

Work Stress among Traffic Police of Ahmedabad City, Gujarat, India: A Cross-sectional Study

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ABSTRACT

Introduction: The traffic police maintain a smooth flow of traffic and maintain safe and secure movements on the roads. Police face various kinds of hazards such as accident hazards, physical, chemical, and biological hazards, ergonomic hazards, psychosocial hazards, and hazards related to organisational factors of the police department. Work stress is a result of psychosocial hazards, and it has the potential to affect an individual's health and efficiency to perform police work.

Aim: The study aimed to investigate work stress, an occupational health disease, in the traffic police of Ahmedabad city, Gujarat, India.

Materials and Methods: In the present descriptive, cross-sectional study, 420 traffic police from all fourteen traffic police stations of Ahmedabad city, Gujarat, India were randomly selected. The study included male and female traffic police from all cadres, and data was collected from November 2019 to March 2021. The study used an informed consent form and self-

administered questionnaire to collect data on demographics, work profile, and Occupational Stress Index (OSI). The Mann-Whitney U test was used to evaluate the hypotheses, and a Significant p-value was set at 0.05.

Results: When measured using OSI, 257 (61.19%) participants had moderate work stress, and 111 (26.43%) participants had high work stress. The traffic police reported work stress owing to all twelve OSI dimensions of work stress. Apart from OSI, factors such as public friction and public distrust could be potential stressors and cause work stress.

Conclusion: The study discovered that traffic police of Ahmedabad city were not bulletproof against work stress, and it was widely prevalent. Multiple work-related factors were taxing the traffic police, which ultimately led to work stress. The research findings provide an insight into the current health status of the traffic police. Moreover, not only the identification of the work stress important but also the management is equally important.

Keywords: International labour organisation, Occupational hazards, Occupational stress index

INTRODUCTION

Near the end of the 20th century, it was noted that about 45% of the world's population belonged to the global workforce. Around 58% of the population older than 10 years belongs to the workplace and spend one-third of their adult lives at their work. Thus, workers' health is largely affected by work [1]. The International Labour Organisation (ILO) stated that rapid globalisation has a huge impact on the world of work and leads to the rise of serious work-related health issues. Globally, 160 million cases of non-fatal occupational disease occur annually, and along with well-recognised occupational diseases such as pneumoconiosis, new occupational diseases, such as work stress, and work-related musculoskeletal disorders, are on the escalation [2]. Gallup Global Emotions report 2019 noted that one in three people experienced stress and indicated a worldwide average of 35% [3].

The Police whose main job is to protect the public face various kinds of hazards such as accident hazards, physical, chemical, and biological hazards, ergonomic hazards, psychosocial hazards, and hazards related to organisational factors of the police department [4]. Police are susceptible to psychosocial hazards such as emotional trauma while witnessing fatal accidents, on fire ranges, or in hostage situations. These may lead to stress, anxiety, depression, etc. Police are simultaneously at risk of organisational hazards for police work i.e., long or irregular working hours, shift work, work demand and work pressure, poor relationships to poor support in a hierarchical system. These hazards can affect the physical and mental health [4-6]. Across the world, the police are one of the most vulnerable occupational groups for developing work-related health issues, and Indian police are no exception to the risk.

During their tenure, police work in various departments of the police organisation such as the general branch, special branch and crime branch, administrative and accounts branch, vigilance and control room, confidential branch, and in the traffic department. The traffic police maintain a smooth flow of traffic, safe and secure vehicle and pedestrian movements on the city roads and at highway junctions and ensure the prevention of accidents. To fulfil the same, the traffic police liaise with the other departments and authorities [7]. The work profile of traffic police of Ahmedabad city is massive and increasing with the expanding boundaries of the city.

Many countries have reported increased stress levels among employees in the last few years. Compared with the general population, the traffic police have a higher all-cause Standard Mortality Ratio [8]. Hence, the study aimed to investigate work stress, an occupational health disease, in traffic police of Ahmedabad city. The objectives were to translate the tool for the work stress measurement, and to evaluate the difference in work stress of the traffic police based on specific sociodemographic and work variables. "A state, which is accompanied by physical, psychological or social complaints or dysfunctions, and which results from individuals' feeling of unable to bridge a gap with the requirements or expectations placed on them" was used as definition of work stress [9]. Null hypothesis, no significant difference in the work stress of the traffic police, based on their specific personal and work variables. The alternate hypothesis, a significant difference in the work stress of the traffic police, based on their specific personal and work variables.

MATERIALS AND METHODS

The present descriptive, cross-sectional study used simple random sampling technique for data collection. The data was collected

from November 2019 to March 2021. Ethical approval (SHEC/NoD/1319) received from the Sagini Hospital Ethics Committee and also received permission from the Police Department of Ahmedabad city. Before data collection, all fourteen traffic police stations in the city were contacted. Although forty police were randomly selected from each station, data were collected from only 456 police as per the selection criteria. They were informed about the purpose of the study, voluntary participation, the consent form, the confidentiality of information, and the utilisation of the study findings.

Sample size calculation:

$$N = \frac{P_y * P_n}{(\text{Standard error})^2}$$

N is the desired number of participants, and P_y and P_n are expected answers to the questions. At a 95% confidence interval and considering P_y and P_n as a 50/50 split in the fail-safe position, required sample size was 384 [10]. The ultimate sample size was increased, equalised, and rounded off to 420, representing 20% of the total police strength in the traffic department of Ahmedabad city.

Inclusion and Exclusion criteria: The study included male and female traffic police from all cadres except for police on deputation/special duty, those underwent major surgery in the last years, pregnant women, and those diagnosed or recovered from COVID-19.

Study Procedure

The data collection instrument consisted of a participant informed consent form and a self-administered questionnaire (demographic and work profile details, and OSI). The informed consent form was prepared as per the ethical guidelines [11,12].

Parameters	Frequency	Percentage	Parameters	Frequency	Percentage
Police cadre*			Work experience (Traffic)		
Level-II (PSI/ASI)	33	7.86%	2 to 5 years	412	98.10%
Level-III (HPC, PC, LRD)	387	92.14%	>5 years	8	1.90%
Work profile			Age groups		
Traffic regulation	297	70.71%	21-40 years	302	71.90%
Office work	123	29.29%	41-60 years	118	28.10%
Gender			Marital Status		
Male	362	86.19%	Married	337	80.24%
Female	58	13.81%	Unmarried	83	19.76%
Education			Body Mass Index (BMI)†		
Secondary School Certificate-SSC	23	5.48%	Underweight	13	3.10%
Higher Secondary Certificate-HSC	125	29.76%	Normal weight	283	67.38%
Graduation	271	64.52%	Pre obesity	116	27.62%
Postgraduation	1	0.24%	Obesity class I & II	8	1.90%
Daily average working hours			Leisure time activity		
8 hours	305	72.62%	Sedentary	283	67.38%
9-10 hours	81	19.28%	Active	95	22.62%
11-12 hours	34	8.10%	Both	42	10.00%
Total leaves in the last year			Average sleep duration		
0 to 15 leaves	296	70.48%	5 to 6 hours	111	26.43%
16 to 30 leaves	102	24.29%	7 to 8 hours	288	68.57%
31 to 45 leaves	19	4.52%	9 to 10 hours	19	4.52%
>45 leaves	3	0.71%	>10 hours	2	0.48%
Regular exercise habit			Affect level due to public distrust		
Yes	98	23.33%	Yes	225	53.57%
Often	88	20.95%	Often	80	19.05%
No	137	32.62%	No	92	21.90%
Undecided	97	23.10%	Undecided	23	5.48%
Satisfaction level with health-related departmental provisions			Affect level due to public friction		
Yes	159	37.86%	Yes	298	70.95%
To a greater extent	86	20.48%	Often	48	11.43%

The OSI, developed by Shrivastava and Singh in 1984, measures work-related stress in Indian government employees. It consists of 46 items rated on a five-point scale, categorising them into low (46-122), moderate (123-155), and high stress (156-230) levels [13]. Minimum score 46 and maximum score 230. OSI is a reliable and valid tool and often employed in Indian population, including the police [14,15]. The scale was translated from English to Gujarati language using the World Health Organisations' (WHO) guideline [16]. The prefinal version of OSI was tested on 10 participants, and final version was prepared with experts' translation service and certification.

STATISTICAL ANALYSIS

The data of a total of 420 traffic police were utilised after removal of 36 datasheets during the data processing due to incompleteness. Data was entered in MS Office Microsoft Excel 2010. Later, the data was imported, analysed, and the result generated in Statistical Package for Social Sciences SPSS Inc. version 16.0. Data did not fulfil all assumptions for normality. Therefore, non-parametric tests were used. The study categorised traffic police into five groups, i.e., age, gender, cadre, experience, and work profile. The Mann-Whitney U test was used to evaluate the null and alternate hypotheses, highlighting the potential influence of individual and work variables on work stress. The confidence interval was set at 95%, and a p-value of 0.05.

RESULTS

The [Table/Fig-1] Shows, descriptive statistics of various parameters of the traffic police [17].

No	156	37.14%	No	66	15.71%
Undecided	19	4.52%	Undecided	8	1.91%
Affect level due to changing weather and environment			Affect level due to road accident or death		
Yes	274	65.24%	Yes	247	58.81%
Often	69	16.43%	Often	57	13.57%
No	64	15.24%	No	93	22.14%
Undecided	13	3.10%	Undecided	23	5.48%

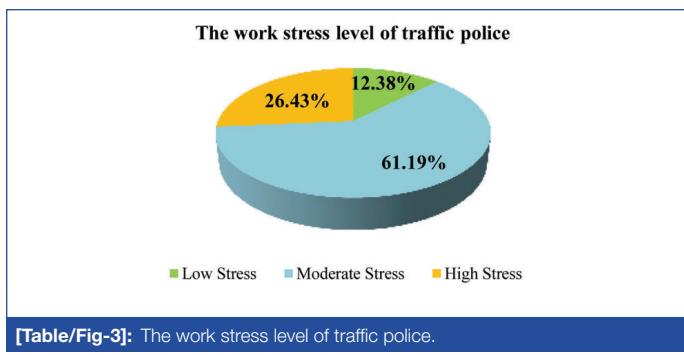
[Table/Fig-1]: Descriptive statistics of various parameters of the traffic police.

*Police Sub Inspector (PSI), Assistant Police Sub Inspector (ASI), Head Police Constable (HPC), Police Constable (PC), Lok Rakshak Dal (LRD) #based on WHO classification [17]

The [Table/Fig-2] shows, descriptive statistics of OSI score. [Table/Fig-3] illustrates the work stress level of traffic police, measured using OSI. The majority of 257 (61.19%) reported a moderate work stress. The [Table/Fig-4] shows, descriptive statistics of OSI variables.

OSI score	Minimum	Maximum	Mean	SD
Overall Score	100	199	145.14	19.06

[Table/Fig-2]: Descriptive statistics of OSI score.



[Table/Fig-3]: The work stress level of traffic police.

Sr. No.	OSI Variables	Minimum	Maximum	Mean	SD
1	Role overload	11	30	22	4.44
2	Role ambiguity	6	20	12.06	2.59
3	Role conflict	9	23	15.46	2.55
4	Unreasonable group & political pressure	5	20	15.10	3.29
5	Responsibility for persons	5	15	10.14	2.15
6	Under-participation	4	20	12.80	3.09
7	Powerlessness	3	15	8.86	2.48
8	Poor peer relation	4	20	9.96	2.71
9	Intrinsic impoverishment	6	19	12.41	1.25
10	Low status	3	14	6.56	1.95
11	Strenuous working condition	5	20	12.62	2.82
12	Unprofitability	2	10	7.17	1.80

[Table/Fig-4]: Descriptive statistics of OSI variables.

The [Table/Fig-5] Shows, Mann Whitney U test to compare OSI score in specific personal and work variables. No significant difference in the work stress was found based on specific personal and work variables. Thus, the null hypothesis was accepted and alternate hypothesis rejected. The [Table/Fig-6], Shows the correlation between work stress and age. The [Table/Fig-7] Shows the scatter plot diagram of the correlation between work stress and age. There was a statistically significant negative correlation between the OSI score and the age of traffic police. Further, the correlation between the OSI scores, and gender, exercise habit, cadre, experience, and work profile were also tested but no significant correlation was found.

DISCUSSION

The study focused on the health and well-being of traffic police in Gujarat, specifically in Ahmedabad city. Based on the data on

Mann Whitney U test								
Work Stress	Groups		Total	Mean rank	Sum of ranks	MW U	Z	p-value*
Total OSI score	Age	21 to 40 years	302	216.2	65287.0	16102.0	-1.54	0.13
		41 to 60 years	118	196.0	23123.0			
	Gender	Male	362	207.0	74929.5	9226.5	-1.48	0.14
		Female	58	232.4	13480.5			
	Cadre	Level II	33	177.3	5849.5	5288.5	-1.64	0.10
		Level III	387	213.3	82560.5			
	Experience	2 to 5 years	412	210.9	86901.0	1473.0	-0.52	0.61
		>5 years	8	188.6	1509.0			
	Work profile	Traffic regulation	297	215.8	64078.0	16706.0	-1.38	0.17
		Office work	123	197.8	24332.0			

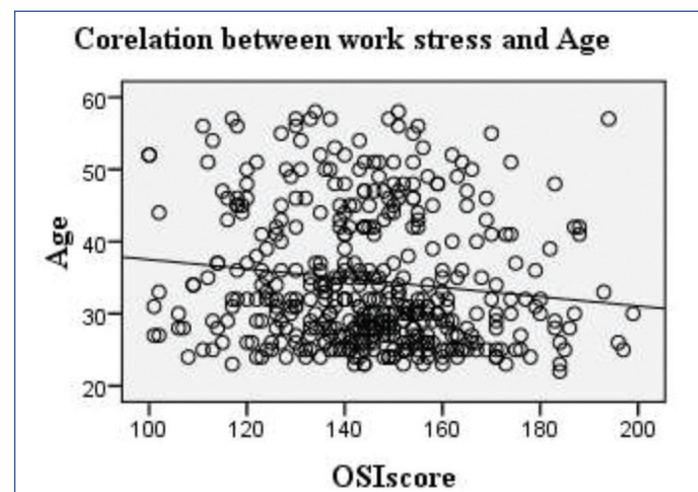
[Table/Fig-5]: Comparison of OSI score in specific personal and work variables.

*Not significant at the p-value > 0.05 level (2-tailed).

Correlation between work stress and age		
Spearman's rho Correlation		-0.152*
Sig. (2-tailed)		0.002
N		420

[Table/Fig-6]: Correlation between work stress and age.

*Correlation significant at the p<0.01 level (2-tailed)



[Table/Fig-7]: Scatter plot diagram of correlation between work stress and age.

the cadre level, gender distribution, and education requirements of police, it was observed that the study data was fairly in line with and representative of the police organisation of Gujarat and India [17-19]. Participants worked seven days a week, with standard eight-hour rotational shifts. Duty hours may increase during important events like elections or festivals. About 27.38% worked more than eight hours daily, possibly due to heavy traffic, paperwork, or meeting deadlines and targets.

Body Mass Index (BMI), or Quetelet Index, reflects an adult's nutritional status [20]. Notable 3.10% were underweight, and

29.52% were preobese and obese. It should be a concern for the department, as to remain fit and active on the duty, nutritional status also plays an essential role. Although, in comparison with studies on Delhi [21] and Sitapur [22] police, the prevalence was reasonably less in the present study. Regularly an adult should sleep 7 or more hours per night to promote optimal health, and less sleep time can lead to adverse health outcomes [23]. About 26.43% participants' average daily sleep duration was five to six hours, and among them, 91.89% complained of a moderate or high stress on OSI. Sleep deprivation is often a direct result of work stress and can lead to exhaustion [9]. Police tend to suffer from sleep problems, and it plays a mediating role between stress and adverse health outcomes [24]. Thus, work stress might have potentially altered the sleep schedule of participants who slept less than seven hours per night.

Leisure activities were divided into active, sedentary, and a combination of both. Largely, 67.38% participants preferred sedentary activities like spending time with family, resting, spiritual activities, and screen time and engaged in household chores. Studies have shown that traffic police in India [25] and Pakistan [26] often struggle with time for family. Spending relaxing or productive time with family, and support from family can act as a buffer and help to combat stress [27]. Therefore, naturally, study participants could have preferred to spend leisure time with family. Regular exercise offers numerous health benefits and helps combat chronic diseases like cardiovascular diseases, type-2 diabetes etc. Although, most people do not engage in regular exercise [28]. Similar findings were noted in study participants. Police are entitled to 12 days of casual, two days of non-casual and 20 days of sick leave annually. About, 70.48% availed less than 15 days of leave. Police expressed difficulties in accessing leave and perceived it as a source of stress and felt discriminated against in leave allocation [29,30].

Participants were affected by the hot and semi-arid climate of Ahmedabad city. The study also highlighted the mixed response to health-related department provisions, with many dealing with public distrust and friction, leading to road accidents or deaths, potentially adversely affecting their mental health and leading to work stress.

Stress is not a disease, but prolonged stress can cause ill health [9]. Change is a constant stressor in life, and modern life has become full of stress. Work has a significant aspect of an individual's life, spending more time on it than sleep, and may have positive or negative effects on health [1,15]. Thus, the cause of stress outside work could be negligible.

Work stress can be measured using subjective and objective methods, and either approach yields similar results [31]. Hence, work stress was measured using a subjective approach, and the findings showed an OSI minimum and maximum score of 100 and 199, respectively, and a mean \pm SD score of 145.14 \pm 19.06. Traffic constables in Kolkata [29] had higher mean OSI scores and more moderate stress, while police in Karnataka [32] had lower mean OSI score and more high stress, compared to the present study. Stress levels of traffic police across different states might be due to some variations in their work. Largely, 61.19% had a moderate stress and 26.43% reported a high stress due to numerous work stressors. Similarly, police officers of the United Kingdom, Malaysia, Pakistan, and Nepal reported high work stress, and authors identified workload, staff shortage, time pressure, long working hours, lack of communication were major contributing factors [33-36].

Role overload was one of the highest scored work stressors, indicating traffic police must accomplish their work with limited time and resources, leading to feelings of being overloaded. Work overload can be a persistent problem and a major contributor to work stress, and often organisations find it difficult to resolve [9]. Thus, role overload experienced might be accounted for due to the inadequate workforce, resources, and diverse work responsibilities to handle Ahmedabad city roads. The traffic police also reported

work stress because of the presence of unreasonable groups and political pressure in the department. Political pressure on the police from within and outside the department is evident in India [37] and Pakistan [38]. Workers face stressors as high cost (e.g., work pressure) and low gain (e.g., salary, recognition) that lead to work stress, as explained by Siegrist [39]. Thus, an organisational stressor, unprofitability reported by the traffic police, can affect their health over a period. The traffic police did not find their work insignificant, in both organisational and social contexts, and believed the job has enhanced their social status, and thus low status emerged as the least scoring stressor on OSI.

Apart from OSI, factors such as public friction and public distrust could be potential stressors and cause work stress. A majority of the traffic police of Kolkata, Chennai and Pakistan reported these as stressors and also issues of unlawful, non-cooperative public and abusive language as a source of work stress [26,29,38]. Police officers face more stressors than any other occupation due to the nature of their job. Research from several countries has also reported a widespread presence of work stress in the police department. The study found no difference in traffic police's work stress level based on personal and work variables, indicating these factors have not influenced work stress. A negative correlation was found between work stress and age, suggesting that work stress reduces with increased age, possibly attributed to successful learning and implementing coping skills such as sharing problems with colleagues, family, accepting realities, becoming optimistic, etc.

Often, the work stress of the traffic police takes a toll on their health and lends them to stress management sessions [40]. Madras High court has expressed concern for stressed police forces, highlighting the difficulty in maintaining law and order and preventing crime [41]. In addition to rising mortality and morbidity rates, police stress may lead to physical and psychological ailments like anxiety, depression, substance abuse, cardiovascular disorders, musculoskeletal disorders, cancer, and more [5,6,8,14,42]. Thus, not only is identification of the work stress important but also management is equally important.

An individual should learn to identify early signs of work stress and respond accordingly. To address work stress, the government and police organisation should develop and implement strategic plan based on research studies, professional opinions, and workers opinions. Periodic police training, classes on health and well-being, seminars on stress reduction and healthy living, and psychological counselling for affected people could also be undertaken. Clinical and longitudinal studies can be planned to investigate work stress and effective treatment approaches.

Limitation(s)

The recall bias of the study participants might have influenced the self-reporting of work stress. Due to periodic changes in the posting, a cross-sectional study design was used, and follow-up could not be taken.

CONCLUSION(S)

The traffic police of Ahmedabad city were not bulletproof against work stress, and it was widely prevalent with majority of 61.19% reported a moderate work stress. Role overload, unreasonable groups and political pressure, and unprofitability were commonly reported stressor. The alarming rates of work stress require immediate attention at personal, organisational, and government levels to keep traffic police "healthy".

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AUTHOR DECLARATION:

- Financial or Other Competing Interests: None
- Was Ethics Committee Approval obtained for this study? Yes
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. NA

PLAGIARISM CHECKING METHODS:

- Plagiarism X-checker: Jan 06, 2025
- Manual Googling: Jun 28, 2025
- iThenticate Software: Jun 30, 2025 (3%)

ETYMOLOGY:

Author Origin

EMENDATIONS:

7

Date of Submission: **Dec 31, 2024**

Date of Peer Review: **Feb 27, 2025**

Date of Acceptance: **Jul 02, 2025**

Date of Publishing: **Feb 01, 2026**