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Health Profile of Kolar Police Personnel: A Cross Sectional Study

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Abstract

Background: The police deal on a regular basis with an assortment of unique situations and stressors and this profession is considered as one of the top three occupations most commonly associated with workplace stress by both occupational physicians and psychiatrists. The prevalence of certain morbidities like hypertension, diabetes, obesity, low back ache and cardiovascular risk is more among police personnel than general population. **Aims**: To assess morbidity pattern among police personnel with the intention of providing inputs to the policy makers to bring about changes to address these issues of the police force. **Settings and Design:** A Descriptive Cross Sectional Study was carried out on police personnel working in 5 police stations. **Methods and Material**: Complete information regarding socio-economic-demographic details, occupational history, past and present history and family history was collected through interview. General examination including anthropometric measurements and vitals with special reference to Non Communicable diseases was recorded. Blood samples were collected to estimate Fasting Blood Sugar, Glycated Hemoglobin (HbA1C) and Lipid profile. **Results:** A total of 200 Police personnel were interviewed. Prevalence of Obesity was 68% and Overweight was seen in 16%. 23.5% were Tobacco users and 28% were consuming Alcohol. 46% of the people were suffering from Musculoskeletal Problems. 23% were diagnosed to have Diabetes Mellitus, 26% had Hypertension and 64.5% had Metabolic Syndrome. 183(91.5%) had abnormal lipid profile. **Conclusions**: Regular screening and health education programs needs to be implemented. Counseling related to lifestyle modification, addiction control and stress management should be an integral component of these health-related activities.

Key-words: Policemen, Diabetes, Hypertension and Obesity.

Introduction

The police are the law enforcement personnel. They deal on a regular basis with an assortment of unique situations and stressors. The shock of each tragedy and violent event takes a cumulative physical and mental toll on police officers in some way or the other. Increased demands of work impinging upon home life, lack of consultation and communication with the higher authorities in the organization, lack of control over workload and inadequate support have been identified as the potential factors responsible for stress among the policemen. For the longest time in law enforcement, the police are trained in policing, but not about how to maintain their mental and physical wellbeing.

Due to democratic system, political interference in policing has increased over the years. Frequent transfer at district and station house level became order of the day in various states. An undesirable nexus between police and politicians in power has developed over the years. In India the ratio of growth of police to growth of population has always gone against the former and thus disrupted population police ratio in various states.[1] Increase in drug addiction, smuggling, economic crimes, insurgency and terrorist activity have thrown

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new challenges for Indian police and the police not able to keep pace with these newer forms of organised crime by mafia gangs and arrested militants. This has caused numerous deaths and injuries to police personnel. Although India embarked on planned economic growth immediately after independence, police has not been included in national planning process and remained "non planned item".

Police work in poor conditions at police stations without basic amenities. Unlike many, they cannot afford to take leave on the hop – our bosses don't usually put us on a parade or suspend on casual leave not applied for.[2] They work routinely for 12 hours or more, often goes to a couple of days nonstop at police station with a catnap in between. The truth is that many policemen live lives of fatigue and despair, knowing that they are nothing but their wits to live by, that the concerned voice by superiors usually to the media, is more often than not spurious.[3]

On an average police officers work twelve hours every day and sometimes even put in 36 hours at a stretch during VIP bandobasts and festivals. Unlike other jobs, the police officers start the day with bad news. There is only negative feedback in terms of how many murders, robberies and rapes have taken place the previous night. Working throughout the day in such an atmosphere produces adverse psychological effects. Moreover long working hours, irregular eating habits, sleepless nights, shift duties and disturbed personnel life produces stress in the police officer's life and they become vulnerable to various disorders.[4]

Police officers often are overly fatigued because of shift work, insufficient sleep and long and erratic work hours. Long work hours and shift work severely stresses on the health and performance of police officers. These factors likely contribute to the elevated levels of morbidity and mortality, psychological distress and family disharmony observed among police. Studies have shown that certain morbidities like hypertension, diabetes, obesity and low back ache are more prevalent among police personnel.[5]

So far, very few studies have been conducted in India and information about the morbidities among police personnel in Kolar district are not available. In view of these, the present study was planned, to conduct a study to assess morbidity pattern among police personnel with the intention of providing inputs to the policy makers to bring about changes to address these issues of the police force.

Material and Methods

The Present study was undertaken in Kolar taluk of Kolar district. All the police personnel who were working on Regular basis in the five police stations in Kolar viz. District Armed Reserve police, Traffic, Gulpet, Town and Rural police stations and who fulfilled inclusion criteria and willing to take part were enrolled. Type of study: A Descriptive Cross Sectional Study. Sample size calculation: Hypothesized percentage frequency of outcome factor (overall morbidity) in the population (P) =50

- Confidence interval(95%)as z alpha =1.96
- Absolute error (d) =15%

Estimated sample size =178

[Using the formula $n=4pq/d^2$]

- Expecting 10% of Noncompliance = 18

Total sample size =196 ≈ 200

Inclusion criteria Police personnel working on permanent basis. Willing to participate in the study. Exclusion Criteria Not willing to participate in the study. Not accessible during the study period. Informed written consent explaining the purpose of the study was taken from all participants after assuring confidentiality of information in the language they were familiar and comfortable in understanding. A pretested semi-structured questionnaire was used to collect the socio demographic profile such as age, sex, service (in completed number of years), usage of tobacco, marital status, type of family and education. A complete history including any past and present history of Non communicable diseases like diabetes, hypertension, cancer, stroke and musculoskeletal morbidities, family history of Non Communicable disease, personal history including habits

were also recorded. Anthropometric measurements like Weight was measured using Berkeley bathroom dial type weighing scale recorded to the nearest 100gm and Height was measured in Franfurt plane on flat surface by using non-elastic measuring tape. Waist circumference and Hip Circumference of the individual was measured by making the subject to stand with feet close together, arms at the side and body weight evenly distributed and wearing little clothing. The subject was made to relax, and the measurements were taken at the end of a normal expiration. Each measurement was repeated twice; if the measurements were within 1 cm of one another, the average will be calculated. If the difference between the two measurements exceeds 1 cm, the two measurements were repeated followed by clinical examination. Information was also collected about any existing morbidity among participants. Health records maintained by the police personnel were verified, if available.

All the police personnel were briefed and instructed about the procedure. They were asked to abstain from any kind of food after overnight meals. (To ensure minimum 8hrs of overnight fasting). All study subjects were divided into small batches of 25 each and on a prefixed day early morning fasting blood samples were drawn which were sent for biochemical analysis. Fasting blood sugar by glucometer and Blood pressure estimation by sphygmomanometer to screen for diabetes and hypertension. Bio rad D-10 was used to estimate the HbA1c levels. Venous blood sample was collected after overnight fasting and total cholesterol, triglycerides, LDL, HDL and VLDL were estimated. All the collected data was analyzed using SPSS -22 statistical software.

Results

Most of the police were from the age group 41-50 years followed by 31-40 years. Mean age of the police was 41.94±9.7 years. Majority 182(91%) were Hindus, 195(97.5%) out of 200 police personnel were males and 159(79.5%) police were residing in the urban areas. Same is depicted in Table 1.

Table 1. Socio-Economic-Demographic Profile of the Police Personnel

Variable		N=200	%
Age	<30	25	12.5
	31-40	58	29
	41-50	71	35.5
	>50	46	23
	Mean age: 41.94 ± 9.7 years		
Religion	Hindu	182	91
	Muslim	17	8.5
	Christian	1	0.5
Sex	Male	195	97.5
	Female	5	2.5
Residence	Urban	159	79.5
	Rural	41	20.5
Education	Secondary	57	28.5
	Higher secondary	63	31.5
	Diploma	13	6.5
	Graduate	55	27.5
	Post graduate	12	6
Marital status	Married	176	88
	Unmarried	23	11.5
	Widow	1	0.5
Type of family	Nuclear	129	64.5
	Joint	25	12.5
	Three generation	46	23
Socio-economic class (Modified B G Prasad's classification)	Upper	101	50.5
	Upper middle	79	39.5
	Lower middle	17	8.5
	Upper lower	3	1.5
	Total	**200**	**100**

Majority of the police personnel 63 (31.5%) had studied up to PUC (higher secondary), 57(28.5%) had completed SSLC (secondary) followed by 55(27.5%) of them who had done graduation, 13(6.5%) had done diploma and 12(6%) had finished their post-graduation. 176 (88%) of the police were married, 129(64.5%) belonged to Nuclear family and 101(50.5%) belonged to class I, 3(1.5%) belonged to class IV while none belonged to class V as per Modified B G Prasad's classification for the month of Aug 2015.[27]

Table no.2 shows that most of the police 122(61%) were Police constables and Home guards, followed by 65(32.5%) who

were Head constables and 13(6.5%) were inspectors viz. Sub Inspectors, Assistant Sub Inspectors and Women Assistant Sub Inspectors. 67(33.5%) of 200 police were working in District Armed Reserve Police station, 36(18%) were from Kolar Town police station, 35 (17.5%) were from Gulpet station, 34(17%) were from Rural station and 28(14%) were Traffic police.

115(57.5%) out of 200 police were working in the field, 34(17%) were doing desk work which included writer and computer operator and 51(25.5%) were working at Court, Bomb squad, Dog squad, Driver, Armorer. 74(37%) had worked in the police department for more than 20 years, 73(36.5%) of the police had worked between 11 and 20 years and 53 (26.5%) had experience of less than 10 years.

Table 2. Occupational Profile of Police Personnel

Variable		N=200	%
Designation	Police constable, home guards	122	61
	Head constables	65	32.5
	Inspectors	13	6.5
Station	DAR	67	33.5
	Traffic	28	14
	Gulpet	35	17.5
	Town	36	18
	Rural	34	17
Type of work	Field	115	57.5
	Desk	34	17
	Others*	51	25.5
Experience	<10	53	26.5
(in no of years)	11-20	73	36.5
	>20	74	37
Night shifts	Yes	79	39.5
	No	121	60.5
Severity of work	Strenuous	87	43.5
(as expressed)	Sedentary	113	56.5
Physical activity	Yes	91	45.5
(during leisure time)	No	109	54.5
	Total	**200**	**100**

Table 3. Distribution of Police personnel as per Body Mass Index

BMI	N
<22.9	32
23-24.9	32
>25	136
WC (>80 for Females and >90 for Males)	**114**
WHR(>1 for Males and >0.85 for Females)	**12**

Table 4. Distribution of Morbidity among police personnel.

Morbidity	Frequency
Tobacco Consumption	47
Alcohol Consumption	56
Areca nut and Betel leaf consumption	51
Diabetes	46
Hypertension	52
Metabolic Syndrome	129
Musculoskeletal Problems	92
Abnormal Lipid Profile	183

79(39.5%) of the police personnel had worked in the night shifts and 121(60.5%) had worked in the day shift in the previous month.87 (43.5%) police personnel opined that their work was strenuous and 113 (56.5%) felt that their work was sedentary. 91(45.5%) of the police were involved in physical activity like Walking, Jogging, Yoga and Sports. for a duration of more than 30min per day for at least 5 days in a week .109(54.5%) police did not have any physical activity during leisure time.

Health risk associated with obesity occurs at lower body mass index in Asian population, so proposed BMI Classification for adult Asians was used.[6] Above table shows that 32 (16%) out of 200 had normal BMI, 32(16%) were overweight and 136(68%) were obese. 47 (23.5%) out of 200 police had history of tobacco usage. The commonest form of tobacco used was Cigarette 24 (50%), followed by chewable form of tobacco 17 (37%) and Beedi 6 (13%). 56 (28%) had habit of alcohol consumption**.** 66% of the police who were consuming alcohol in the present study were consuming brandy, whisky, rum and vodka followed by beer (25%) and wine (9%).51 (25.5%) police personnel had history of betel leaf Chewing.

Diagnosis of diabetes was done based on American Diabetic Association Criteria for diabetes detection. 46 (23%) police were diabetic, 21 (10.5%) were having impaired fasting glucose and 133 (66.5%) were normal by fasting blood glucose estimation. Out of 48 police (46 who had FBS Values >126mg/dl and 2 who had Values <109 but was a known Diabetic) who were diagnosed to have Diabetes, 29 were already known diabetics and 19 were newly diagnosed to have diabetes.[7]

Hypertension was diagnosed as per guidelines of Joint National Commission on Detection, Evaluation and Treatment of High Blood Pressure (JNC 7). 52 police were diagnosed to have hypertension among whom 32 were newly diagnosed to have Hypertension.[8]

MS is diagnosed if at least three of the following five factors are positive Variable Condition

- Waist circumference >102 cm in males, >88 cm in females (cut-off for waist circumference was lowered from 102 cm to 90 cm in males and from 88 cm to 80 cm for Asians based on the ethnic differences for central obesity)[9,10]
- Blood pressure SBP≥130 and/or DBP≥85 or treatment for previously diagnosed hypertension
- Triglycerides ≥150 mg/dl or drug treatment for elevated triglycerides
- HDL <40 mg/dl in males, < 50 mg/dl in females or drug treatment for low HDL
- Glucose >110 mg/dl or treatment for previously diagnosed diabetes

129 (64.5%) police personnel had metabolic syndrome.

92 (46%) police had one or more of the musculoskeletal problems. 41% of the police experienced Lower Back Ache, 31% Knee pain, 19% Neck pain and 6% had Shoulder pain.[11]

Any subject having at least one of the above values more than cut off values were considered to have abnormal lipid profile.[9,10]

- Total Cholesterol - >200mg/dl
- Triglycerides - >150mg/dl
- LDL - >130mg/dl
- HDL - <40mg/dl for males , <50mg/dl for females

183 police personnel had abnormal lipid profile.

Discussion

In the present study most of the police were from the age group 41-50 years followed by 31-40 years. Mean age of the police was 41.94±9.7 years. The mean age of the police was 41.61 ± 5.2 years in a study done by Saha A et al.[26] Similar observation of mean age among the police was observed in various studies across India.

In the present study majority 101 (50.5%) belonged to Socio-economic status of class I followed by 79(39.5%) to class II as per Modified B G Prasad's classification for the month of Aug 2015 whereas (53%) police belonged to the class III by Almale et al among Mumbai police which was contrasting to the present study.[15] 74(37%) had worked in the police department for more than 20 years, 73 (36.5%) had worked between 11 and 20 years and 53(26.5%) had experience of less than 10 years. 47% of the police had experience of 15-25 years and 33% had experience of 25 -35 years as observed in a study by Almale et al at Mumbai.[15]

A lower prevalence of overweight and obesity was observed in various studies done in India.[12,22] The prevalence of obesity in our study was similar to various studies done. [4,14,16,25.]The possible factors identified for this increased prevalence of obesity were lack of physical exercise, consumption of food at odd times and food consumption at the road side.

Prevalence of smoking was ranging from 20.2% to 27.99% in various studies done on police personnel in India which was similar to the present study finding. The possible factors which would have contributed to this prevalence were job stress, low levels of job satisfaction and influenced by police who were smokers.[4,12,16,22,23,24,25] A higher prevalence of smoking of 34.7%, 48% and 55% was observed in various studies in India.[13,15,20] Ms. Elsa Mary at Kochi city revealed 14% had history of smoking which was less when compared with the present study.[18] 28% police had history of alcohol consumption. 66% of them were consuming hot drinks (brandy, whisky, rum and vodka) followed by beer (25%) and wine (9%). Prevalence of alcohol consumption was ranging from 20.8% to 31.9% in various studies done on police personnel in India which was similar to the present study.[4 ,12,16,15,23,24] A higher prevalence of alcohol consumption of 45.7%, 35.7% and 48% was observed which was higher than the present study.[14,20,25] The possible factors for high alcohol consumption observed in the present study as expressed were prolonged working hours, lack of recreational facilities at work place and pressure from the higher ups in the department which lead them to stress and most police tackled this stress by consuming alcohol.

In the present study 23% police were diabetic, 10.5% were having impaired fasting glucose and 66.5% were normal (by Fasting Blood Glucose level). In comparison lower prevalence of Diabetes Mellitus was observed ranging from 4.45% to 15% in various studies done on police personnel in India. [20,21,13,14,22,23,16,15,18,17] Prevalence of Diabetes Mellitus was 33.6% and 37% in various studies in India among police personnel which was higher than the present study.[4,25,12] The possible reasons for this increased prevalence in previous studies identified by them were lack of physical activity during leisure time, obesity, stress, positive family history of diabetes and lack of awareness about the risk factors for diabetes .Similar observations were made in the present study.

26% police were diagnosed to have hypertension. Prevalence of Hypertension was 17.6%,20.7%,21%,25% and 26.6% in various studies conducted across India which was close to the observation made in the present study.[21,23,18,13,16] In comparison lower prevalence of hypertension ranging from 9 to 15% was noted in few studies.[20,22,19] Prevalence of Hypertension was ranging from 30.5% to 58.5% which was higher than the present study.[25,12,14,15,4] High fatty food consumption, irregular dietary habits, obesity, stressful environment, lack of physical exercise were risk factors identified for high prevalence.

Prevalence of metabolic syndrome was 16.8% in a study by Thayyil et al.[14] A higher prevalence of metabolic syndrome of 64.5% was observed in the present study which was similar to the observation done by Tharkar et al in Chennai which was 57.3%.[4] The probable reasons for increased metabolic syndrome in Kolar police could be due to poor life style choices, job stress, low level of Job satisfaction, drinking and smoking habits. Prevalence of MSDs was 24.8% and 29.16% respectively in other studies conducted in India which was less when compared to the present study prev-

alence of 46%. The increase in the prevalence of MSDs in the present study could be due to prolonged standing during working hours, unusual duty hours, bad posture and frequent travel while patrolling. A higher prevalence of 62.3% for MSDs was observed among Mumbai police in a study done by Almale et al.[15]

CONCLUSION

Police personnel as a group selected for remarkable physical fitness at the entry stage fail to maintain and succumb to lifestyle diseases that are very much preventable. Similar results from other parts of India and the world calls for attention from policy makers to introduce effective policies for taking care of this issue. Workplace programs to promote the health and fitness of police officers are commonly lacking, but can be an effective means for reducing morbidities. Regular screening and health education programs needs to be implemented. Counselling related to lifestyle modification, addiction control and stress management should be an integral component of these health-related activities.

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