

Prevalence of Chronic Morbidity and Sociodemographic Profile of Police Personnel – A Study from Gujarat

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ABSTRACT

Introduction: The police personnel are special group of population that work for minimum 12 hours a day. They are at risk of various types of chronic morbidities.

Aim: To determine the sociodemographic, chronic morbidity and health profile of police personnel of Vadodara district.

Materials and Methods: It was a cross-sectional study conducted on the police force of Vadodara district, Gujarat, India. The present study was the outcome of health checkup camp for police personnel. Total 982 police personnel participated in the aforementioned study. Information regarding the sociodemographic profile, addiction to alcohol drinking, tobacco chewing or smoking, diagnosed chronic morbidities, BMI, blood sugar and history of exercise and yoga was collected. Data collected was entered into Microsoft Excel 2007 and analysed by using Epi-Info 7. Statistical methods used included

frequencies and proportions for categorical data while range, mean and standard deviation were calculated for continuous data. For bivariate analysis, Chi-square test was used.

Results: In the study population, 95.10% were males. The prevalence of chronic morbidity, hypertension and diabetes were 9.5%, 5% and 2.6% respectively. About 47.05% had normal BMI and mean BMI was 24. The study revealed that 7.64% police personnel had the habit of smoking, 3.16% consumed alcohol whereas 24.03% consumed tobacco products. It was found that 138 (14.05%) were active in sports and 304 (30.95%) were actively involved in exercise while 44 (4.48%) were involved in yoga.

Conclusion: The prevalence of hypertension (5%) and diabetes (2.6%) were low as compared to the general population (NFHS-4). This can be attributed to health consciousness prevalent among the population. A substantial number of study population were involved in sports, exercise and yoga.

Keywords: Diabetes, Exercise, Hypertension, Tobacco, Yoga

INTRODUCTION

The police personnel are the law enforcement people who are dealing with stressful situations on day to day basis [1,2]. Stress is a common factor in each and every organization at various levels of hierarchy including police force. Job of police is generally acknowledged as more stressful than any other occupation [3]. The major brunt of this job is borne by constables as they are the foot-soldiers of police in India [4]. The shock of each tragic and violent event has a cumulative physical and mental strain on each police officer in some way or the other. Extensive working hours not only intrude into their personal life, but also result in their inability to consult and communicate with the higher authorities in the organization. Lack of workload management and inadequate support at workplace have been considered as the probable factors responsible for the stress in the policemen [1,2]. The police training focuses on law enforcement and enhances performance in service, but their physical and mental well being are neglected [5].

Exposure to acute and chronic stressful events at work can result in impaired psychosocial well being and physical health. The police personnel face strong job demands in addition to constant political and media scrutiny. There are many professional and legal strictures that circumscribe the policing response, which can lead to frustration. This overload of job demands causes strain in individual police officers. Moreover, prolonged working hours, irregular eating habits, inadequate sleep or sleepless nights, transferable jobs, shifting duties and disturbed home life contributes to mounting stress in the police officer's life. This results in vulnerability towards various diseases such as hypertension, diabetes, obesity, joint pains, paralytic strokes and heart attacks [3-7].

The police are expected to perform various law and order related duties without losing their composure and sensitivity while keeping

complete emotional control. Suppression of negative emotions like anger, fear, and grief have harmful consequences on the immune system and worsen the physical health [4,8,9]. To alleviate the stress, the police officers tend to acquire maladaptive behaviors like drinking alcohol, smoking and overeating contributing significantly to their deterioration [10]. These together make police vulnerable to individual health as well as society health at large. A physically and psychologically fit officer will respond more aptly and efficiently in various situations that they encounter [11].

The assessment of well being of officers is overlooked throughout their career. Unlike the regular maintenance of their vehicles, firearms and other equipments, the mandatory scheduled regular health checkup program for the officers are not carried out [11].

Thus, this study was conducted with the aim to determine the sociodemographic, chronic morbidity and health profile of police personnel of Vadodara district.

MATERIALS AND METHODS

A cross-sectional study was performed during the health check-up camp of Police Personnel conducted at Dhiraj Hospital, Piparia. It was conducted between May 2015 and June 2015. All police personnel of Vadodara district were invited to participate in the study as a part of health screening camp. Out of 1500 police personnel invited for the camp, 982 (65.47%) participated in the study. Uncooperative and seriously ill police personnel were excluded from the study. After taking permission from Institutional Ethical Committee and Human Research Review Panel of Smt B K Shah Medical Institute and Research Center, the study was commenced.

The trained team of researchers conducted the health check-up camp for police personnel in Dhiraj hospital. After taking consent from the study participants, a predesigned semi-structured performa

was used for data collection. The performa included information regarding demographic characteristics such as their name, age, sex, religion, caste, department he/she works and the post held, duration of service in police, address. Additionally, it included anthropometric parameters such as height, weight, BMI. The performa included data regarding the addiction to alcohol drinking, tobacco chewing or smoking, history of any major illness such as diabetes, hypertension, tuberculosis, jaundice, any cardiac, kidney or skin disease or surgical operation etc. It also included information regarding type of dietary intake, exercise, yoga or meditation and being involved in a sports activity.

STATISTICAL ANALYSIS

Data collected was entered, cleaned, validated using Microsoft Excel 2007 and analysed by using Epi-Info 7. Statistical methods used included frequencies and proportions for categorical data whereas range, mean and standard deviation for continuous data were calculated. For bivariate analysis, Chi-square test was used.

RESULTS

[Table/Fig-1] shows the sociodemographic profile of 982 police personnel who attended the health check-up camp conducted in Dhiraj hospital. Of the study population, 934 (95.10%) were males and 48 (4.90%) were females. Majority (32.8%) were in the age group of 18-30 years. 966 (98.37%) were Hindus while the rest were Muslims. A total of 521 (53.05%) had mixed diet while the remaining 461 (46.95%) were vegetarian.

Mean height of police personnel was 166.93±4.356 cm (160-196 cm, standard error - 0.14) while their mean weight was 66.87±9.953 kg (50-100 kg, standard error - 0.32). Mean BMI was 24.00±3.44 kg/m² (18.52-32.77 kg/m², standard error - 0.11), while their mean pulse was 79.37±7.743 per minute (60-120 per minute, standard error - 0.25).

A total of 514 (52.34%) individuals had duration of their service as a police under 10 years and 468 (47.66%) had 11 and more years of service. Majority 96.87% study participants were below officer's rank. A 31.67% of personnel had the habit of smoking or chewing tobacco. Also, 3.16% personnel disclosed their addiction to alcohol.

As shown in the [Table/Fig-2] there was no significant statistical association between tobacco products consumption and duration of police service ($\chi^2 = 0.3353$, df = 2, p-value = 0.5625) while there was significant increase in the alcohol consumption of police personnel with their increasing service duration ($\chi^2 = 9.0358$, df = 2, p-value = 0.00264).

A total of 94 (9.57%) police personnel had history of chronic illnesses like diabetes, hypertension, renal diseases, thyroid, cardiac disease etc. Thus, the prevalence of chronic morbidity was 9.5%. The distribution of morbidity is shown in [Table/Fig-3]. A total of 48/94 (51.06%) were diagnosed cases of hypertension and 25/94 (26.60%) were diagnosed cases of diabetes. Thus, prevalence of diagnosed cases of hypertension was 48/982 (5%) and prevalence of diagnosed cases of diabetes was 25/982 (2.6%). Other morbidities are described in [Table/Fig-3].

[Table/Fig-4] shows that there was significant association between BMI of police personnel and known cases of diabetes and hypertension. Around 462 (47.05%) had normal BMI (18.50 - 22.99 kg/m²) while 160 (16.29%) had BMI in the overweight at risk category (23.00 - 24.99 kg/m²) and 289 (29.43%) had BMI in the category of obese Class - I (25.00 - 29.99 kg/m²) while the rest 71 (7.23%) had BMI in the category of obese Class - II (30.00 - 34.99 kg/m²) as per Asian BMI Classification criteria [12]. Thus, the prevalence of overweight and obese was 520/982 (52.95%). It was found that only 138 (14.05%) were involved in sports and 304 (30.95%) were actively involved in exercise beyond their works schedule while about 44 (4.48%) were involved in yoga or other type of meditation.

[Table/Fig-5] shows the distribution of participants as per their random blood sugar level. It was found that 34 participants having no prior history of diabetes, had blood sugar more than 200 mg/dl. They were sent for further evaluation and diagnosis.

Sociodemographic profile Variables		Frequency (n=982) (%)
Age in years	18 - 30	322 (32.80)
	31 - 40	267 (27.20)
	41 - 50	223 (22.70)
	> 51	170 (17.30)
Sex	Male	934 (95.10)
	Female	48 (4.90)
Religion	Hindu	966 (98.37)
	Muslim	16 (1.63)
Diet	Mixed	521 (53.05)
	Vegetarian	461 (46.95)

[Table/Fig-1]: Sociodemographic profile of police personnel participating in the study (n=982).

Duration of Police Service in years	Type of Tobacco Products Consumption			Alcohol Consumption		Total
	Smoke	Smokeless	Nil	Present	Absent	
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
≤ 10	15 (2.92)	152 (29.57)	347 (67.51)	08 (1.56)	506 (98.44)	514 (100)
11 and more	60 (12.82)	84 (17.95)	324 (69.23)	23 (4.91)	445 (95.09)	468 (100)
Total	75 (7.64)	236 (24.03)	671 (68.33)	31 (3.16)	951 (96.84)	982 (100)

[Table/Fig-2]: Distribution of police personnel according to their addiction to tobacco and alcohol and duration of service (n=982).

Morbidity	Frequency (n=94) (%)
Hypertension	48 (51.06) *
Diabetes	25 (26.59) *
Renal Diseases including Calculi	10 (10.64)
Cardiac Disease	06 (6.38)
Thyroid	03 (3.19)
Tuberculosis	03 (3.19)
Cataract	02 (2.13)
Piles	02 (2.13)
Others including Paralysis, Seizures, Sickle Cell Anemia, GERD, Asthma, BPH	06 (6.38)

[Table/Fig-3]: History of chronic morbidity of police personnel (n=94).
*11 participants have both diabetes and hypertension so they are placed in both types of morbidity.

BMI	Known Cases of Hypertension		Known Cases of Diabetes		Total	Statistical Significance
	Present	Absent	Present	Absent		
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	
18.50-22.99	08(1.73)	454(98.27)	06(1.30)	456 (98.70)	462 (100)	For Hypertension $\chi^2 = 28.768$, df = 3, p-value = < 0.001 For Diabetes $\chi^2 = 15.881$, df = 3, p-value = 0.001
23.00-24.99	07(4.37)	153(95.63)	03(1.88)	157 (98.12)	160 (100)	
25.00-29.99	23(7.96)	266(92.04)	08(2.77)	281 (97.23)	289 (100)	
30.00-34.99	10(14.08)	61(85.92)	08(11.27)	63 (88.73)	71 (100)	
Total	48 (4.89)	934(95.11)	25(2.55)	957 (97.45)	982 (100)	

[Table/Fig-4]: Distribution of police personnel according to their BMI and known cases of hypertension and diabetes (n=982).

* - Likelihood ratio Chi-square test calculated as 2 cells (25.0%) have expected count less than 5. The minimum expected count is 1.81.

Known cases of diabetes	Blood Sugar level (n=854)*			Statistical Significance
	≤ 200 mg/dl	> 200 mg/dl	Total	
	No. (%)	No. (%)	No. (%)	
Yes	14 (56.00)	11 (44.00)	25 (100)	Pearson Chi-square = 69.61, df = 1, p-value = < 0.001
No	795 (95.90)	34 (4.10)	829 (100)	
Total	809 (94.70)	45 (5.30)	854 (100)	

[Table/Fig-5]: Distribution of police personnel according to their blood sugar level and known cases of diabetes (n=854)*

* Out of 982, only 854 were tested for blood sugar. Reasons were non-willingness for blood test.

DISCUSSION

The present study was conducted to understand health and chronic disease pattern among the police personnel. Majority of the study participants were male (95.10%). Study conducted by Aggrawal S et al., on police personnel in Maharashtra in 2014 also found predominant male population (95.18%) [13]. Similarly, Johns F et al., in Kerala in 2008 had reported 93.2% males participants while the study conducted by Selokar D et al., in Wardha had 95.10% males [14,15]. Thus, it reflects that policing is male dominated service. Gender equality is skewed by a large margin in this profession, particularly in country like India.

In the present study, 32.8% belonged in the age group of 18-30 years followed by 27.2% in the age group of 31-40 years, 22.7% in the age group of 41-50 years and 17% in the age group of 51-60 years. Study conducted by Aggrawal S et al., reported that 24.04%, 57.95%, 18.01% belonged to age groups 31 to 40 years, 41 to 50 years and 51 to 60 years respectively [13]. Study conducted by Selokar D et al., reported 31.40%, 34.30%, 24.50% and 9.80% belonging to the age groups of 21-30 years, 31 to 40 years, 41 to 50 years and 51 to 60 years respectively [15].

In the present study, the prevalence of chronic morbidity was found 9.5% which includes diabetes, hypertension, renal diseases, thyroid, cardiac disease and others [Table/Fig-3]. The prevalence of hypertension was 5% and prevalence of diabetes was 2.6% in the present study. Study conducted by Aggrawal S et al., reported hypertension (15.82%), diabetes mellitus (11.98%) in the police personnel [13]. Study conducted by Ramakrishnan J et al., on policemen in Puducherry in 2008-2009 showed that the prevalence of diabetes was 33.6% and that of hypertension was 30.5% [16]. Study conducted by Johns F et al., reported 17.9% hypertension and diabetes 12.5% [14]. Thus, the prevalence of hypertension and diabetes were lower as compared to other studies. This could be due to study participants being involved in sports activities (14%), exercises (31%) and yoga (4.48%).

Study conducted by Parekh A et al., reported 20.4% hypertension in population of Vadodara district [17]. While study conducted by Iyer U et al., reported 24% hypertension and 12% diabetes in Vadodara city [18]. NFHS-4 [19] reported overall prevalence of hypertension in females 9.7% and 13% in males in Gujarat. NFHS-4 [20] reported prevalence of hypertension in females 13.8% and 15.4% in males in Vadodara district of Gujarat. WHO reported overall prevalence of hypertension and diabetes 25.4% and 8.5% respectively in India in 2014 [21].

In the present study, mean BMI was 24.00±3.44 which is within the BMI range of overweight at risk for Indian population (23.00 to 24.99) [12]. The study conducted by Tharkar S et al., in Chennai reported 25.90±4.10 mean BMI which was showing obese condition [22]. They also reported 57% of prevalence of metabolic diseases among this population. WHO reported Indian population having mean BMI of 21.9 [21].

In the present study, 47.05% had normal BMI while 16.29% had BMI in the overweight at risk category and 289 (29.43%) had BMI in the category of obese Class – I while the rest 71 (7.23%) had BMI in the category of obese Class – II as per Asian BMI classification criteria [12]. Study conducted by Little M et al., showed that 40.3% had

normal BMI, 15.8% were overweight at risk and 17.7% belonged to obese class I while 3.5% belonged to obese class II [23]. Study conducted by Sen J et al., showed that 58.5% had normal BMI, 22% were overweight at risk and the rest 19.5% were obese [24].

In the present study, 7.64% police personnel had habit of smoking and 3.16% consumed alcohol while 24.03% consumed tobacco products. Thus, overall prevalence of addiction was 34.83%. Study conducted by Johns F et al., reported habit of smoking in 13.2% and alcoholism in 9.1% of them [14]. Study conducted by Selokar D et al., reported 76.5% having the problem of addiction [15]. Study conducted by Tharkar S et al., reported 22.60% smoking, 31.10% alcohol and 8.50% tobacco consumption [22]. Smoking and alcohol consumption both were low compared to the previous studies.

LIMITATION

The present study was conducted along with camp of police personnel. Of total police force in district, 65% has participated in present study. This reflects 45% of participants were out of study. This may be one of the limitations. Sampling method was purposive.

CONCLUSION

The study reported around 9.5% chronic morbidities among the police personnel which was quite low compared to other studies. The prevalence of hypertension (5%) and diabetes (2.6%) were also low compared to the general population. (NFHS-4) This can be attributed to health consciousness prevalent among the population. A substantial number of study populations were involved in sports, exercise and yoga. Also, the addiction and alcohol consumption was found low.

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