

Original Research Article

Burden of non-communicable diseases, occupational stress and quality of life among police personnel in Telangana, India: findings from a cross-sectional study

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ABSTRACT

Background: Police personnel work under demanding conditions characterised by long duty hours, irregular shifts, exposure to traumatic events, and high occupational stress. These factors may contribute to unhealthy lifestyle behaviours and increase the risk of non-communicable diseases (NCDs), adversely affecting their overall health and quality of life. This study aimed to assess the prevalence of major NCDs and identify associated lifestyle, occupational, and psychosocial risk factors among police personnel in Telangana, India.

Methods: A cross-sectional baseline survey was conducted among 1,172 police personnel in Siddipet district, Telangana, from March to May 2022. Information on socio-demographic characteristics, lifestyle practices, occupational stress, and quality of life was collected using validated questionnaires, Anthropometric measurements, blood pressure, and laboratory investigations.

Results: The majority of participants (89.3%) were men, with a mean age of 38±9.7 years. Nearly 25% of them were physically inactive. 43.3% of employees had high levels of operational stress. Of the individuals, 22.3% had hypertension, 19.7% had diabetes, and 58.0% were overweight or obese. A larger burden of NCDs was substantially correlated with older age, male gender, alcohol intake, tobacco use, and physical inactivity. Higher levels of organisational and operational stress were reported by female employees. Nearly half of the participants reported having a higher overall quality of life despite these difficulties.

Conclusions: Police personnel in Telangana face a considerable burden of NCDs and occupational stress. Strengthening workplace health promotion, regular screening, physical activity programs, and stress-management interventions may help reduce disease risk and improve overall well-being and quality of life.

Keywords: Diabetes, Hypertension, Non-communicable diseases, Obesity, Occupational stress, Police personnel, Quality of life

INTRODUCTION

Non-communicable diseases (NCDs) are the leading cause of the global disease burden, accounting for approximately 71% of all deaths worldwide. These diseases also constitute the leading cause of mortality in

India, accounting for more than 60% of all deaths.¹ Cardiovascular diseases, hypertension and diabetes disproportionately affect the people who are employed in high-stress occupations. Police personnel, comprising approximately 2 million active personnel across India, represent a vulnerable occupational group. They are

exposed to stressful operational demands, including prolonged duty hours (>14 hours/day), irregular shift work, exposure to violence and trauma in day-to-day life, and organisational pressures that contribute to increased rates of hypertension, obesity, and dyslipidaemia. These stressors affect police personnel's lives adversely, and they suffer from physical, physiological, and psychosocial problems. The maladaptive coping strategies, like unhealthy eating behaviours, smoking, and alcoholism, further exacerbate cardio metabolic risk in them.^{2,3}

The literature suggests that most police personnel fell within a moderate perceived stress range, having a high prevalence of hypertension, metabolic syndrome and type-2 diabetes.^{3,4} Also, a study reported 29.6% of the police personnel used tobacco, and 75.8% of the personnel were physically inactive.⁵ They also tend to have compromised Quality of Life (QoL) compared with the general population, due to the above risk factors. Police personnel also suffer from musculoskeletal pain, nervousness, sleep apnoea, varicose veins, anaemia, etc., leading to low QoL.⁶

Stress in the workplace leads to a significant decline in the employees' physical, mental and psychological well-being. The stress on police officers can be either operational stress (inherent to the nature of police work) or organisational stress (individual behaviour within an organisation).⁷⁻⁹ Inherent challenges of policing include maintaining law and order, while organisational factors include the work environment, organisational policies, leadership style, etc. Apart from NCDs, occupational and organisational stress was linked to sleep apnoea and also contribute to cardiometabolic risk.¹⁰

Literature review suggests that occupational risk factors, QoL and morbidity have remained largely ignored in police services. The present study attempts to address the research gap in the prevalence and various factors contributing to NCDs, including the quality of Life of police personnel. This study also analyses the role of operational and organisational stressors as risk factors for NCDs.

METHODS

The Telangana police department is the law enforcement agency for the state of Telangana. It has 33 revenue districts with subdivisions. About 80,000 to 1 lakh police personnel are currently employed in the state. Women constitute about 11.8% of the state's police workforce. Siddipet is one of the 33 districts in Telangana state; with a population of about 10 lakhs Siddipet Police Commissionerate comprises 3 divisions, 6 circles, and 27 police stations in the district. The district comprises 5 municipalities and 499 villages. There are about 1400 police personnel in the district.

Ethical clearance was obtained from the Institutional Ethics Committee (IEC). Following ethical approval, permission was obtained from the police department to conduct the study. The study commenced after all necessary approvals were obtained. All participants provided informed consent after receiving the participant information sheet.

A baseline cross-sectional survey was conducted as part of an intervention study to reduce non-communicable disease risk factors among police personnel in Siddipet. The results presented in this article are derived from the baseline survey. In brief, researchers approached all the police personnel employed in Siddipet district and collected baseline data. Of 1400 police personnel, 1172 were available at the time of the study (83.7% response rate). Data collection was conducted from March to May 2022.

This cross-sectional study gathered data on socio-demographic and occupational characteristics of study participants. Also, researchers examined the prevalence of major NCDs (hypertension, diabetes mellitus, metabolic syndrome) among police personnel, alongside health-related quality of life assessed using a standardised scale (WHOQOL-BREF).¹¹ The psychosocial stressors were measured using validated Likert-scale instruments: the Operational Stress Inventory (PSQ-Op) for field-related stressors (e.g., risk of injury, public hostility) and the Organisational Police Stress Questionnaire (PSQ-Org) for workplace factors (e.g., workload, supervisory relations, shift fatigue). The PSQ-Op and PSQ-Org each consisted of 20 items. Each question was evaluated on a 7-point scale ranging from 1 ("no stress at all") to 7 ("very stressful" or "a lot of stress"), with 4 indicating moderate stress. Separate summary scores for PSQ-Op and PSQ-Org were calculated as the mean of all for each participant.¹² For the PSQ-Op, low stress is defined as a score ≤ 2.0 , moderate stress as 2.1-3.4, and high stress as 3.5 or greater. For the PSQ-Org, low stress is defined as a score ≤ 2.6 , moderate stress as 2.7-3.9, and high stress as 4.0 or greater.¹³

In addition to the above-mentioned psychological measures, other variables, such as physical activity, nutrition (meat, fruit, and dairy consumption), addictions to alcohol and smoking, and QoL, were also assessed. Height and weight were measured, and BMI was calculated. After the individual rested in a peaceful, comfortable posture for at least five minutes, their blood pressure (BP) was taken three times. The final blood pressure value was determined by averaging the last two readings. Systolic blood pressure more than or equal to 140 and/or diastolic blood pressure greater than or equal to 90, as well as a history of hypertension verified by a medical professional, were considered indicators of hypertension. HbA1C >7% or a history of diabetes verified by a physician were considered indicators of diabetes. According to the World Health Organisation's (WHO) standards, physical inactivity is defined as a

history of not participating in at least 150 minutes of moderate physical activity, 75 minutes of vigorous physical exercise, or a mix of both each week. ^[14] A three-point rating system was used to gather self-reported levels of work-related stress: mild, moderate, and severe.

Statistical analysis

The data was entered into Microsoft Excel and analysed using Jamovi. Study variables were summarised using descriptive statistics. Categorical data were presented as frequency and percentage, and continuous variables were expressed as mean $\pm$ standard deviation (SD). Statistical significance was defined as $p < 0.05$. Multiple logistic

regression and bivariate and multivariate analyses found variables associated with high organisational and operational stress levels. The model takes into account factors like age, gender, physical activity, alcohol use and tobacco use.

RESULTS

Socio-demographic details

The study examined the socio-demographic background, lifestyle, dietary features, organisational and operational stress data of 1172 police officers whose information was completely accessible, as shown in Table 1.

Table 1: Distribution of police personnel according to age and lifestyle factors.

Variables	Males, N (%), (n=1047)	Females N (%), (n=125)	Total N (%), (n=1172)
Age groups (years)			
21-30	219 (20.9)	83 (66.4)	302 (25.8)
31-40	452 (43.2)	35 (28)	487 (41.6)
41-50	169 (16.1)	5 (4)	174 (14.8)
51-60	207 (19.8)	2 (1.6)	209 (17.8)
Life style factors			
Physical activity	815 (77.83)	68 (54.4)	883 (75.3)
Alcohol intake	690 (65.9)	8 (6.4)	698 (59.6)
Tobacco users	168 (16)	2 (1.6)	170 (14.5)
Dietary factors			
Meat consumption (times/week)			
0	50 (4.8)	11 (8.8)	61 (5.2)
1-3	892 (85.2)	112 (89.6)	1004 (85.7)
4-7	105 (10)	2 (1.6)	107 (9.1)
Fruit consumption (times/week)			
0	91 (8.7)	8 (6.4)	99 (8.4)
1-3	677 (64.7)	81 (64.8)	758 (64.7)
4-7	279 (26.6)	36 (28.8)	315 (26.9)
Dairy consumption (times/week)			
0	96 (9.3)	13 (10.4)	109 (9.3)
1-3	344 (31.8)	29 (23.2)	373 (31.8)
4-7	607 (58.9)	83 (66.4)	690 (58.9)
Operational stress			
Low	308 (29.4)	15 (12.0)	323 (27.6)
Moderate	304 (29.0)	37 (29.6)	341 (29.1)
High	435 (41.5)	73 (58.4)	508 (43.3)
Organisational stress			
Low	553 (52.8)	48 (38.4)	601 (51.3)
Moderate	270 (25.8)	49 (39.2)	319 (27.2)
High	224 (21.4)	28 (22.4)	252 (21.5)

Males accounted for a greater number of police officials in the survey, 1047 (89.3%). The mean age of police officers is 38 ± 9.68 years (Mean $\pm$ SD). Approximately 25% of individuals were physically inactive, 60% consumed alcohol, and 15% used nicotine products, with 43% experiencing significant operational stress. Despite substantial work stress, over half of the staff reported a great overall quality of life. In terms of health issues,

almost 22% were hypertensive, 20% were diabetic, and roughly 58% were overweight or obese, with age, male gender, tobacco and alcohol usage all playing a substantial role in the NCD burden.

Most of the police personnel belonged to the 31-40 years age group (41.6%), followed by the 21-30 years (25.8%). Males constituted the majority of the study population

(89.3%). Among males, the highest proportion was also seen in the 31-40 years age group (43.2%), whereas most female personnel were in the 21-30 years age group (66.4%).

In terms of lifestyle characteristics, 75.3% of individuals were physically active, 59.6% consumed alcohol, and 14.5% smoke. Male policemen were more likely to consume alcohol and use tobacco than female officers. Males were also more physically active than females (77.8% versus 54.4%).

Dietary assessment showed that most participants consumed meat 1-3 times per week (85.7%), fruits 1-3 times per week (64.7%), and dairy products 4-7 times per week (58.9%).

Overall, unhealthy lifestyle practices such as alcohol use and tobacco consumption were observed among a considerable proportion of police personnel.

High operational stress was observed among 43.3% of participants, with a higher proportion among females (58.4%) compared to males (41.5%), while low operational stress was more common among males. Organisational stress was predominantly low (51.3%); however, females reported higher levels of moderate (39.2%) and high (22.4%) organisational stress than males. Overall, female personnel demonstrated higher levels of both operational and organisational stress than males (Table 1).

Quality of life profile among police personnel

Assessment of quality of life among police personnel revealed that 48.7% of participants reported a high overall quality of life, 42.6% a moderate level, and only 8.6% a low level. These findings suggest that the majority of respondents reported satisfactory general well-being despite the occupational demands of policing (Table 2).

In the physical domain, 50.2% of police personnel demonstrated high physical quality-of-life scores, indicative of relatively favourable perceptions of physical health, energy, and functional capacity. An additional 44.5% reported moderate physical well-being, whereas only a small proportion experienced poorer physical health status (Table 2).

In the psychological domain, quality of life was predominantly in the moderate (47.0%) and high (46.6%) categories, reflecting generally positive psychological well-being among participants. Nevertheless, 6.1% of respondents reported low psychological quality of life, suggesting the presence of emotional distress or reduced psychological resilience in a subset of the study population (Table 2).

Regarding the social domain, the largest proportion of police personnel (45.5%) reported a moderate level of social quality of life, indicating average satisfaction with interpersonal relationships and social support systems. In contrast, only 4.2% achieved high social well-being, highlighting comparatively lower perceptions of social functioning and suggesting that occupational responsibilities may adversely affect opportunities for social interaction and relationship satisfaction (Table 2).

The environmental domain demonstrated a predominance of moderate quality-of-life scores (61.1%), while 26.4% of participants reported high environmental quality of life. These findings imply that although most personnel perceived their living conditions, financial resources, access to healthcare services, safety, and recreational opportunities as adequate, there remains scope for improving environmental factors that contribute to overall well-being (Table 2).

Table 2: Distribution of police personnel according to Quality of Life (QoL).

Domains	Males, N (%) (n=1047)	Females, N (%) (n=125)	Total, N (%) (n=1172)
Overall			
Low	89 (8.5)	12 (9.6)	101 (8.6)
Medium	443 (42.3)	57 (45.6)	500 (42.6)
High	515 (49.2)	56 (44.8)	571 (48.7)
Physical			
Low	54 (5.2)	7 (5.6)	61 (5.2)
Medium	459 (43.8)	63 (50.4)	522 (44.5)
High	534 (51)	55 (44)	589 (50.2)
Psychological			
Low	64 (6.1)	10 (8)	74 (6.3)
Medium	492 (47)	60 (48)	552 (47.0)
High	491 (46.9)	55 (44)	546 (46.6)
Social			
Low	44 (4.2)	6 (4.8)	50 (4.2)
Medium	474 (45.3)	59 (47.5)	533 (45.5)
High	529 (50.5)	60 (48)	589 (50.2)
Environmental			
Low	130 (12.4)	15 (12)	145 (12.3)
Medium	641 (61.2)	76 (60.8)	717 (61.1)
High	276 (26.4)	34 (27.2)	310 (26.4)

Male police personnel reported a slightly better quality of life compared to females across most domains. High overall quality of life was observed in 49.5% of males and 44.8% of females. In both the physical and psychological domains, males had slightly higher proportions of high scores than females. However, females showed comparatively better scores in the environmental and social domains. Overall, both males and females predominantly had a medium to high quality of life across all domains.

Burden of non-communicable diseases among police personnel

The present study revealed a substantial burden of non-communicable disease (NCD) risk factors among police personnel, particularly with respect to hypertension, diabetes, and excess body weight. These findings underscore the growing health challenges faced by this occupational group, which is frequently exposed to irregular work schedules, occupational stress, and lifestyle constraints that may predispose them to chronic diseases.

With regard to blood pressure status, the majority of participants (62.3%) were classified as prehypertensive, indicating a large proportion of personnel at elevated risk of progressing to overt hypertension. Furthermore, 22.3% were hypertensive, while only 15.4% exhibited normal blood pressure levels. A gender-based comparison demonstrated that hypertension was more prevalent among male police personnel than among females, suggesting a greater burden of abnormal blood pressure within the male workforce (Table 3 and 4, Figure 1).

Assessment of glycaemic status also highlighted a considerable burden of metabolic abnormalities. More than one-third of the participants (37.5%) were identified as prediabetic, indicating an increased likelihood of developing type 2 diabetes mellitus if preventive measures are not implemented. In addition, 19.7% of the

study population had diabetes mellitus. The prevalence of diabetes was notably higher among males, with 20.8% classified as diabetic, compared with 10.4% among female personnel, reflecting sex-related differences in metabolic risk within the study population (Table 3 and 4, Figure 1).

Table 3: Distribution of police personnel according to non-communicable diseases.

Domain	Males, N (%) (n=1047)	Females, N (%) (n=125)	Total, N (%) (n=1172)
Hypertension*			
Normal	144 (13.8)	37 (29.6)	181 (15.4)
Prehypertension	654 (62.4)	76 (60.8)	730 (62.3)
Stage-1 HTN	216 (20.6)	12 (9.6)	228 (19.5)
Stage-2 HTN	33 (3.2)	0 (0)	33 (2.8)
Diabetes*			
Normal	441 (42.1)	61 (48.8)	502 (42.8)
Prediabetes	388 (37.1)	51 (40.8)	439 (37.5)
Diabetic	218 (20.8)	13 (10.4)	231 (19.7)
Obesity*			
Underweight	3 (0.3)	12 (9.6)	15 (1.3)
Normal	397 (37.9)	66 (52.8)	463 (39.5)
Overweight	538 (51.3)	43 (34.4)	581 (49.6)
Obesity class-1	95 (9.1)	4 (3.2)	99 (8.4)
Obesity class-2	11 (1.1)	0 (0)	11 (0.9)
Obesity class-3	3 (0.3)	0 (0)	3 (0.3)

Table 4: Mean and standard deviations of laboratory investigations.

Investigation	Male	Female	Mean±SD
BMI (kg/m²)*	26.1±3.41	23.6±3.84	25.8±3.54
Hb (g/dl)*	15.3±1.23	12.5±1.48	15.0±1.51
TSH (μIU/ml)	2.58±2.13	2.73±2.21	2.59±1.99
HbA1c (%)	6.18±1.31	5.89±1.06	6.15±1.29
Sr. total cholesterol (mg/dl) **	175±34.2	158±35.3	173±34.7
Sr. triglycerides (mg/dl) *	167±85.0	118±70.2	162±84.8
	35.6±8.31	40.6±9.46	36.1±8.57
Sr. HDL (mg/dl) *	156±27.5	133±29.6	153±38.46
Sr. LDL (mg/dl) *	0.88±0.15	0.600±0.131	0.862±0.168
Sr. creatinine (mg/dl) *			

*- significant, ** - borderline significant

Evaluation of nutritional status based on body mass index (BMI) demonstrated that 49.6% of participants were overweight, while 8.4% were categorised as having Class I obesity. Excess body weight was more frequently observed among males, of whom 51.3% were overweight, and 9.1% had Class I obesity. In contrast, among female personnel, 34.4% were overweight, and 3.2% were classified as having Class I obesity. Conversely, a greater proportion of females (52.8%) had a normal BMI compared with males (37.9%) (Table 3 and 4, Figure 1).

Collectively, these findings indicate a high prevalence of modifiable NCD risk factors among police personnel,

with male officers exhibiting a comparatively greater burden of hypertension, diabetes, overweight, and obesity. The predominance of prehypertension and prediabetes further highlights an important window of opportunity for early identification and intervention. Regular health screening, workplace wellness initiatives, promotion of healthy dietary practices, encouragement of physical activity, and stress management strategies are warranted to mitigate the future burden of chronic diseases and improve the long-term health outcomes of police personnel.

Male police personnel had higher BMI, haemoglobin levels, total cholesterol, triglycerides, LDL cholesterol, and serum creatinine than females, suggesting a higher metabolic risk among males. Females had higher HDL (protective cholesterol) levels, indicating a comparatively better lipid profile. Thyroid function was similar in both groups. Overall, these findings indicate that male police personnel had a higher burden of cardiometabolic risk factors compared to females. The high prevalence of prehypertension, prediabetes and overweight status among both genders suggests an increased future risk of developing chronic non-communicable diseases if preventive measures are not implemented (Table 4).

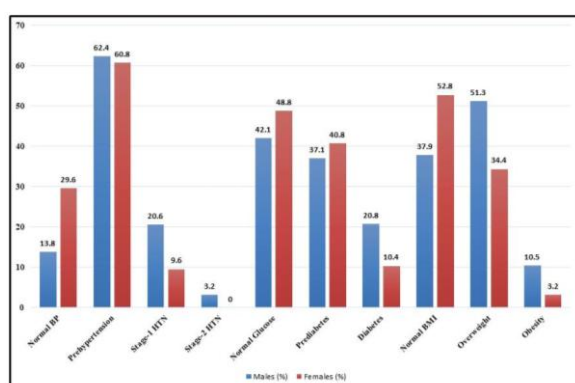


Figure 1: Distribution of hypertension, diabetes, and obesity categories among male and female police personnel.

The relationship between risk variables and noncommunicable illnesses revealed that age above 40 and male gender was significantly associated with hypertension, diabetes, obesity, or any of the NCDs.

Table 5: Association between risk factors and non-communicable diseases.

Risk factor	Hypertension, N (%) (p)	Diabetes, N (%) (p)	Obesity, N (%) (p)	Any of the NCDs, N (%) (p)
Age >40years*	137 (47.4) (<0.001)	161 (69.7) (<0.001)	74 (65.5) (<0.001)	263 (53.8) (<0.001)
Male gender*	276 (95.5) (0<0.001)	218 (94.4) (0.021)	109 (96.5) (<0.001)	465 (44.4) (<0.001)
Tobacco use*	51 (17.8) (0.083)	55 (24.2) (<0.001)	26 (23.4) (0.019)	98 (57.6) (<0.001)
Alcohol use	184 (64.1) (0.107)	142 (62.6) (0.578)	79 (71.2) (<0.001)	309 (44.3) (0.036)
Physical inactivity	69 (24.0) (0.989)	45 (19.8) (0.206)	23 (20.7) (0.003)	380 (43.0) (0.098)

*- significant, ** - borderline significant

Table 6: Factors affecting organisational and operational stress of police personnel.

Risk factor	Categories	Operational stress	Organisational stress
Age group in years*	21-30	3.68±1.41	3.08±1.29
	31-40	3.23±1.56	2.77±1.35
	41-50	2.96±1.39	2.64±1.30
	51-60	3.01±1.61	2.57±1.40
Gender*	Male	3.21±1.55	2.76±1.36
	Female	3.70±1.26	3.02±1.18
Physical activity*	Yes	3.13±1.49	2.68±1.32
	No	3.69±1.56	3.12±1.38
Hypertension*	Normal	3.28±1.53	2.78±1.33

Continued.

Tobacco users had a greater risk of diabetes (24.2%), obesity (23.4%), and all NCDs (57.6%). Alcohol intake was substantially related to obesity (71.2%) and other NCDs (44.3%). Physical inactivity was linked to obesity (20.7%), but not to hypertension or diabetes.

These data indicate that growing age, male gender, and bad lifestyle choices, such as tobacco and alcohol use, all contribute significantly to the prevalence of noncommunicable illnesses among police officers (Table 5).

Binary logistic regression analysis showed that age >40 years was a significant predictor of all studied NCD outcomes. Participants aged >40 years had significantly lower odds of remaining normotensive and higher odds of diabetes, obesity, and the presence of any NCD, which is consistent with the descriptive findings showing higher proportions of NCDs among older individuals. Males were significantly associated with lower odds of being normotensive ($p=0.005$), higher odds of obesity ($p=0.026$), and the presence of any NCD ($p=0.006$), consistent with the higher prevalence observed among males in the descriptive analysis. Tobacco use was significantly associated with the presence of any NCD ($p=0.049$) and showed borderline association with diabetes ($p=0.052$), while alcohol use was significantly associated with obesity ($p=0.016$) and presence of any NCD ($p=0.028$). Physical activity was not significantly associated with hypertension, diabetes, obesity, or overall NCD presence after adjusting for other variables. Overall, multivariable analysis suggests that increasing age and male gender were the strongest independent predictors of NCD burden in the study population.

Risk factor	Categories	Operational stress	Organisational stress
	Prehypertension	3.27±1.52	2.81±1.35
	Stage-1 HTN	3.27±1.60	2.75±1.34
	Stage-2 HTN	3.10±1.36	2.72±1.46
Diabetes*	Yes	3.10±1.57	2.62±1.43
	No	3.31±1.52	2.83±1.32
Obesity*	Yes	3.25±1.53	2.79±1.35
	No	3.28±1.53	2.79±1.35
NCD*	Yes	3.26±1.55	2.79±1.36
	No	3.28±1.48	2.79±1.3

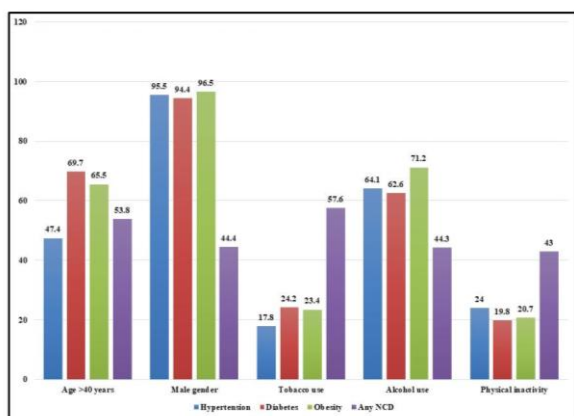


Figure 2: Distribution of selected risk factors among police personnel with hypertension, diabetes, obesity, and any non-communicable disease. Age >40 years and male gender were associated most strongly with all major NCD outcomes.

Operational stress was higher among younger police personnel and decreased with increasing age. Female personnel experienced higher operational and organisational stress compared to males. Organisational stress was higher among physically inactive personnel, while operational stress showed minimal variation across physical activity levels.

Linear regression analysis showed that increasing age (>40 years) was significantly associated with lower operational stress ($\beta=-0.234$, $p=0.013$) and organisational stress scores ($\beta=-0.373$, $p<0.001$), which is consistent with the lower mean stress scores observed among older age groups in the table. Male gender was significantly associated with lower organisational stress scores than females ($\beta=-0.311$, $p=0.036$), consistent with the higher mean organisational stress observed among females. Physical activity showed a significant negative association with both operational stress ($\beta=-0.407$, $p<0.001$) and organisational stress ($\beta=-0.500$, $p<0.001$), indicating lower stress among physically active individuals, which aligns with the descriptive findings. Gender was not significantly associated with operational stress. Hypertension, diabetes, obesity, and the presence of NCDs did not show significant associations with either

operational or organisational stress after adjustment for other variables.

DISCUSSION

The present study highlights the substantial burden of non-communicable diseases (NCDs), behavioural risk factors, and occupational stress among police personnel in Telangana. Police personnel are exposed to demanding work environments that may adversely affect their physical and mental health. Similar concerns have been reported in earlier studies, which identified police personnel as a high-risk occupational group for cardiovascular and metabolic disorders.^{2,3,10}

Physical inactivity emerged as one of the most common lifestyle-related risk factors in the present study. Similar findings have been reported in previous studies, where a substantial proportion of police personnel were found to be physically inactive.⁹ This highlights the widespread prevalence of unhealthy lifestyle practices among police personnel, which may increase the risk of developing chronic non-communicable diseases. Alcohol consumption and tobacco use were also commonly observed in the present study, consistent with evidence from earlier research identifying these behaviours as significant health-related concerns among police personnel.¹⁵

The burden of hypertension, diabetes, and obesity observed in the present study is consistent with findings reported in earlier research. Previous studies have documented a high prevalence of these metabolic disorders among police personnel, indicating that they represent significant occupational health concerns within this population.^{4,9} The elevated BMI, HbA1c, triglyceride, and LDL cholesterol levels observed in the present study further suggest an increased cardio-metabolic risk profile among police personnel.¹⁶ Collectively, these findings underscore the substantial burden of metabolic risk factors in this occupational group and highlight the need for targeted preventive and health-promotion interventions.

The present study found significant associations between increasing age, tobacco use, alcohol consumption, physical inactivity, and the presence of NCDs. Similar

patterns have been reported in previous studies, which have documented a higher burden of metabolic and cardiovascular risk factors among police personnel compared with the general population.³ Furthermore, obesity and other lifestyle-related risk factors have been identified as important contributors to adverse health outcomes in this occupational group.¹⁷ These findings emphasize the critical role of modifiable behavioural risk factors in the development and progression of chronic diseases among police personnel and highlight the importance of targeted preventive interventions.

Occupational stress emerged as an important finding in the present study. Previous research has consistently demonstrated a high burden of work-related stress among police personnel, reflecting the demanding nature of their profession.⁹ Similar patterns were observed in the present study, where stress was more common among personnel with physical inactivity and chronic diseases. Furthermore, earlier studies have reported significant associations between occupational stress and adverse health outcomes, including metabolic syndrome and cardiovascular risk factors.^{10,18} These findings highlight the potential impact of occupational stress on both physical and mental health and underscore the need for workplace-based stress management and health promotion strategies among police personnel.

Furthermore, regression analysis in the present study identified age, male gender, tobacco use, alcohol consumption, and physical inactivity as significant predictors of one or more NCD outcomes. These findings highlight the interconnected nature of occupational stress, lifestyle factors, and chronic diseases among police personnel and emphasise the need for comprehensive workplace health promotion strategies.¹⁹⁻²²

This study has limitation. The relatively small number of female police personnel in the study limited the ability to develop a detailed understanding of gender-specific health issues and risk factors.

CONCLUSION

The present study highlights that police personnel carry a considerable burden of non-communicable diseases along with several lifestyle and occupational risk factors. Physical inactivity, excess body weight, substance use, and high levels of workplace stress were commonly observed, reflecting the health challenges faced in this profession. Chronic conditions such as hypertension and diabetes were also prevalent and were associated with key behavioural risk factors. The findings suggest that the demanding nature of police work may significantly impact both physical and mental well-being. Strengthening regular health screening, promoting healthy lifestyles, and implementing workplace stress-management programmes could help improve the overall health and quality of life of police personnel.

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