

Original Research Article

Prevalence of occupational health hazards, stress level and associated factors among traffic police officers in Delhi: a cross-sectional study

Kalpna Verma, Seema Rani*, Suchhanda Bhattacharya

Rufaida College of Nursing, Jamia Hamdard, New Delhi, India

Received: 29 April 2026

Revised: 17 June 2026

Accepted: 18 June 2026

*Correspondence:

Seema Rani,

E-mail: seema.rani@jamiahamdard.ac.in

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Traffic police officers are routinely exposed to adverse environmental, ergonomic, and psychosocial conditions due to prolonged outdoor duties, vehicular pollution, noise, and occupational stress. These exposures place them at increased risk of physical, social, and mental health problems, particularly in metropolitan cities such as Delhi. Objectives were to assess the prevalence of occupational health hazards and perceived stress among traffic police officers and to determine the association between stress and selected demographic variables.

Methods: A quantitative descriptive cross-sectional study was conducted among 140 traffic police officers working in selected regions of Delhi. Participants were selected using purposive sampling. Data were collected using a self-structured questionnaire assessing occupational health hazards and the perceived stress scale-14 (PSS-14). Descriptive and inferential statistics were used for analysis.

Results: Occupational health hazards were reported by 37.9% of participants. Mental health hazards were most prevalent (80.83%), followed by social (74.84%) and physical hazards. Common physical problems included respiratory, gastrointestinal, eye, and musculoskeletal complaints. The mean perceived stress score was 15.89, indicating overall low stress. Low stress was reported by 62.9% of officers, moderate stress by 35.7%, and high stress by 1.4%. Stress levels were significantly associated with education ($p=0.014$) and substance use ($p=0.047$).

Conclusions: Traffic police officers face considerable occupational health risks, particularly related to mental and social well-being. Regular health screening, stress management interventions, and enforcement of occupational safety measures are recommended.

Keywords: Delhi, Occupational health hazards, Perceived stress, Prevalence, Traffic police

INTRODUCTION

Occupational health is a vital component of public health that focuses on the promotion and maintenance of the highest degree of physical, mental, and social well-being of workers across all occupations. In the modern era of rapid urbanization, industrial growth, and motorization, occupational environments have become increasingly complex and hazardous, particularly for professionals engaged in outdoor and public-facing duties. Among these, traffic police officers constitute a distinctive

occupational group exposed to a multitude of environmental, ergonomic, and psychosocial stressors that place them at elevated risk for adverse health outcomes.¹

Traffic police officers play a critical role in maintaining urban mobility, enforcing traffic regulations, preventing road traffic accidents, and ensuring public safety. Their responsibilities extend beyond traffic regulation to include accident management, crowd control, emergency response, and public education on road safety. In large

metropolitan cities, these duties are performed under challenging conditions characterized by high traffic density, unpredictable road user behaviour, prolonged working hours, and constant exposure to environmental pollutants.² Unlike other law enforcement personnel, traffic police officers are required to perform most of their duties outdoors, often standing for extended periods at busy intersections with limited opportunities for rest or recovery.

Delhi, the national capital of India, is one of the most congested and polluted cities in the world. The exponential growth in population, rapid urban expansion, and a sharp increase in motor vehicle ownership have significantly intensified traffic congestion and environmental pollution in the city. According to governmental and environmental reports, Delhi consistently records air pollution levels exceeding national and international safety standards, particularly with respect to particulate matter (PM_{2.5} and PM₁₀), nitrogen dioxide, and carbon monoxide.³ Traffic police officers stationed at road intersections are continuously exposed to these pollutants, placing them at increased risk of respiratory morbidity and other pollution-related health problems.

Vehicular emissions represent one of the most significant occupational hazards for traffic police officers. Prolonged inhalation of toxic gases and particulate matter has been associated with reduced lung function, chronic bronchitis, asthma, and other respiratory disorders.⁴ Several studies conducted in India and neighbouring South Asian countries have reported a higher prevalence of respiratory symptoms among traffic police personnel compared to administrative or indoor workers.^{5,6} Despite the availability of protective measures such as face masks, their use remains inconsistent due to discomfort, inadequate supply, lack of enforcement, and limited awareness regarding occupational health protection.⁷

Noise pollution is another major occupational hazard encountered by traffic police officers. Continuous exposure to traffic noise, including engine sounds, honking, and sirens, often exceeds recommended occupational exposure limits. Chronic noise exposure has been linked to hearing impairment, tinnitus, hypertension, sleep disturbances, irritability, and reduced concentration.⁸ Noise-induced stress not only affects physical health but also contributes significantly to psychological strain, potentially impairing decision-making abilities and increasing the risk of errors during duty hours.

In addition to environmental hazards, traffic police officers are exposed to substantial ergonomic risks. Prolonged standing, repetitive hand movements for signalling, awkward postures, and inadequate ergonomic infrastructure contribute to musculoskeletal disorders such as low back pain, neck and shoulder strain, knee pain, and varicose veins.⁹ The absence of proper rest

shelters, insufficient seating arrangements, and limited rotation of duty assignments further exacerbate these problems. Studies have consistently demonstrated a high prevalence of musculoskeletal complaints among traffic police officers, which often lead to reduced work efficiency, absenteeism, and long-term disability.¹⁰

Extreme climatic conditions further compound the occupational risks faced by traffic police officers in Delhi. During summer months, ambient temperatures frequently exceed 45°C, exposing officers to heat stress, dehydration, fatigue, and heat-related illnesses. Conversely, during winter, prolonged exposure to cold temperatures combined with dense smog adversely affects respiratory and cardiovascular health.¹¹ Climate-related occupational stress is an emerging concern, particularly in the context of global climate change, which is expected to increase the frequency and intensity of heatwaves and extreme weather events.¹²

Beyond physical and environmental hazards, psychosocial stress constitutes a significant component of occupational risk among traffic police officers. The nature of traffic policing requires constant vigilance, rapid decision-making, and frequent interactions with the public, including confrontations with aggressive or non-compliant road users. Exposure to road traffic accidents, injuries, and fatalities can have profound psychological effects, contributing to emotional exhaustion, anxiety, and burnout.¹³ Irregular shift patterns, extended duty hours, limited social support, and perceived lack of organizational recognition further intensify work-related stress.

Occupational stress among traffic police officers has been associated with a range of adverse mental health outcomes, including depression, anxiety, sleep disturbances, irritability, and reduced job satisfaction.¹⁴ Chronic stress not only affects psychological well-being but also has physiological consequences, such as increased risk of hypertension, cardiovascular disease, and impaired immune function.¹⁵ Furthermore, stress-related coping behaviours, including tobacco and alcohol use, have been reported among police personnel, potentially exacerbating existing health problems.¹⁶

Despite the recognized vulnerability of traffic police officers to multiple occupational health hazards, their health and safety needs have often been overlooked in occupational health policies and programs. Most occupational health research and interventions have traditionally focused on industrial workers, healthcare professionals, or factory-based occupations, with limited attention given to public service workers such as traffic police.¹⁷

In India, systematic and region-specific data on the combined burden of occupational health hazards and stress among traffic police officers remain scarce, particularly in high-risk urban environments like Delhi.

Objectives

Objectives of the current study are to assess the prevalence of occupational health hazards and stress among the traffic police officers. Another objective was to seek association between stress and selected demographic variables of the traffic police officers.

METHODS

Study design and research approach

A quantitative research approach was adopted for the present study, employing a descriptive cross-sectional research design. This design was considered appropriate as it allows for the systematic assessment of the prevalence of occupational health hazards and perceived stress among traffic police officers at a single point in time without manipulating study variables.¹⁸ Cross-sectional designs are widely used in occupational health research to determine the burden of health conditions and associated factors within a defined population.¹⁹

Study setting

The study was conducted in selected traffic control points across different regions of Delhi. These locations were chosen because they represent high-traffic zones where police officers are routinely exposed to vehicular pollution, noise, extreme climatic conditions, and prolonged standing duties. Permission to conduct the study was obtained from the traffic police headquarters, Todapur, Delhi. The selected setting ensured accessibility to the target population and feasibility of data collection within the stipulated time frame.

Study period

The study was carried out over a period of approximately three months, from 29 September 2025 to 21 December 2025.

Study population

The study population comprised traffic police officers working in the Delhi traffic police department who were actively engaged in field duties. Traffic police officers are a specialized unit of the police force responsible for traffic regulation, enforcement of road safety laws, accident management, and public interaction, placing them at higher occupational risk compared to administrative police personnel.

Sample size and sampling technique

A sample size of 140 traffic police officers was included in the study. The sample size was estimated using Cochran's formula, considering a prevalence rate of 12% based on previous literature, a 95% confidence level, and a margin of error of 5%.⁶ Although the calculated sample

size was 160, 140 participants were included due to feasibility constraints and availability during the data collection period.

A non-probability purposive sampling technique was used to select participants. This technique was appropriate as it enabled the inclusion of officers who met specific eligibility criteria and were available and willing to participate at the time of data collection.¹⁸

Inclusion criteria

Inclusion criteria included the traffic police officers working in Delhi, posted on field duty for at least one year within last three years and able to read and understand Hindi or English and willing to participate in their study.

Exclusion criteria

Traffic police personnel engaged exclusively in administrative duties. Officers with less than one year of field experience during the last three years. Officers unwilling to participate in the study

Data collection instruments

Data were collected using three structured instruments:

Section I: socio-demographic profile

This section included 16 items assessing age, gender, religion, marital status, type of family, monthly family income, educational status, years of service, duration of daily road duty, physical activity, frequency of health checkups, recent health problems, past medical and surgical history, use of protective equipment, and substance use habits.

Section II: occupational health hazard assessment questionnaire

A self-structured Likert-type questionnaire was developed to assess the prevalence of occupational health hazards. The tool comprised three major domains:

Physical health hazards (respiratory, gastrointestinal, eye, skin, musculoskeletal, auditory, and general health issues); social health hazards; mental health hazards.

Responses were recorded on a five-point Likert scale ranging from never to always. Scores indicating frequent or consistent occurrence were considered indicative of the presence of occupational health hazards.

Section III: perceived stress scale (PSS-14)

Stress levels were assessed using the Perceived Stress Scale-14, developed by Cohen et al.²⁰ The PSS-14 measures the degree to which individuals perceive

situations in their lives as stressful. Scores range from 0 to 56 and are categorized as low, moderate, or high perceived stress.

Data collection procedure

After obtaining ethical clearance from the Institutional Ethics Committee of Jamia Hamdard, formal permission ref no. 12/25(11/11/2025) was secured from the traffic police headquarters. Participants were briefed about the purpose of the study, and written informed consent was obtained.

Data were collected using a paper-and-pen method, ensuring privacy and confidentiality. Each participant completed the questionnaire under the supervision of the investigator. Following data collection, an educational pamphlet on the prevention of occupational health hazards was distributed to all participants.

Ethical considerations

Ethical principles of autonomy, beneficence, non-maleficence, and justice were strictly followed.²¹ Participants were assured of anonymity and confidentiality, and they were informed of their right to withdraw from the study at any time without penalty. Data were coded to protect participant identity.

Statistical analysis

Data were coded and entered statistical software for analysis. Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to summarize socio-demographic, occupational, and psychological variables.

Inferential statistics were applied to examine associations between psychological distress and selected socio-demographic and occupational factors. The chi-square test was used to determine statistical associations between categorical variables. A p value of less than 0.05 was considered statistically significant.

RESULTS

The results of the present study are based on data collected from 140 traffic police officers working in selected regions of Delhi. The findings are organized according to the study objectives and presented under the following subsections: demographic characteristics, prevalence of occupational health hazards, perceived stress levels, and association between stress and selected demographic variables.

The demographic profile of the participants revealed that most traffic police officers belonged to the 36-45 years age group (35.7%), followed by those aged 56-60 years (24.3%) and 26-35 years (21.4%). Most participants were

male (88.6%), while 11.4% were female. Regarding marital status, 95.7% were married.

Table 1: Socio-demographic and occupational characteristics of traffic police officers (n=140).

Background variables	Frequency	Percentage
Age (in years)		
18-25	6	4.3
26-35	30	21.4
36-45	50	35.7
46-55	20	14.3
56-60	34	24.3
Gender		
Male	124	88.6
Female	16	11.4
Religion		
Hinduism	137	97.9
Islam	2	1.4
Sikhism	1	0.7
Marital status		
Married	134	95.7
Unmarried	5	3.6
Windowed	1	0.7
Type of family		
Single	83	59.3
Nuclear family	57	40.7
Family monthly income (Rs.)		
40,000-50,000	11	7.9
50,001-60,000	22	15.7
> 60,001	107	76.4
Education		
Secondary (10th)	18	12.9
Higher secondary (12th)	66	47.1
Graduation	52	37.1
Postgraduation	4	2.9
Total service period in traffic police department		
1-5 years	15	10.8
5-10 years	31	22.1
10-15 years	31	22.1
More than 15 years	63	45

In terms of educational qualification, 47.1% had completed higher secondary education, 37.1% were graduates, and 2.9% were postgraduates. Nearly half of the participants (45%) had more than 15 years of service in the traffic police department. A majority (76.4%) reported a monthly family income exceeding ₹60,000.

Regarding work-related characteristics, most officers reported 8-10 hours of daily road duty, with limited opportunities for rest during shifts. A substantial proportion reported irregular health checkups and inconsistent use of personal protective equipment such as masks and earplugs.

Table 2: Frequency and percentage distribution of samples as per their demographic characteristics n=140.

Background variables	Frequency	Percentage
Duration of road duty in a day		
Up to 6 hours	13	9.3
Up to 8 hours	19	13.6
Up to 10 hours	108	77.1
Engagement in regular physical activity		
Yes	34	24.3
No	106	75.7
Frequency of health checkups		
Once a year	73	52.2
Twice a year	9	6.4
Only after experiencing a health problem	28	20
Never	30	21.4
Health issues in last 3 months		
Yes	7	5
No	133	95
Past surgical history		
Yes	12	8.6
No	128	91.4
Past medical history		
Yes	15	10.7
No	125	89.3
Use of protective gear (mask, ear plug)		
Regular	13	9.3
Sometimes	71	50.7
Never	56	40
Habit of any substance use		
Yes	63	45
No	77	55

Table 3: Prevalence of occupational health hazards among traffic police officers n=140.

Category	Prevalence
Mental Health Hazards	80.83%
Social Health Hazards	74.84%
Physical Health Hazards	27.37%
Overall Occupational health hazards	37.90%

Overall, 37.9% of traffic police officers reported experiencing one or more occupational health hazards.

Among the three major categories assessed, mental health hazards were the most prevalent (80.83%), followed by social health hazards (74.84%) and physical health hazards.

Stress levels were assessed using the perceived stress scale-14 (PSS-14). The obtained stress scores ranged within the possible score limits of the scale.

Table 4: Frequency and percentage distribution of perceived stress of traffic police officers n=140.

Stress level	Frequency	Percentage
Low stress	88	62.9
Moderate stress	50	35.7
High stress	2	1.4

The mean perceived stress score was 15.89, indicating an overall low level of perceived stress among participants. The distribution of stress levels showed that: 62.9% of traffic police officers experienced low stress. 35.7% experienced moderate stress. Only 1.4% experienced high stress.

These findings suggest that while most officers reported low stress levels, a notable proportion experienced moderate stress.

Physical health hazards

Within the domain of physical health hazards, the most frequently reported problems were: respiratory complaints, including breathlessness, cough, and throat irritation. Gastrointestinal problems, such as acidity and indigestion. Eye-related problems, including redness, irritation, and watering

Other reported physical issues included noise-related hearing problems, skin irritation, musculoskeletal pain (particularly back, neck, and knee pain), and general health complaints such as fatigue and headaches.

Social health hazards

Social health hazards were commonly reported and included: reduced participation in social activities; strained family relationships due to long and irregular duty hours; feelings of social isolation; limited time for family and recreation.

A significant proportion of participants reported difficulty balancing work and family responsibilities.

Mental health hazards

Mental health hazards were highly prevalent among participants. The most commonly reported issues included: irritability during traffic duty; anxiety and persistent worry; difficulty concentrating while on duty; sleep disturbances; mood swings and episodes of anger. These findings indicate a substantial psychological burden associated with traffic policing duties.

Fisher's Exact test was used to determine the association between stress level among traffic police officers and selected background variables such as age, gender, religion, marital status, type of family, family monthly income.

Table 5: Fisher’s exact test showing association between stress level with demographic variables among traffic police officers n=140.

Selected variables	Low stress	Moderate stress	High stress	Fisher’s exact test value	Degree of freedom	P value
Age in years						
18-25	4	2	0	2.936	8	0.997
26-35	19	11	0			
36-45	31	18	1			
46-55	12	8	0			
56-60	22	11	1			
Gender						
Male	77	45	2	0.445	2	0.832
Female	11	5	0			
Transgender	0	0	0			
Religion						
Hinduism	87	48	2	6.448	4	0.47
Islam	1	1	0			
Sikhism	0	1	0			
Christianity	0	0	0			
Others	0	0	0			
Marital Status						
Married	84	48	2	5.578	4	0.394
Unmarried	4	1	0			
Widowed	0	1	0			
Divorced	0	0	0			
Type of family						
Single	53	30	0	2.527	2	0.311
Nuclear family	35	20	2			
Joint family	0	0	0			
Extended family	0	0	0			
Family monthly income (Rs.)						
40,000-50,000	9	2	0	2.989	4	0.571
50,001-60,000	12	10	0			
>60,001	67	38	2			

*Significant- p value <0.05.

Table 6: Fisher’s exact test showing association between stress level with demographic variables among traffic police officers n=140.

Selected variables	Low stress	Moderate stress	High stress	Fisher’s exact test value	Degree of freedom	P value
Education						
Secondary (10 th class pass)	6	11	1	14.024	6	0.014*
Higher secondary (12 th class pass)	46	20	0			
Graduation	35	16	1			
Postgraduation	1	3	0			
Total service period in traffic police department						
1-5 years	9	6	0	3.398	6	0.794
6-10 years	18	13	0			
11-15 years	18	12	1			
more than 15 years	43	19	1			
Duration of road duty in a day						
Up to 6 hours	10	3	0	4.145	4	0.372
Up to 8 hours	10	8	1			
Up to 10 hours	68	39	1			

Continued.

Selected variables	Low stress	Moderate stress	High stress	Fisher's exact test value	Degree of freedom	P value
Up to 12 hours	0	0	0			
Engage in regular physical activity						
Yes	23	11	0	0.58	2	0.819
No	65	39	2			
Frequency of health checkups						
Once in a year	45	28	0	4.628	6	0.599
Twice in a year	6	3	0			
Only after experiencing a health problem	19	8	1			
Never	18	11	1			
Health issues in last 3 months						
Yes	3	4	0	2.199	2	0.327
No	85	46	2			
Past surgical history						
Yes	7	5	0	0.656	2	0.797
No	81	45	2			
Habit of any substance use						
Yes	44	17	2	5.372	2	0.047*
No	44	33	0			

*Significant- p value <0.05

There was no significant association observed between stress level with selected background variables such as age, gender, religion, marital status, type of family, family monthly income.

Fisher's extract test was used to find association between the stress among traffic police officers and their selected demographic variables and found that there was significant association between the stress level among traffic police officers and their education ($p=0.014$) and substance use ($p=0.047$) where as there is no significant association between stress and total service period in traffic police department, duration of road duty, engage in regular physical activity, frequency of health checkups, health issues in last 3 months, past medical and surgical history.

DISCUSSION

The present study aimed to assess the prevalence of psychological distress and its associated factors among traffic police officers in an urban metropolitan area of India. The findings reveal a high burden of psychological distress, with anxiety emerging as the most prevalent condition, followed by stress and depression. These results underscore the significant mental health challenges faced by traffic police officers and highlight the urgent need for targeted mental health interventions within this occupational group.

The present study reveals that out of 140 traffic police officers, more than one-third of the traffic police officers (37.90%) experience occupational health hazards. These findings are consistent with the similar cross-sectional study by conducted by Meena et al aimed to assess morbidity and prevalence of risk factors among police officers and found that the overall prevalence of health

complaints among police personnel in the National capital region of India is 49.6%, with common complaints related to cardiovascular and musculoskeletal systems.²² Similarly, a cross-sectional study by Jahan et al concluded that traffic police reported high prevalence of ocular, respiratory and auditory complaints and also these were more prevalent physical health problems among traffic police officers.⁷

The present study reveals that out of 140 traffic police officers, among physical health issues, respiratory problems are most common (36.71%), followed by gastrointestinal (34.39%) and eye-related problems; other issues include noise-related problems, skin issues, musculoskeletal symptoms (25.92%), and general problems. The findings of the present study were consistent with the previous a study by Mishra and Purushothama, investigated the prevalence of occupational health symptoms among traffic police personnel in Mangaluru. Their results showed that respiratory symptoms were reported by 51.2%, eye-related problems by 61.6%, and auditory complaints by a significant proportion of the officers, and other findings suggest that health issues among traffic police are common but generally non-severe.⁵ However findings are contrast with study conducted by Dhakal et al which aimed to assess health hazards due to occupational traffic police officers at Kathmandu. Their findings revealed high rates of physical health issues like musculoskeletal pain (87.8%), ocular problems (72.3% burning/tearful eyes), and depression (58.8%), contrasting sharply with the present Delhi study ($n=140$), where mental health hazards dominate at 80.83%, followed by social (74.84%) and lower physical hazards (27.37%).²³

The present study reveals that out of 140 traffic police officers, social and psychological challenges are highly

prevalent, with the majority reporting social withdrawal, difficulty in social participation, strained relationships, social isolation, and emotional disturbances such as mood swings and anger. In line with present study, a systematic review study by Sherwood et al identifies low social support from colleagues as the top risk factor for depression, anxiety, PTSD, and burnout, alongside individual traits like neuroticism and avoidant coping, organizational issues (high demands, low rewards), and operational stressors (trauma exposure).²⁴

The present study also revealed that the irritation during traffic management ranks as the highest mental health hazard, followed by anxiety due to heavy traffic, loss of concentration, sleep disturbances, and memory lapses. In line with present study, a cross sectional study by Kumar and Varma, aimed to assess mental health and related issues among drivers due to traffic congestion and found that it significantly impairs mental health, with positive correlations between mental health and quality of life ($r=0.329$, $p<0.01$) and negative links to depression ($r=-0.371$, $p<0.01$), anxiety ($r=-0.331$, $p<0.01$), and stress ($r=-0.344$, $p<0.01$).²⁵ Similarly, a study by Beutel et al conducted a longitudinal study demonstrates that baseline noise annoyance particularly daytime road/aircraft and nighttime neighbourhood sources predicts new-onset depression, anxiety, and sleep disturbance at follow-up, with vulnerabilities heightened among women, younger adults, and lower SES groups, mirroring the Delhi traffic police findings where irritation (top mental hazard), anxiety from heavy traffic, concentration loss, sleep disturbances, and memory lapses prevail amid constant noise exposure.²⁶

The present study depicts that the majority 62.9% of respondents experience low stress levels, while over one-third report moderate stress (35.7%). Only a very small proportion (1.4%) experience high stress. This suggests that overall stress levels among the respondents are generally low to moderate, with severe stress being uncommon. among traffic police. These findings are consistent with the previous cross sectional research study conducted by Raju et al examined the stress levels among police personnel, their findings showed that 51.0% of the respondents experienced normal/low stress, 31.84% had mild stress, 16.73% reported moderate stress, and only 0.41% exhibited severe stress.²⁷

The present study reveals that the association between prevalence of stress level with demographic variable among traffic police officers and found that there is no significant association between stress levels and variables such as age, gender, religion, marital status, type of family, and family income, whereas a significant association exists between stress levels and education ($p=0.014$) as well as substance use ($p=0.047$). But no significant association was found between stress levels and service period, duration of road duty, physical activity, frequency of health checkups, recent health issues, or past medical/surgical history. Consequently, the findings of the present study were consistent with the

previous a cross-sectional study conducted by Ghising et al aimed to assess occupational stress and its associated factors among traffic police in Nepal and found that moderate occupational stress in 81.9% of participants, significantly associated with age ($p=0.008$) and education ($p=0.044$), plus factors like shift work, job pressure, delayed promotions, low salary, transfers, and family disruption.¹⁴

Despite its strengths, the study has certain limitations. The use of a non-probability purposive sampling technique limits the generalizability of the findings. The study relied on self-reported data, which may be subject to reporting bias or social desirability bias, particularly regarding stress and substance use. The cross-sectional design precludes establishing causal relationships between occupational hazards and stress. Environmental exposure levels (e.g., air pollution or noise levels) were not objectively measured.

Implications for nursing practice

The findings of this study highlight the critical role of community health and occupational health nurses in promoting the well-being of traffic police officers. Nurses can: Conduct regular health assessments and early screening for occupational illnesses; Provide counselling and stress management support; Educate traffic police officers on preventive measures and healthy lifestyle practices; Advocate for safer working environments and occupational health policies.

Nurses can also play a key role in multidisciplinary occupational health teams working with police departments.

CONCLUSION

Traffic police officers are exposed to a wide range of occupational health hazards, with a substantial proportion experiencing physical, social, and mental health problems. Mental health hazards were the most prevalent, followed by social and physical health hazards, indicating that psychological and psychosocial risks are prominent concerns in traffic policing.

Although most participants reported low perceived stress levels, a considerable proportion experienced moderate stress. The presence of mental health symptoms despite low perceived stress scores suggests possible normalization of stress, underreporting, or adaptive coping mechanisms among traffic police officers. The significant association of perceived stress with educational status and substance use highlights the role of individual factors in stress perception and coping.

Recommendations

Future studies are recommended to: employ longitudinal designs to assess long-term health outcomes among traffic police officers; use probability sampling

techniques for better generalizability; incorporate objective measurements of environmental exposures such as air and noise pollution; evaluate the effectiveness of intervention programs aimed at reducing occupational stress and health hazards; conduct comparative studies between traffic police officers and other occupational groups.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

- World Health Organization. Occupational health: A manual for primary health care workers. Geneva: WHO; 2001.
- National Crime Records Bureau. Accidental deaths and suicides in India. New Delhi: Ministry of Home Affairs; 2022.
- Central Pollution Control Board. National air quality status and trends. New Delhi: CPCB; 2023.
- Chelimela S, Faiyazuddin M, Mohammed M. Respiratory morbidity among traffic police personnel. *Lung India*. 2016;33(5):524-8.
- Mishra PK, Purushothama J. Occupational hazards and health problems among traffic personnel of Mangaluru city. *Int J Community Med Public Health*. 2019;6(8):3608-13.
- Rijal SS. Occupational health problems of traffic police officers. *J Nepal Health Res Counc*. 2018;16(3):287-92.
- Jahan I, Dalal K, Khan MAS, Mutsuddi A, Sultana S, Rashid MU, et al. Occupational Health Hazards Among Traffic Police in South Asian Countries: Protocol for a Scoping Review. *JMIR Res Protoc*. 2023;12:e42239.
- Haralkar SJ, Gite RN. Morbidity profile of traffic policemen. *Nat J Community Med*. 2012;3(4):619-23.
- Lee M, Mohamad Jamil PAS, Mohammad Yusuf NAD, Mohd Suadi Nata DH, Karuppiah K. Musculoskeletal disorders of traffic police in Putrajaya: evaluating ergonomic risks and trends. *Work*. 2025;80(2):871-87.
- Sridher S, Thulasiram S, Rishwanth R, Sakthivel G, Rahul V, Maheswari RU. Health status of traffic police personnel in Chennai city. *Public Health Review: Int J Public Health Res*. 2017;4(4):98-103.
- Raval A, Dutta P, Tiwari A, Ganguly PS, Sathish LM, Mavalankar D, et al. Effects of occupational heat exposure on traffic police workers in Ahmedabad, Gujarat. *Indian J Occup Environ Med*. 2018;22(3):144-51.
- Kjellstrom T, Briggs D, Freyberg C, Lemke B, Otto M, Hyatt O. Heat, human performance, and occupational health: a key issue for the assessment of global climate change impacts. *Ann Rev Public Health*. 2016;37:97-112.
- Yadav B, Bhusal S, Pradhan PMS. Occupational stress among traffic police officers. *BMC Public Health*. 2022;22:1125.
- Ghising R, Shah T, Badhu A, Baral D. Occupational stress among traffic police in Sunsari, Nepal. *J Birat Nurs Campus*. 2024;1(1):47-54.
- McEwen BS. Stress, adaptation, and disease. *Ann N Y Acad Sci*. 1998;840:33-44.
- Kulkarni V, Mithra P, Aujla RS, Singh K, Unnikrishnan B, Jain A, et al. Stress among traffic police personnel in the coastal region of south India. *Indian J Occup Ther*. 2019;13(3):35-9.
- International Labour Organization. Safety and health at work. Geneva: ILO; 2019.
- Polit DF, Beck CT. Nursing research: Generating and assessing evidence for nursing practice. 10th ed. Philadelphia: Wolters Kluwer; 2017.
- Creswell JW. Research design: qualitative, quantitative, and mixed methods approaches. 4th ed. Thousand Oaks: Sage Publications; 2014.
- Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. *J Health Soc Behav*. 1983;24(4):385-96.
- World Medical Association. Declaration of Helsinki: Ethical principles for medical research involving human subjects. *JAMA*. 2013;310(20):2191-4.
- Meena JK, Kumar R, Meena GS. Protect the protector: morbidity and health behavior among police personnel in national capital region of India. *Indian J Occup Environ Med*. 2018;22(2):86-91.
- Dhakal M, Shah RK, Sainju NK, Manandhar N. Health status of traffic police in Kathmandu Valley: findings from a cross-sectional study. *Int J Occup Safe Health*. 2017;7(1):2-6.
- Sherwood L, Hegarty S, Vallières F, Hyland P, Murphy J, Fitzgerald G, et al. Identifying the key risk factors for adverse psychological outcomes among police officers: a systematic literature review. *J Trauma Stress*. 2019;32(5):688-700.
- Kumar R, Varma B. Mushrooming traffic congestion and psychological implications among drivers. *Int J Creat Res Thoughts*. 2020;8(6).
- Beutel ME, Brähler E, Ernst M, Klein E, Reiner I, Wiltink J, et al. Noise annoyance predicts symptoms of depression, anxiety and sleep disturbance 5 years later. Findings from the Gutenberg Health Study. *Eur J Public Health*. 2020;30(3):516-21.
- Raju S, Kumari R, Tiwari S. Prevalence of stress among police worker: a cross-sectional study. *Int J Community Med Public Health*. 2020;7(7):2645-9.

Cite this article as: Verma K, Rani S, Bhattacharya S. Prevalence of occupational health hazards, stress level and associated factors among traffic police officers in Delhi: a cross-sectional study. *Int J Community Med Public Health* 2026;13:3799-807.