

## **Prevalence of Hypertension and its Association with Stress among Police Personnel**

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**H**ypertension-one of the most common diseases worldwide, is estimated to affect one quarter of all adults, and has been identified as the leading cause of mortality and the third cause of disability-adjusted life years worldwide. The International Society of Hypertension has defined hypertension as a systolic blood pressure equal to or above 140 mmHg and/or diastolic blood pressure equal to or above 90 mmHg on two consecutive readings taken 5 minutes apart (Whitworth, 2003). According to the World Health Organization, the non-transmissible diseases will be the leading cause of functional disability in the next two decades and, among chronic degenerative conditions, arterial hypertension will be the most important cause.

In a review of cohort and case-control studies that investigated the association between psychosocial stress and hypertension, meta-analysis by MEDLINE, EMBASE, PSYCINFO and LILACS, up to 2007 revealed that five out of seven studies found a significant and positive association between measures of chronic stress and hypertension, with risk ratios ranging from 0.8 to 11 (Sparrenberger et al, 2009).

As per a study by Indian Council of Medical Research, prevalence of hypertension was 25 percent among urban population and 29 percent among rural population when systolic blood pressure of 140 mmHg and/or diastolic blood pressure of 90 mmHg or above were considered as hypertension. According to NCD risk factor survey conducted by Integrated Disease Surveillance Project, during 2007-2008, the prevalence of hypertension in India varied between 17 percent to 20 percent, and 23 percent to 24 percent in Kerala state where this study was conducted. In fact, hypertension is the most prevalent chronic disease in India (Whitworth, 2003).

The physical threats in police operational duties have been regarded as inherent causes of stress in police work, but organisational factors such as work overload, time pressure, inadequate resources, manpower shortage, lack of support and communication with the higher authorities in the organisation have

also been identified as the factors responsible for stress among the policemen (Anshel, 2000).

A cross-sectional study which was conducted among 296 police personnel in urban Pondicherry, majority of the police personnel had very high levels of stress (83.8%). About 34.5 percent of the police personnel had hypertension, including both new and old cases (Saya et al, 2017). There is paucity of data on stress and hypertension among vulnerable groups like police personnel. Hence this study will help in providing preliminary data which can be used for further studies.

### **Objectives**

The objectives of the study were to: Assess the prevalence of hypertension among police personnel; Assess the stress among police personnel; Find the association between blood pressure and stress.

**Hypothesis:** H1 - There is a significant association between blood pressure and stress among police personnel.

**Conceptual framework:** The study was based on Lazarus Transactional theory of stress and coping (Lazarus & Folkman, 1987).

### **Review of Literature**

A study was conducted to assess the prevalence of hypertension, pre-hypertension, normotension among 1817 police personnel in Bankura, West Bengal, India. The study findings revealed that the prevalence of hypertension, pre-hypertension and normotension were 41.9 percent, 42.9 percent and 15.2 percent respectively. Even one-quarter of subjects below 40 years had hypertension. Mean blood pressure remained in the pre hypertensive range. Prevalence of hypertension and mean blood pressure increased with age. Around 40 percent of hypertensive knew their status, three-quarter of aware subjects received treatment and only one-third of treated subjects had a controlled blood pressure (Mallik et al, 2014).

A cross-sectional study was conducted during the period April 2007 to September 2007 at three police stations in Ahmednagar district to assess the level of

stress and source of stress among policemen and to study stress as a risk factor for hypertension, diabetes, obesity and depression. All available 90 policemen were interviewed and their occupational stress was assessed by occupational stress index. Clinical examination and necessary investigations were done. Depression among them was diagnosed with the help of Hamilton depression rating scale. Majority of policemen (88.89%) were having moderate level of stress. Role overload and responsibility for person were moderately stress producing factors among all ranks. Stress score was significantly high among overweight, diabetes, hypertensive and depressed policemen (Kamble & Phalke, 2011).

## Methods and Procedure

Research approach adopted was Quantitative approach; the research design was descriptive design. Setting and sample was police personnel working in urban, rural and traffic departments of Ernakulam. 1000 police personnel were selected using purposive sampling technique from those who satisfied the inclusion criteria.

**Tools** - Tool 1- Section A: Demographic data which was collected from the subjects using self-report technique. Section B: Sphygmomanometer and stethoscope to measure the blood pressure and format for recording the blood pressure.

Tool 2: Stress rating scale. It comprised of 40 questions to assess the stress which was graded as mild, moderate and severe based on the scores.

**Data collection:** The ethical clearance was obtained from institutional ethical committee. Written permission was obtained from the police commissioner in charge of urban and traffic Ernakulam district and the superintendent of police, Ernakulam rural. Informed consent was obtained from the subjects and data was collected from them.

## Results

It was found that of the 1000 police personnel 31.3 percent were between 46 to 50 years, 27.7 percent were between 41 to 45 years of age, 23 percent were in the age group of 36 to 40 and only 18 percent of subjects were aged between 30 to 35 years of age. Majority (84%) of the subjects was male and only 16 percent were female, 78.3 percent had more than 10 years of experience in police department and 12.9 percent had 6 to 10 years of experience and 8.8 percent had an experience of 2 to 5 years. Based on rank, 50.4 percent of the subjects were Civil police officers, 24 percent were senior civil police officers, 16.8% were Assistant sub inspectors, sub-inspectors constituted

7.9 percent and the remaining 0.9 percent by higher officials. It was found that 38.5 percent of subjects were posted in the urban, 39.2 percent in rural and remaining 22.3 percent in traffic department.

**Prevalence of hypertension among police personnel:** In the study, prevalence of hypertension refers to the number of existing police personnel diagnosed with hypertension and police personnel with systolic blood pressure of 140 mmHg or above, and or diastolic blood pressure of 90 mmHg or above in 2 consecutive readings measured using a calibrated sphygmomanometer.

Among the selected subjects, 37.9 percent were hypertensive and out of them 25.07 percent were known hypertensive and 74.93 percent were newly identified cases of elevated blood pressure.

### *Association between blood pressure and stress*

To test the association between blood pressure and stress, the following null hypothesis was formulated.

H01-There is no significant association between blood pressure and stress and was tested by computing the chi-square which is presented in Table 2.

The obtained chi-square value was significant at 0.05 level. Therefore the null hypothesis was rejected and it was inferred that blood pressure was significantly associated with stress among police personnel.

**Discussion:** In the present study, the prevalence of hypertension was 37.9 percent, which was found to be higher than the prevalence reported in other studies among the police men in Kolkata, West Bengal (32.5%), Urban Pondicherry (34.5%) and Nagpur (22.5%). On the other hand, studies conducted in Mumbai revealed a higher prevalence of 42.4% and in Bankura, it was found to be 41.9%.

In the present majority the police personnel had mild to moderate stress and a few had severe stress which was similar to a study conducted in Kuala Lumpur among 579 police officer which revealed that the overall prevalence of stress was 38.8 percent with 5.9 percent severe, 14.9 percent moderate and 18 percent mild stress whereas a study in urban Pondicherry reported that majority (83.8%) of the police personnel had high and very high levels of stress.

In the present study, it was found that the blood

**Table 1: Frequency and percentage distribution of the subjects based on prevalence of hypertension (N=1000)**

| Item                                | Frequency | Percentage |
|-------------------------------------|-----------|------------|
| Normotensive                        | 621       | 62.1       |
| Hypertensive                        | 379       | 37.9       |
| Known hypertensive                  | 95        | 25.07*     |
| New case of elevated Blood pressure | 284       | 74.93*     |

\*n=379

Table 2: Chi-square, degree of freedom and level of significance between blood pressure and stress (N=1000)

| Variable     | Mild | Moderate | Severe | $\chi^2$ | df | Significance |
|--------------|------|----------|--------|----------|----|--------------|
| Normotensive | 355  | 228      | 38     | 66.942*  | 2  | 0.0000       |
| Hypertensive | 116  | 221      | 42     |          |    |              |

\* $p \leq 0.05$

pressure was significantly associated with stress. As anticipated, stress score was significantly high among the hypertensive. The findings were supported by a few studies which reported a significant association between blood pressure and stress.

**Implications of the study:** The investigator suggests the need for periodic health checkups and counseling and other stress relieving techniques like yoga, meditation, leisure time activity, along with regular physical exercise and life style modifications to alleviate and prevent health related issues as well as job stressors among police personnel.

**Limitations:** As a self-rated stress rating scale was used for data collection which requires honest and sincere response from the participants, the generalization should be done with caution. Another limitation is that the subjects were selected from a particular district which may not be a true representation of the population under study which places a caution for the generalisation of the study findings.

**Recommendation:** A study can be conducted (a) to identify the risk factors of stress among police personnel or (b) to assess the impact of regular health checkups on health status of police personnel.

## Conclusion

Policing is a highly demanding work environment with the threat, uncertainty at work, encounters, political pressure, exposure to violence, and death. High levels of stress-related illness are causing concern across industry. It is dangerous to ignore high blood pressure, because this increases the chances of life-threatening complications. Hypertension is an important health issue among high risk occupation

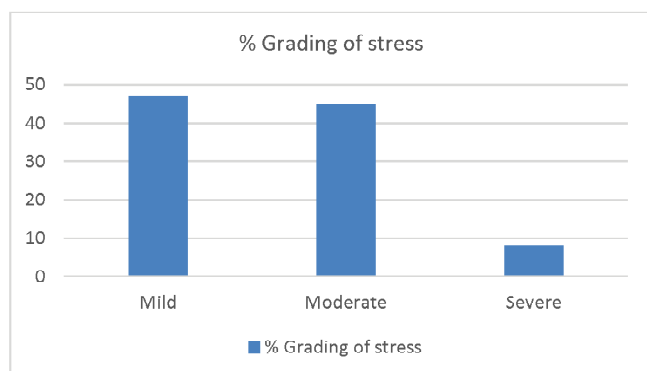


Figure 1: Bar diagram showing the percentage distribution of police personnel based on grading of stress scores.

groups like police personnel. So far, the focus of clinicians and epidemiologists has been on individuals with hypertension. Majority of cardiovascular disease events occur in persons who are prehypertensive. Identifying and characterising modifiable risk factors of hypertension remain important for public health and clinical medicine.

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