level of blood pressure followed by Grade I level hypertension, Pre-hypertensive level and then by Grade II level of hypertension i.e. 40(83.33%), 04(08.33%), 03(06.25) and 01(02.08) respectively. Out of 47 Hypertensive, 28 (27 males & 1 Female) subjects are known cases of Hypertension and 19 are newly diagnosed. There was statistical significant difference between males and females for normal blood pressure level against others (Chi square value-36.523, p value-<0.001). Mean systolic blood pressure-124.01± 11.61 (96-160), Mean diastolic blood pressure- 82.27 ± 7.69 (60-90), Mean systolic blood pressure of male- 127.19 ±9.69 (100-150), Mean systolic blood pressure of female- 113.91 ± 11.50 (96-160), Mean diastolic blood pressure of male- 84.00 ± 6.82 (70-90), Mean diastolic blood pressure of female- 76.79 ± 7.80 (60-100). (Table 1)

Distribution of study subjects according to anaemia shows that majority police persons had normal haemoglobin level and few had anaemia. Prevalence of anaemia was 15.00%. Prevalence of anaemia among male was 11.85%. Prevalence of anaemia among female was 25.00%. All subjects with anaemia had mild grade anaemia. Mean haemoglobin was 13.31 ±0.81 gm% (11.2-14.8). Mean haemoglobin of males was 13.52±0.69 gm % (11.2-14.8). Mean haemoglobin of female was 12.63 ±0.82 gm% (11.2-14.4). (Table 2)

Prevalence of morbidities among study subjects shows that majority of police persons had Central Obesity (WHR) followed by Mental Stress i.e. 65.00% and 51.00% respectively. Few police person had hypertension followed by presbyopia, obesity (BMI) and anaemia i.e. 23.5%, 16.5%, 15% and 15%. Other morbidities were musculoskeletal Problems, menstrual problems, diabetes mellitus, sensorineural deafness, gastritis, myopia, MI and CVE. (Table 3)

Table 1. Distribution of study subjects according to blood pressure level

*Blood Pressure level	Study subjects			
	Male (%)	Female (%)	Total (%)	
Normotensive	49(32.23)	40(83.33)	89(44.50)	
HTN	Pre-hypertensive	61(40.13)	03(06.25)	64(32.00)
	Grade I	39(25.65)	04(08.33)	43(21.50)
	Grade II	03(01.97)	01(02.08)	04(02.00)
Total	152(76.00)	48(24.00)	200(100)	

*JNC8 classification of hypertension

Table 2. Distribution of study subjects according to anaemia

Status	Study Subjects		
	Male (%)	Female (%)	Total (%)
Normal	134(88.15)	36(75.00)	170(85.00)

Anaemia	18(11.85)	12(25.00)	30(15.00)
Total	152(76.00)	48(24.00)	200(100)

Table 3. Prevalence of morbidities among study subjects

ICD Code	All Morbidities	Total (n=200)	
		No.	%
E65	Central Obesity(WHR)	130	65
F43.0	Mental Stress	102	51
I10	Hypertension	47	23.5
H52.4	Presbyopia	33	16.5
E66.9	Obesity(BMI)	30	15
D64.9	Anaemia	30	15
M00-M99	Musculoskeletal Problems	17	8.5
N92.6	Menstrual problems	06	*12.5
E11	Diabetes mellitus	06	03
H90.3	Sensorineural deafness	04	02
K29.7	Gastritis	04	02
H52.1	Myopia	02	01
I21-I21.4	MI	02	01
I63.9	CVE	01	0.5

* Prevalence among female

DISCUSSION

High Prevalence of Hypertension was reported in IN Almale B et al (2014) study (42.4%) & Thayyil J et al (2012) study 54.4%. [9],[10] Low prevalence of HT was seen in Selokar D et al (2011) study, (17.6%) as well as Tambe N et al (2012) study, prevalence of known hypertension was 10.1%, and newly diagnosed hypertension was 10.6%. [11],[2]

More S et al (2015) study showed 15% of participants were suffering from hypertension which was significantly seen in Class II police personnel as compared to Class III police personnel (P – 0.037).[12]

Satopathy DM et al (2009) study revealed that 25% of study subjects were hypertensive. Among the persons who were obese (BMI >25), 31.8% were hypertensive and among normal/thin (BMI <25), 19.2% were hypertensive and this difference of BMI and hypertension was not significant but there was a positive correlation (r=0.4) between BMI and hypertension.[13]

Sen A et al (2015) study showed that the occurrence of the hypertension was significantly lower among the civilians than the policemen (22.4% vs. 32.5%, P<0.001).[14]

Almale B et al (2014) study showed various morbidities as Musculoskeletal (62.3%), Gastrointestinal (51.8%) Hypertension (42.4%), Dental (41 %), Psychiatric disorder (34.1 %), Diabetes Mellitus (12.7%), Respiratory System (15.2 %), Skin & Hair(17.8%) , Ophthalmic (8.3%) and Coronary Heart Disease (4.7%).[9]

More S et al (2015) study reveals that Disturbed sleep (75.83%), Acidity (42.08%), Anxiety (37.91%),Headache (33.75%), Backache (28.90%) and Depression (28.30%) were the common psychosomatic diseases among the participants. 15% of participants were suffering from Hypertension which was significantly seen in Class II police personnel as compared to Class III police personnel(P – 0.037). similarly they also found that Acidity was more common among Class II police personnel (P – 0.006). They found only 14.16% of police personnel doesn't showed any signs or symptoms of psychosomatic diseases.[12]

Saha A et al (2010) study reported Gastro intestinal problems 45.8%; Cardio vascular problems 38.2%; Nervousness / Anxiety problems 52.8%; Pain in different body parts 24.8%; Sleep disturbance 50.5%; Others problems 30.3%. [15]

CONCLUSION

Prevalence of hypertension was high. Hypertension was more in males with statistical significant difference. Other morbidities found were presbyopia, anaemia, musculoskeletal problems, menstrual problems, diabetes mellitus, sensorineural deafness, gastritis, myopia, & history of MI and CVE.

REFERENCES

[1]. Gupta R. Trends in hypertension epidemiology in India. J Hum Hypertens. 2004;18(2):73-8.

- [2]. Tambe NN, Singh V, Narang K, Tambe V, Goel RB, Intern MBBS. A Prevalence Study of Risk Factors for Chronic Diseases among Police Personnel in a Metropolitan Area. *Int J Recent Trends Sci Technol*. 2012; 5(2): 61–3.
- [3]. Gaziano T, Reddy KS, Paccard F, Horton S, Chaturvedi V. Cardiovascular disease. In: *Disease Control Priorities in Developing Countries*, Jamison DT, Breman JG, Meashan AR, Alleyne G, Claeson M, Evans DB, et al (Eds.), 2nd edn. New York, NY: Oxford University.
- [4]. Diseases I, Whitworth JA. World Health Organization (WHO)/International Society of Hypertension (ISH) statement on management of hypertension. *J Hypertens*. 2003;21(11):1983–92. Health (San Francisco). 2000. p. 437–45.
- [5]. Flack JM, Neaton J, Grimm R Jr, Shih J, Cutler J, Ensrud K, et al. Blood pressure and mortality among men with prior myocardial infarction. *Circulation*. 1995;92(9):2437–45.
- [6]. Murray CJ, Lopez AD. Mortality by cause for eight regions of the world: Global Burden of Disease Study. *Lancet [Internet]*. 1997;349(9061):1269–76.
- [7]. Rodgers A, Lawes C, MacMahon S. Reducing the global burden of blood pressure related cardiovascular disease. *J Hypertens*. 2000; 18(Suppl1):S3–6.
- [8]. Cox KR, Anshel MH. A conceptual model and implications for coping with stressful events in police work. *Crim Justice Behav*. 2000;27(3): 375–400. p. 40–53.
- [9]. Almale BD, Vankudre AJ, Bansode-Gokhe SS, et al. An epidemiologic study of occupational stress factors in Mumbai police personnel [Internet]. Vol. 18, *Indian Journal of Occupational and Environmental Medicine*. 2014. p. 109–12.
- [10]. Thayyil J, Jayakrishnan TT, Meharoo R, Jeeja MC. Metabolic Syndrome and Other Cardiovascular Risk Factors Among Police Officers. Vol. 4, *North American Journal of Medical Sciences*. 2012. p. 630–5.
- [11]. Ramakrishnan J, Majgi SM, Premarajan KC, Lakshminarayanan S, Thangaraj S, Chinnakali P. High prevalence of cardiovascular risk factors among policemen in Puducherry, South India. *J Cardiovasc Dis Res [Internet]*. 2013;4(2):112–5.
- [12]. More S, Gaikwad A, Shelke P. Prevalence of psychosomatic diseases among police personnel of Navi Mumbai. *MedPulse – Int Med J*. 2015;2(February):72–4.
- [13]. Satapathy D, Behera T, Tripathy R. Health status of traffic police personnel in Brahmapur city. Vol. 34, *Indian Journal of Community Medicine*. 2009. p. 71–72.
- [14]. Sen A, Das M, Basu S, Datta G. Prevalence of hypertension and its associated risk factors among Kolkata-based policemen: a sociophysiological study. *Int J Med Sci Public Heal [Internet]*. 2015;4(2):225–32.
- [15]. Saha A, Sahu S, Paul G. Evaluation of cardio-vascular risk factor in police officers. *Int J Pharma Bio Sci*. 2010;1(4):263–71.