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Impact of occupational and psychological stress on police health in South India

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Abstract

Background: Police personnel form an important occupational group who constantly work under stressful situations. Preventive programs in the government organizations and studies investigating the occupational stress among police officers in India, particularly in the state of Andhra Pradesh, are still limited.

Materials and Methods: Demographic details such as age, educational qualification, years of service, and number of children etc of Male police constables ($n = 123$) working in the Bellampalli subdivision of Adilabad district of erstwhile Andhra Pradesh were captured. Details of height, weight, body mass index (BMI, kg/m²), blood pressure (BP), pulse, the status of addiction, and type of illness were extracted from the records. Descriptive statistics were calculated, and Chi-square test to find an association between categorical variables was performed using SPSS version 16.

Results: About 72.4% of the constables were addicted to at least one habit such as alcohol consumption, smoking, and chewing smokeless tobacco and pan. Nearly 20.3% were addicted to chewing tobacco/pan followed by addition to alcohol consumption 14.6%. With the increase in age, the prevalence of hypertension also increased showing a significant association (systolic BP [SBP]: $P = 0.001$; diastolic BP [DBP]: $P = 0.001$). Similarly, higher BMI (SBP: $P = 0.008$; DBP: $P = 0.001$) and increased number of service years (SBP: $P = 0.001$; DBP: $P = 0.001$) were associated with higher prevalence of hypertension.

Conclusion: Developing an adequate evaluation of the association between chronic diseases and mortality in addition to a hazard surveillance system for tracking the risks for occupational injury and illness among police officers should be considered.

Keywords: Hypertension, police, stress

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INTRODUCTION

Police personnel face many occupational health and safety risks that can impact their physical, mental, and interpersonal relationships.^[1,2] Working conditions, workloads, fear of

severe injury or being killed on duty, lack of recognition, inadequate equipment, shooting someone in the line of duty, anti-terrorist operations, confrontation with the public, police hierarchy, and lack of job satisfaction are some of the occupation-specific stressors that Indian Policemen encounter

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in their work environment.^[3] Several studies demonstrated that the lifestyle and the constant stressful environment that the police face are the contributing factors to high rate of smoking and alcohol addiction.^[4-6] A cohort study done on US police personnel revealed that risk for the development of noncommunicable diseases and cardiovascular disease events at an earlier age is higher in this occupational group and that they die much earlier compared to other groups.^[5,7] Police officers are at higher risk for high blood pressure (BP), insomnia, increased levels of destructive stress hormones, heart problems, and posttraumatic stress disorder due to the constant job pressures.^[1] Police personnel in India can be broadly categorized into constables, inspectors, and officers. Belonging to the lowest strata, the constables obey commands of inspectors/subinspectors and impart assigned duties as part of police work.^[8] Studies on the occupational health problems among constables revealed that inadequate salaries/facilities, round-the-clock duty, no time for family, negative interaction with other police staff, harassment, role ambiguity, and negative public image are some of the factors leading to psychological stress and burn out.^[1,9,10] Irritation, antisocial behavior, conduct problems, crimes, and even suicides are some of the manifestations of stress in the workplace.^[11] To improve the work effectiveness, workplace stress management programs with the advanced strategies have become an integral part of various organizations. In the year 1998, the Government of Andhra Pradesh launched “Arogya Bhadratha” a comprehensive health scheme for the police personnel and their family members. The scheme covers treatment expenses of an exhaustive list of serious medical conditions. For the purpose of catering to the health requirements of the police on priority basis, accredited private and government hospitals across the state are empanelled and are paid from the corpus fund contribution from the personnel along with the grant for medical reimbursement contributed by the government.^[12] However, preventive programs in the government organizations and studies investigating the occupational stress among police officers in India, particularly in the state of Andhra Pradesh, are still limited.^[11] Thus, the present study is an attempt to assess the health status of the police constables and recommend preventive measures to safeguard their health.

MATERIALS AND METHODS

Data were retrieved from the health checkup records of 123 male police constables working in the Bellampalli subdivision of Adilabad district of erstwhile Andhra Pradesh. Demographic variables such as age, educational qualification, years of service, and number of children were captured. Details of height, weight, body mass index (BMI, kg/m²), BP, pulse, the status of addiction, and type of illness were

extracted from the records. BMI was classified according to the proposed criteria of the World Health Organization (WHO), underweight <18.5, normal = 18.5–24.5, overweight = 25–29.9, and obese ≥30. Normal BP was taken as <120 mmHg (systolic BP [SBP]) and <80 mmHg (diastolic BP [DBP]). BP values of 120–139 mmHg (SBP) and 80–89 mmHg (DBP) were classified as prehypertensive. Stage I hypertension was taken as 140–159 mmHg (SBP) and 90–99 mmHg (DBP), whereas BP values of >160 mmHg (SBP) and >100 mmHg (DBP) were classified as Stage II hypertension (JNC2004).^[13] Data were tabulated in Microsoft Excel 2013, descriptive statistics were calculated, and Chi-square test to find an association between categorical variables was performed using Statistical Package for Social Sciences (SPSS) version 16 (IBM). For Chi-square test, $P < 0.05$ was found to be statistically significant.

RESULTS

A total of 123 male constables were included in this retrospective study. The mean age of the constables was 33.49 years (standard deviation [SD]: 7.5), and the mean weight and height were 63.60 kg (SD: 9.5) and 170.94 cm (SD: 6.4), respectively. The mean SBP was 130.47 mmHg and DBP was 84.07 mmHg. The average heart rate was 79.37/min and the mean BMI was 21.79. Basic characteristics of the study population are shown in Table 1. The majority of the constables, i.e., 46.3% belonged to the age group of ≤30 years. The total number of years of service ranged from 6 to 10 years, i.e., 43.9%. About 73% of the constables completed higher secondary schooling. BMI in 69.9% of the constables was found to be normal, i.e., 18.50–24.99. On analyzing SBP, the majority of the constables, i.e., 53.7% were prehypertensive (120–139 mmHg). When DBP was analyzed, 39.8% were predominantly suffering from prehypertension (80–89 mmHg) and Stage 1 hypertension (90–99 mmHg). Results for addictive habits showed that 72.4% of the constables were addicted to at least one habit such as alcohol consumption, smoking, and chewing smokeless tobacco and pan. The majority of the constables, i.e., 20.3% were addicted to chewing tobacco/pan followed by addition to alcohol

Table 1: Characteristics of the study population

	Mean	SD
Age	33.49	7.566
Years of service	11.78	7.455
Weight	63.60	9.572
Height cm	170.94	6.04540
SBP	130.47	13.037
DBP	84.07	8.477
Heart rate	79.37	3.549
Number of children	2.22	1.858
BMI	21.7901	3.27898

BMI: Body mass index, SBP: Systolic blood pressure, DBP: Diastolic blood pressure, SD: Standard deviation

consumption 14.6% [Table 2]. On performing Chi-square test, from the data presented in Tables 3-5, it is evident that as the age increases, the prevalence of hypertension also increased showing a significant association (SBP: $P = 0.001$; DBP: $P = 0.001$). Similarly, higher BMI (SBP: $P = 0.008$; DBP: $P = 0.001$) and increased number of service years (SBP: $P = 0.001$; DBP: $P = 0.001$) were associated with higher prevalence of hypertension.

DISCUSSION

Occupational stress among police personnel can lead to impaired psychological well-being and physical health.^[14]

Table 2: Frequency distribution of categorical variables

Variable	count/range/Categories	Frequency (%)
Age group	≤30	57 (46.3)
	31-40	42 (34.1)
	≥41	24 (19.5)
Years of service	≤5	19 (15.4)
	6-10	54 (43.9)
	≥11	50 (40.7)
Education	Secondary school	73 (59.3)
	Intermediate College	37 (30.1)
	Bachelors and above	13 (10.6)
Addictive habits	Nil	34 (27.6)
	Smoke	12 (9.8)
	Pan/tobacco chewing	25 (20.3)
	Drink	18 (14.6)
	Two or more habits	34 (27.6)
BMI		
Underweight	≤18.49	20 (16.3)
Normal	18.50-24.99	86 (69.9)
Preobese	25-29.99	15 (12.2)
Obese class 1	30-34.99	2 (1.6)
SBP		
Normal	<120	16 (13.0)
Prehypertension	120-139	66 (53.7)
Stage 1 hypertension	140-159	36 (29.3)
Stage 2 hypertension	≥160	5 (4.1)
DBP		
Normal	<80	17 (13.8)
Prehypertension	80-89	49 (39.8)
Stage 1 hypertension	90-99	49 (39.8)
Stage 2 hypertension	≥100	8 (6.5)

BMI: Body mass index, SBP: Systolic blood pressure, DBP: Diastolic blood pressure

Among constables, various factors such as inadequate housing/security of the family, irregular working hours, inadequate provision for children's education, inconsistent policies regarding evaluation, accountability and transfer, insufficient personal time (e.g., coffee breaks and lunch), lack of encouragement from higher male officer, lack of recognition for good work, working overtime, inadequate salary, lack of holidays, lack of opportunity for advancement, and delayed promotion were contributing to significant levels of psychological stress.^[1,10] Good adaptation to traumatic stress has been associated with active and instrumental coping strategies such as gaining social support whereas maladaptive, negative coping strategies include addiction to nicotine, excessive alcohol intake, and problem gambling.^[14] Our study results were in line with the fact that the individual and psychological factors, as well as the combination, determine the nicotine dependence including the degree of dependence.^[15] The majority of the constables, i.e., 72.4% were addicted to at least one of the habits such as smoking, chewing smokeless tobacco and pan, and alcohol consumption. Addiction to chewing tobacco/pan was seen in 20.3% of the constables followed by addition to alcohol consumption 14.6%. In our study, the majority of the constables, i.e., 59.3% completed higher secondary schooling and only 10.6% of the constables attended university college. A study on the association of occupational stress factors on nicotine dependence among the Indo-Tibetan Border Police found that higher level of education can act as a protective factor against the nicotine dependence, and this was attributed to the fact that higher education increased the awareness of the risks of smoking.^[15] Worldwide, it is estimated that hypertension may be affecting about 1 billion individuals causing approximately 7.1 million deaths/year.^[13] In our study, on analyzing SBP, the majority of the constables, i.e., 53.7% were suffering from prehypertension (120–139 mmHg). When DBP was analyzed, 39.8% were predominantly suffering from prehypertension (80–89 mmHg) and Stage 1 hypertension (90–99 mmHg). A study done on the police

Table 3: Association between blood pressure and age

Age group	Normal (<120)	Prehypertension (120-139)	Stage 1 hypertension (140-159)	Stage 2 hypertension (≥160)	Total	P
SBP						
≤30	12	41	4	0	57	0.001*
31-40	3	21	17	1	42	
≥41	1	4	15	4	24	
Total	16	66	36	5	123	
Age group	Normal (<80)	Prehypertension (80-89)	Stage 1 hypertension (90-99)	Stage 2 hypertension (≥100)	Total	P
DBP						
≤30	12	31	13	1	57	0.001*
31-40	4	13	22	3	42	
≥41	1	5	14	4	24	
Total	17	49	49	8	123	

Chi-square test: * $P < 0.05$ is considered as significant. SBP: Systolic blood pressure, DBP: Diastolic blood pressure

Table 4: Association between blood pressure and years of service

Years of service	Normal (<120)	Prehypertension (120-139)	Stage 1 hypertension (140-159)	Stage 2 hypertension (≥160)	Total	P
SBP						
≤5	4	13	2	0	19	0.001*
6-10	10	36	8	0	54	
≥11	2	17	26	5	50	
Total	16	66	36	5	123	
Years of service	Normal (<80)	Prehypertension (80-89)	Stage 1 hypertension (90-99)	Stage 2 hypertension (≥100)	Total	P
DBP						
≤5	4	11	4	0	19	0.001*
6-10	11	24	18	1	54	
≥11	2	14	27	7	50	
Total	17	49	49	8	123	

Chi-square test: * $P < 0.05$ is considered as significant. SBP: Systolic blood pressure, DBP: Diastolic blood pressure

Table 5: Association between blood pressure and body mass index

BMI	Normal (<120)	Prehypertension (120-139)	Stage 1 hypertension (140-159)	Stage 2 hypertension (≥160)	Total	P
SBP						
Underweight (≤18.49)	5	14	1	0	20	0.008*
Normal (18.50-24.99)	11	47	25	3	86	
Preobese 25-29.99	0	5	8	2	15	
Obese class 1 (30-34.99)	0	0	2	0	2	
Total	16	66	36	5	123	
BMI	Normal (<80)	Prehypertension (80-89)	Stage 1 hypertension (90-99)	Stage 2 hypertension (≥100)	Total	P
DBP						
Underweight (≤18.49)	5	14	1	0	20	0.001*
Normal (18.50-24.99)	12	32	37	5	86	
Preobese (25-29.99)	0	3	10	2	15	
Obese class 1 (30-34.99)	0	0	1	1	2	
Total	17	49	49	8	123	

Chi-square test: * $P < 0.05$ is considered as significant. SBP: Systolic blood pressure, DBP: Diastolic blood pressure, BMI: Body mass index

personnel in South Indian city of Chennai found that metabolic syndrome, hypertension, and diabetes among the police were highly prevalent and indeed significantly higher when compared with the general population.^[5] According to the WHO, 62% of cerebrovascular diseases and 49% of ischemic heart diseases are due to suboptimal BP (>115 mmHg SBP) with little variation by sex.^[13]

In our study, although BMI in 69.9% of the constables was found to be normal, i.e., 18.50–24.99, a significant positive association between BMI and BP was noticed (SBP: $P = 0.008$; DBP: $P = 0.001$). Epidemiological studies among Asian population reported a positive association between BMI and BP.^[16] Similar studies among Indian police personnel revealed strong correlation between BMI and BP.^[17,18] Age and increased number of service years (SBP: $P = 0.001$; DBP: $P = 0.001$) were found to be associated with higher prevalence of hypertension in our study population. This can be due to the reason that as the seniority increases, the roles and responsibilities increase in addition to the family responsibilities subjecting them to the stressful situations and the risk of hypertension. In fact, as discussed in a study, although policemen join the

police department in good health, they retire with some stress-related disorders.^[18] In our retrospective study, only male police constables were included. Serum cholesterol, blood sugar levels, waist-to-hip ratio, and other parameters such as daily intake of fruits and duration of the physical activity were not assessed. Further detailed research considering the other important factors is required to evaluate the risk factors and the attributable risk.

CONCLUSION

Police personnel form an important occupational group who constantly work under stressful situations. It is through this research we intend to recommend the measures to reduce the stressors and their consequences among the police personnel. Before the stress becomes chronic tailor-made courses that improve the stress management skills such as stress relief camps, yoga sessions and other such programs should be organized for the city police periodically according to the gender, role, and type of work. The police should be taught to use the power of communication and persuasion. Since the police workplace offers an opportunity to screen and provide brief interventions to promote healthy lifestyles, special screening programs to

control the progress of hypertension should be initiated. As an initial therapy, policemen with prehypertension should be counseled about the lifestyle modifications to control BP. Another important intervention in preventing the upswing in the prevalence of chronic heart disease is the prevention of smokeless tobacco consumption. Implementation of effective interventions and modifying the police culture and environment making it conducive to lifestyle changes is highly essential. Innovative interventions such as educating police about health matters, training workplace staff to provide workplace health promotion activities, engaging specialist health consultants and counselors to conduct programs, use of electronic mail, mHealth applications, and other methods such as posters and seminars to deliver and raise awareness of health messages should be considered. In addition, application of information technology to capture the health status of the police personnel will improve the diagnosis, promote self-care, and help in understanding much information about their health. Work environment which includes motivation and feedback for lifestyle change should be encouraged. Provision of adequate salary, recognition for good work, quick time-bound promotions, decreasing working hours, and chances to pursue higher education are some of the other recommendations to enhance the well-being of the policemen. An adequate evaluation of the association between chronic diseases and mortality in addition to a hazard surveillance system for tracking the risks for occupational injury and illness among police officers is yet to be developed.^[19]

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Conflicts of interest

There are no conflicts of interest.

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