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Diabetes – How Much Affected Our Police Personnel Are? - A Cross Sectional Study in District Gwalior (M.P.)

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Abstract

Background: Police work is considered as inherently stressful on account of several factors such as long and unpredictable hours of work, constant exposure to traumatic situations, they have irregular diet, take overtime and shift work with no rest. All these factors ultimately lead to diabetes and negative impact of health outcomes. The long–term effects of diabetes mellitus include progressive development of the multiple complications. Objective: To determine the prevalence of diabetes mellitus and its associated risk factors among the police personnel stationed at various Police Stations in District Gwalior. **Material and Methods:** A cross sectional Study was conducted at various police stations in district Gwalior. Requisite permission was taken from Superintendent of Police District Gwalior, along with in charge of all the police stations visited. Prior consent was taken from all the police personnel for the study. A total of 402 police personnel from rural and urban police stations of District Gwalior were included. Study was conducted from April 2017 to March 2019. Logistic regression analysis was used to describe the possible association between independent variables and the outcome variable as Diabetes Mellitus among the police personnel of district Gwalior. **Results:** Total 402 police personnel participated in the study, among them 200 were from rural and 202 from urban police stations. The overall cases of diabetes were 11.9%, among them 54.2% were diagnosed in the current study. The mean RBS level of the participants was 136.6 mg/dl. 13.4% of urban and 10.5% of rural counterparts was found to be diabetic. 207(51.1%) of the participants had BMI more than 25kg/mtr2. P value <0.05 was considered significant. **Conclusion:** There is high prevalence of diabetes among police personnel. As the hierarchy and duration in service increases the prevalence of diabetes has also increased. Regular health monitoring with physical exercise can put positive impact on the health status among them.

Keywords: Police, Gwalior, Diabetes, Duty.

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INTRODUCTION

Diabetes mellitus (DM) is emerging as a major healthcare challenge for India. According to the World Health Organization (WHO) estimates, India had 32 million diabetic subjects in the year 2000 and this number would increase to 80 million by the year 2030.[1] Police work is considered as inherently stressful on account of several factors such as long and unpredictable hours of work, constant exposure to traumatic situations, dealing with anti-social elements, strong disciplinary mechanism, etc.[2] Occupational stress can alter blood glucose levels in an undesirable manner and can affect the management of dysglycemia and its complications.[3]

The term diabetes mellitus describes a metabolic disorder of multiple etiologies characterized by chronic hyperglycemia with disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action, or both. The long–term effects of diabetes mellitus include progressive development of the specific complications of retinopathy

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with potential blindness, nephropathy, and/or neuropathy with risk of foot ulcers, amputation, Charcot joints, and features of autonomic dysfunction. People with diabetes are at increased risk of cardiovascular, peripheral vascular and cerebro-vascular disease.[4]

Given the fact that policemen lead a physically inactive life, they have irregular diet and limited choice of food while on duty, take overtime and shift work, suffer from disrupted sleep patterns with stress and have high rates of tobacco and alcohol consumption than the general population.[5, 6, 7]

There is no scientific study done on the prevalence of diabetes among the police personnel of district Gwalior. Therefore, this study was conducted among the Gwalior district police to evaluate and determine the prevalence and associated risk factors for diabetes.

METHODOLOGY

A cross sectional Study was conducted to find out the prevalence of diabetes mellitus and its associated risk factors among the police personnel stationed at various Police Stations in District Gwalior.

By considering the prevalence of diabetes among police personnel as 12% 8, 9 we calculated the sample size using precision/absolute error of 5% and at type 1 error of 5% with 95% confidence interval, the sample size turns out to be 149.76 ~ 150 minimum. To cover both rural and urban areas together, total sample size taken for the study was minimum 200 police personnel each from rural and urban areas from Gwalior District. All police personnel who wanted to participate in the study and were working for more than 1 year were included in the study. Those who didn't want to participate and working for less than one year or could not fill the form completely due to any reasons were excluded.

The ethical committee permission was taken prior to conducting the study. The purpose of study was explained to the Superintendent of Police, District Gwalior and permission to carry out the study was obtained. Officer in-charge of the respective police station was contacted and requested for help and support to carry out the Data collection and Anthropometric measurements. Informed written consent in Hindi was obtained from police personnel before the commencement of interview one by one.

Anthropometric and clinical examinations were done to assess height (cm), weight (kg), waist circumference (cm), body mass index (BMI), blood pressure (BP) (mm Hg), and random blood sugar (RBS) levels (mg/dl). RBS was measured using, Dr Morepen Gluco One BG-03 instrument. Mercury sphygmomanometer was used to measure the blood pressure of each participant. If abnormally high reading was recorded on 1stmeasurement, one more reading was taken for confirmation after 15-30 min of 1st reading. BMI was calculated using Asian Classification of BMI.10

The Perceived Stress Scale (PSS) is the most widely used psychological instrument for measuring the perception of stress. It's a 10 item question with 5 options (0 to 4) to choose from which includes 0 - never, 1 - almost never, 2 - sometimes, 3 - fairly often, 4 - very often. To calculate the score first we had to reverse the scores for questions 4, 5, 7, and 8. On these 4 questions, scores can be changed like e.g. 0 = 4, 1 = 3, 2 = 2, 3 = 1, 4 = 0. Scores ranging from 0-13 would be considered low stress. Scores ranging from 14-26 would be considered moderate stress. Scores ranging from 27-40 would be considered high perceived stress.11

Statistical analysis was performed with SPSS software, version 16.0. Simple frequency format was used for Categorical variables. Standard deviation was applied to percentages and quantitative and numerical variables. For hours of duties performed by the police personnel, we had calculated Median and Range as mean hours of duties was less than the standard deviations calculated, also wherever applicable. Logistic regression analysis was used to describe the possible association between independent variables and the outcome variable as Diabetes Mellitus among the police personnel of district Gwalior.

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RESULTS

Total 402 police personnel were included in the study from both rural and urban police stations. The overall cases of diabetes (RBS ≥200mg/dl) were 48(11.9%), among them 29(60.4%) were diagnosed in the current study. The mean RBS level of the participants was 136.6 mg/dl. 27(13.4%) of urban and 21(10.5%) of rural counterparts were found to be diabetic and had RBS ≥200mg/dl while 22(10.9%) of Urban and 19(9.5%) of rural police participants had RBS in range of 146-199mg/dl.

The mean age of the participants in the study was 42.6years (SD11.7). As the age advanced the prevalence of DM has also increased. The statistically significant socio-demographic variables of the participants are shown in Table 1. Total 377(93.8%) were male police personnel, among them 47(12.5%) were diabetic with RBS ≥200mg/dl and 39(10.3%) had RBS between 146–199mg/dl. while 1(4.0%) and 2(8.0%) of total 25(6.2%) female participants were diabetic with RBS ≥200mg/dl and between 146-199mg/dl respectively [Table 1].

Majority of the participants i:e. 18 (18%) with intermediate level education had RBS ≥200mg/dl while it was only 5 (11.1%) for post graduates or higher education level. With the education the prevalence of Diabetes has also decreased, which justifies that education plays a significant role in understanding diabetes and appropriate measures for the same.

As per the BG Prasad classification of socioeconomic status, 32(14.7%) of the participants in the upper class were diabetic while it was 0(0.0%) for those who come in the category of lower middle class.

The mean BMI of the male participants in the current study was 25.3kg/mtr2 (SD 3.2) while for female it was 23.8kg/mtr2 (SD 3.2). As per the Asian Classification of BMI it comes in the category of Obesity class I for male participants and pre-obese for female. For BMI and DM, 207(51.5%) had BMI >25 kg/mtr2 among them 31(14.9%) developed diabetes. Also with increase in Waist circumference the proportion of participants with Diabetes has also increased. The mean waist circumference for male police personnel was 88.5 cm (SD 7.6) while for female it was 87.0 (SD 7.6) which is a significant risk factor for diabetes and other co-morbidities.

Duration of service in police department was also associated with the increased prevalence of Diabetes. The mean duration of service for the participants was 19.3 years (SD 11.8). While mean 2.2yrs (SD 1.8) was the duration for which police personnel were deployed in the current postings. Increase in hierarchy was also associated with increased prevalence of Diabetes and was significant statistically. Significant findings for service profile and diabetes can be seen in [Table 2].

Exercise helps in dealing with stress and disease free living. As per the current study the mean duration of exercise was 52.3 min (SD39.8) per day while 184(45.7%) didn't do exercise at all. Mean 3.2 days per week of exercise was done by police personnel in District Gwalior. The variables which are risk factors for Diabetes and statistically significant, are shown in [Table 3].

Police personnel smoke with median 0 cigarettes (range 30) per day. 69(17.4%) has h/o tobacco consumption for more than 20 years. 112(27.8%) reported consuming alcohol.

The Perceived Stress Scale (PSS) is a measure of the degree to which situation in one's life are appraised as stressful. As per findings the mean score of the participants was 16.9 (SD 3.6) which comes in the category of moderate level score.

Anova and Multinomial Logistic regression analysis was used to describe the possible association between independent variables and the outcome as diabetes. At start all the variables were included in the regression model, later less significant variables were excluded one by one. Independent variables are having positive impact on outcome variables with p value less than 0.05 and chi square of 251.9 for final model suggests that model is a fit. Both

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Pearson and Deviance in goodness of fit model is not significant with p value more than 0.05 and chi square of 912.5 and 708.2 respectively. Pseudo R square in Cox and Snell model and Nagelkerkes model explains that 46.6% and 62.6 % of variance observed in the outcome variables can be explained by independent variables.

The probability of RBS less than 140 mg/dl is 2.7 units less in general category police participants as compared to SC/ST participants (with respect to RBS ≥200mg/dl) and is statistically significant with p value less than 0.05.

For BMI, there is 11.4 units more chances of RBS <140mg/dl in underweight participants as compared to Obese I category (relative to RBS ≥200mg/dl). Findings are significant with p value less than 0.05.

Those who work for 8 to 12 hrs a day are predicted to have 2.48 units less chances of having RBS between 141-199 mg/dl as compared to those who work for more than 12 hrs a day (relative to RBS ≥200 mg/dl). All the significant findings in the Anova and Multinomial regression model can be seen in the Table 4 and 5 repectively [Table 4].

Table 1: Distribution of police personnel according to their Socio-demographic variables and anthropometric measurements in context to Diabetes Mellitus with calculated Proportions, Pearson Chi Square and P values. (N=402)

Variables		Random Blood Sugar Level			Total
		≤ 140 mg/dl	141- 199 mg/dl	≥ 200 mg/dl	
Age (years)	Upto30 (99)	93 (93.9%)	5 (5.1%)	1 (1.0%)	χ2 -36.78 P value = 0.000001
	31-40 (73)	62 (84.9%)	8 (11.0%)	3 (4.1%)	
	41-50 (94)	70 (74.5%)	10 (10.6%)	14 (14.9%)	
	>50 (136)	88 (64.7%)	18 (13.2%)	30 (22.1%)	
Caste Category	General (214)	150 (70.1%)	31 (14.5%)	33 (15.4%)	χ2 -17.21 P value = 0.002
	OBC* (98)	83 (84.7%)	7 (7.1%)	8 (8.2%)	
	SC/ST† (90)	80 (88.9%)	3 (3.3%)	7 (7.8%)	
Marital Status	Single (30)	29 (96.7%)	1 (3.3%)	0 (0.0%)	χ2 -16.21 P value = 0.013
	Married (369)	282 (76.4%)	39 (10.6%)	48 (13.0%)	
	Divorced (01)	0 (0.0%)	1 (100.0%)	0 (0.0%)	
	Widowed (02)	2 (100.0%)	0 (0.0%)	0 (0.0%)	
Body Mass Index-Asian Classification	Under weight (07)	7 (100.0%)	0 (0.0%)	0 (0.0%)	χ2 -14.82 P value = 0.022
	Normal (188)	159 (84.6%)	12 (6.4%)	17 (9.0%)	
	Over weight (175)	127 (72.6%)	24 (13.7%)	24 (13.7%)	
	Obese (32)	20 (62.5%)	5 (15.6%)	7 (21.9%)	
Waist circumference (cm)	≤ 90 for Male (221)	187 (84.6%)	16 (7.2%)	18 (8.1%)	χ2 -19.82 P value = 0.003
	≤ 80 for Female (06)	6 (100.0%)	0 (0.0%)	0 (0.0%)	
	> 90 for Male (156)	104 (66.7%)	23 (14.7%)	29 (18.6%)	
	> 80 for Female (19)	16 (84.2%)	2 (10.5%)	1 (5.3%)	
Location of police station	Urban (202)	153(75.7%)	22(10.9%)	27(13.4%)	χ2 -1.12 P value = 0.5
	Rural (200)	160(80.0%)	19(9.5%)	21(10.5%)	
* Other backward class, † Scheduled caste/Scheduled tribe					

Table 2: Distribution of police personnel according to their service profile in context to Diabetes Mellitus with calculated Proportions, Pearson Chi Square and P values. (N=402)

Service	Random Blood Sugar Level	Total

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		≤ 140 mg/dl	141- 199 mg/dl	≥ 200 mg/dl	
Years of services	≤ 10 (135)	125 (92.6%)	08 (5.9%)	02 (1.5%)	χ2 -38.11 P value = 0.000001
	11 – 20 (65)	53 (81.5%)	08 (12.3%)	04 (6.2%)	
	> 20 (202)	135 (66.8%)	25 (12.4%)	42 (20.8%)	
Present Service Rank	Constable (261)	222 (85.1%)	21 (8.0%)	18 (6.9%)	χ2 -30.87 P value = 0.000027
	Head Constable (64)	42 (65.6%)	08 (12.5%)	14 (21.9%)	
	ASI/SI (70)	46 (65.7%)	09 (12.9%)	15 (21.4%)	
	Inspector and above (07)	03 (42.9%)	03 (42.9%)	01 (14.3%)	
Duty hours/day	≤10 (54)	45 (83.3%)	05 (9.3%)	04 (7.4%)	χ2 -1.5 P value = 0.8
	11 - 15 (175)	136 (77.7%)	17 (9.7%)	22 (12.6%)	
	> 15 (173)	132 (75.4%)	19 (10.9%)	22 (12.7%)	
Any kind of patrolling duty	No (114)	88 (77.2%)	13 (11.4%)	13 (11.4%)	χ2 -0.2 P value = 0.8
	Yes (288)	225 (78.1%)	28 (9.7%)	35 (12.2%)	

Table 3: Distribution of police personnel according to risk factor profile in context to Diabetes Mellitus with calculated Proportions, Pearson Chi Square and P values. (N=402)

Risk factor profile		DM- Coded			Total
		≤ 140 mg/dl	141- 199 mg/dl	≥ 200 mg/dl	
Exercise (Minutes per day)	No Exercise (184)	153 (83.2%)	19 (10.3%)	12 (6.5%)	χ2 - 17.97 P value = 0.006
	< 30 (79)	62 (78.5%)	10 (12.7%)	7 (8.9%)	
	30 – 60 (83)	57 (68.7%)	9 (10.8%)	17 (20.5%)	
	> 60 (56)	41 (73.2%)	3 (5.4%)	12 (21.4%)	
Exercise (days in a week)	No Exercise (184)	153 (83.2%)	19 (10.3%)	12 (6.5%)	χ2 -9.7 P value = 0.046
	1-6 (96)	70 (72.9%)	10 (10.41%)	16 (16.67)	
	7 (122)	90 (73.8%)	12 (9.8%)	20 (16.4%)	
Alcohol (Duration in years)	Absent (290)	225 (77.6%)	30 (10.3%)	35 (12.1%)	χ2 -16.22 P value = 0.012
	≤ 10 (42)	40 (95.2%)	1 (2.4%)	1 (2.4%)	
	11 – 20 (41)	31 (75.6%)	3 (7.3%)	7 (17.1%)	
	>20 (29)	17 (58.6%)	7 (24.13%)	5 (17.24%)	
Tea/Coffee per day	Absent (82)	70 (85.4%)	9 (11.0%)	3 (3.7%)	χ2 - 9.27 P value = 0.05
	≤ 5 (270)	201 (74.4%)	28 (10.4%)	41 (15.2%)	
	>5 (50)	42 (84%)	4 (8%)	4(8%)	
Past h/o Diabetes	No (383)	313 (81.7%)	41 (10.7%)	29 (7.6%)	χ2 - 147.07 P value = 0.000001
	Yes (19)	0 (0.0%)	0 (0.0%)	19 (100.0%)	
Family h/o Diabetes	No (351)	282 (80.3%)	31 (8.8%)	38 (10.8%)	χ2 -10.12 P value = 0.006
	Yes (51)	31 (60.8%)	10 (19.6%)	10 (19.6%)	
Spouse Health - Morbidities	Absent (316)	262 (82.9%)	30 (9.5%)	24 (7.6%)	χ2 - 28.91 P value = 0.000001
	Present (86)	51 (59.3%)	11 (12.8%)	24 (27.9%)	
Stress scale category	Low score stress (43)	30 (69.8%)	5 (11.6%)	8 (18.6%)	χ2 - 2.55 P value = 0.63
	Moderate to high level stress (359)	283 (79.05%)	36 (10.05%)	40 (11.17%)	

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Table 4: ANOVA for variables with respect to Diabetes Mellitus among Police Personnel in District Gwalior

Model		Sum of Squares	Df	Mean Square	F	Significance
ANOVA	Regression	797.64	9	88.62	312.78	0.000001
	Residual	111.35	393	0.28		
	Total	909	401			

Table 5: Logistic Regression Analysis in context to Random Blood Sugar (402)

Blood sugar			Regression coefficients	Significance	ODDs ratio	95% confidence interval	
Variables		Sub variables				Lower bound	Upper bound
Random Blood Sugar ≤ 140 mg/dl	Intercepts		-31.867	0.981			
	Category	General	-2.730	0.034	0.06	0.005	0.812
		Other backward class	-2.197	0.092	0.111	0.009	1.430
		Scheduled caste/tribe	0				
	Body Mass Index	Under weight	11.452	.949	94105.437	7.585E-147	1.168E+156
		Normal	4.810	.002	122.764	6.238	2415.855
		Pre Obese	3.400	.007	29.954	2.514	356.913
		Obese I	0				
	Duty hours per day	<8	10.361	.928	31593.752	2.623E-093	3.806E+101
		8 – 12	-2.528	.004	.080	.014	.455
		> 12	0				
	Smoking	Absent	2.054	.014	7.801	1.514	40.192
		Present	0				

Table 5: Logistic Regression Analysis in context to Random Blood Sugar (402)

Blood sugar			Regression coefficients	Significance	ODDs ratio	95% confidence interval	
Variables		Sub variables				Lower bound	Upper bound
Random Blood Sugar 141 – 199 mg/dl	Intercepts		-66.673	.972			
	Education	Upto high school	2.265	.113	9.634	.585	158.659
		Intermediate	.998	.439	2.712	.216	33.962
		Graduate	2.923	.035	18.606	1.229	281.758
		Post Graduate	0				
	Body mass index	Under weight	1.606	.996	4.985	7.473E-251	3.325E+251
		Normal	4.184	.013	65.648	2.448	1760.332
		Pre Obese	3.905	.005	49.664	3.191	772.994
		Obese I					
	Duty hours per day	<8	11.591	.919	108103.099	8.877E-093	1.317E+102
		8 – 12	-2.483	.018	.083	.011	.648
		> 12	0				
	Past h/o Hypertension	Absent	-2.277	.069	.103	.009	1.197
		Present	0				
	Smoking	Absent	2.482	.010	11.961	1.814	78.849
		Present	0				

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DISCUSSION

The diabetes was detected in overall 48 (11.9%) of the participants among them 29(60.4%) of the participants were diagnosed in the current study as past h/o Diabetes was reported by 19 (4.7%) of the total participants and were on some kind of Oral medications. The prevalence of diabetes was 27 (13.4%) in urban police personnel while it was 21(10.5%) for Rural. As per the study by Ganesh KS et al,[12] and Rathi K et al,[13] both had 10.1% diabetic among Police personnel while Aggarwal SS et al,[14] had 11.9% diabetic in Akola Police personnel which is almost in accordance with the current study.

377(93.8%) were male police personnel in the current study among them 47 (12.5%) were diabetic as compared to 1 (4.0%) of female participant. 95.1% of police personnel were male in study conducted by Bhatia KMKet al,[15] in Vadodara. Similar finding was shown by Sridher S et al.[16] Study by Hartley TA et al,[17] (2011) in Bufallo, NY police department had 27.8% male and 11.8% females with impaired glucose tolerance. The disproportionate no of women police personnel put increased work load on existing staff in dealing with crime related to women.

The mean age of police personnel was 42.3±11.3 years with 34.9% aged 50 years or more. Current study found 22.1% diabetic with age more than 50 years. A study conducted by Tesfaye T et al,[18] in Ethiopia showed that 21.3% were Diabetic at age more than 45 years, while 51.8% showed impaired fasting glucose. Similar was the findings of Oputa RN et al at Nigeria.[19] Prevalence of diabetes was 45.3% in the 50–59 years age groups as shown by Ramakrishnan J et al,[20] in his study among Puducherry police. While it was 55% in 51-55 years age group as per study by Kumar N et al,[21] in eastern district of India. The difference in findings in the current study might be due to random blood sugar calculation and their might be more diabetic among those which fell in the category of impaired blood sugar level (141-199mg/dl).

48 (13.0%) of married participants were diabetic in this study. 50.7% of the respondents were married as per Phiri Met al,[22] at Zambia, among them 61.5% were diabetic while rest 30.8% of the diabetics were divorced or separated. This difference might be due to regional variation in the physical built of the participants and work profile.

163 (40.5%) were graduates in the current study. 18 (18.0%) and 13(8.0%) of the intermediate and graduates respectively were diabetic. Tharkar S et al,[23] had 24.5% participants were atleast graduates. It suggests that better education level has positive impact on DM. The findings were not significant statistically though.

As per Asian classification of BMI, 175 (43.5%) were overweight while 32 (7.9%) were obese in current study. 7 (21.9%) of the obese participants were diabetic. Study also found that the diabetes had increased from 18(8.1%) to 29 (18.6%) in male as waist circumference increased (>90 cm), also for female it increased from 0(0.0%) to 1 (5.3%) (>80cm). In a study by Satapathy et al,[24] 25.7% were overweight, 57.6% were obese and 62.1% had abdominal obesity. Mahajan D C et al25 revealed 28% with BMI >25Kg/m2 and waist circumference >94cm in 53.33% of the subjects. Study by Bhatia KMK et al15 in Vadodara reported mean BMI of 24.00±3.44 kg/m2.

In this study total 202(50.2%) participants had more than 20 years of service and among them participants with diabetes had increased to 42 (20.8%). Study by Tesfaye T et al,[18] in Ethiopia revealed that 21.5% police personnel with diabetes had more than 20 years of service. Sridher S et al,[16] at Chennai had 48.2% participating police personnel with service more than 20 years. Ramakrishnan J et al,[20] in his study had mean duration of service as policemen were 16.3 years (SD ± 11.7). This concludes that as the service duration increased the combined stress with imbalance between work and personal/health life has negative impact on diabetes status.

As per current study 173 (43.1%) police personnel work for more than 15 hours a day among them 22 (12.7%) had diabetes. While only 54 (13.4%) reported to be working for less than 10hrs a day Continuous round the clock duty without proper rest in between makes body

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susceptible for disease which hampers the productive life as a police professional. As per Makarani MA et al,[26] at Pune, 69% were working for more than 12 hours while it was 94% for Rathi K et al,[13] at Delhi. Current study found that 351 (87.3%) had no family history of diabetes but among them 38 (10.8%) developed diabetes as compared to 10 (19.6%) with family history of Diabetes. Mahajan DC et al,[25] in Mumbai had found that 29.3% of the participants had family history of DM. While it was 11.7% as per Kumar P et al,[27] in Bankura. Current study revealed that 184 (45.8%) participants were physically inactive. While study conducted by Lohakpure VR et al28 in Ambajogai and Jahnavi G et al,[29] in Vijaywada found that 65.2% and 64% respectively were physically inactive.

359 (89.1%) were in moderate level stress scale score in this study. Ragesh Get al30in Calicut had 83.2% participants with moderate to high level operational stress which is in accordance with our study. This reveals that combined effect of workload leads to increase in stress which increases with service duration.

In a study among female police personnel by Roy B et al,[31] at Kerala had found that those who were working for more than 12 hours in a day experienced significantly ($P< 0.05$) more stress. This might be due to different perception of stress by female counterparts, regional variations or as facing dual burden of family and professional life as a police officer.

Current study found that 97 (24.1%) participants were consuming tobacco in any form (smoking or chewing), among them 16 (16.5%) developed diabetes. Also 112 (27.9%) revealed that they consumed alcohol and 13 (11.6%) were diabetic among them. As per Ganesh KS et al,[12] in urban Puducherry smoking was highly prevalent in 21.6% of the participants while alcohol use was among 50.3%.

312 (77.6%) participants were engaged in taking excess sweets per day in current study. As per Ganesh KS et al,[12] in urban Puducherry, 40% used to add extra salt in their diet. Lohakpure VR et al,[28] in Ambajogai had 72.8% participants had mixed diet which includes non-vegetarian diet. As per Bhatia KMK et al,[15] at Vadodara 53.1% had mixed diet. High salt intake and high caloric diet may lead to impaired glucose level in blood.

Police duty is stressful and most of the police personnel who join forces as a normal healthy cadet end up being diabetic with time in police forces. Timely intervention and proper guidance for health is very important for prevention and appropriate management of diabetes and its complications.

CONCLUSION

There is very high prevalence of diabetes among police personnel as duration of service/ hierarchy increases, make us state that Police personnel join the police department in extremely good health but later they end up unfit. Obesity, increased waist circumference is also a contributory factor for diabetes. Regular health checkup should be made mandatory for all police personnel; so that self-indulgent habits and negligent behavior do not harm them and they can dedicate themselves more efficiently for their law enforcement duties. Health improvement measures in the form of regular exercise, rest at least once in a week, along with regular counseling can help existing police personnel in dealing with day-to-day matters.

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Limitation of the study

Study needs to be replicated in police personnel from other cities with more number of participants. Participant needs to get fasting and post prandial blood sugar along with HbA1c measured for better measurement of diabetes status.

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Conflict of interest - none.

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