Journal of Frontiers in Multidisciplinary Research

Assessment of Traffic Police Booth-Related Problems among Traffic Personnel in Vadodara City

Dr. Vashima Veerkumar [1*], Ms. Nandani Rajput [2]

[1] Temporary Assistant Professor, Department of Family and Community Resource Management, Faculty of Family and Community Sciences, The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat, India

[2] Research Scholar, Department of Family and Community Resource Management, Faculty of Family and Community Sciences, The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat, India

* Corresponding Author: **Dr. Vashima Veerkumar**

Article Info

E-ISSN: 3050-9726
P-ISSN: 3050-9718
Volume: 07
Issue: 02
Received: 24-08-2026
Accepted: 22-09-2026
Published: 20-10-2026
Page No: 366-372

Abstract

Traffic police personnel in India operate under demanding conditions, facing prolonged exposure to extreme weather, pollution, and noise, which significantly impact their health, well-being, and work efficiency. The study aimed to assess the existing design of Traffic Police Booths in Vadodara city, to find out the extent of Problems experienced by Traffic Personnel while working in the booth, to propose design for selected Traffic Police Booth of Vadodara city. A descriptive research design was used, and data were collected from 120 traffic personnel. Information was gathered using a structured questionnaire and observation sheet. the study revealed that the majority of traffic personnel experienced environmental, work-related, psychological, and physiological problems to a high extent while working in traffic booths. Most respondents were young and working regular shifts, with significant variations in the extent of problems observed across variables such as number of shifts per day, age, educational qualification, designation, and years of work experience, while no significant differences were found with gender, shift rotation, and working hours. The study highlights the urgent need for redesigned, user-centric traffic booths to improve conditions for Traffic Personnel.

DOI: https://doi.org/10.54660/.JFMR.2026.7.2.366-372

Keywords: Traffic Personnel, Traffic Police Booths, Work-related problems, Environmental exposure, workplace conditions, user-centric design

Introduction

Policing is widely regarded as one of the most demanding and high-stakes professions globally, requiring constant vigilance, rapid decision-making, and exposure to unpredictable situations (Crockett, 2018) [2]. In India, traffic personnel represent a critical and specialized branch of the policing system, playing a vital role in maintaining road discipline and ensuring the smooth flow of vehicles in increasingly congested urban environments. Beyond routine traffic management, their responsibilities extend to election duties (bandobast), regulation of VIP movements, and management of large-scale festivals and public gatherings (Sumit *et al*., 2024) [18]. These additional responsibilities substantially intensify their workload and operational pressures (Mustiko, 2022) [6]. Unlike conventional indoor occupations, the primary workplace of traffic personnel is the road itself, where they typically spend 8 to 12 hours daily under continuous exposure to extreme weather conditions, high noise levels, and harmful vehicular emissions (Zhenjing *et al*., 2022; Shah *et al*., 2025) [13, 19]. Such prolonged exposure results in multiple occupational health risks, including respiratory problems, heat stress, fatigue, and musculoskeletal discomfort (Priyaranjani & Williams, 2015) [8]. In this context, traffic police booths serve as essential infrastructural components by providing designated spaces for monitoring and regulating traffic, while also enhancing the visibility and authority of personnel (Babu & Sherjin, 2016) [1].

Importantly, these booths function not only as operational units but also as protective enclosures that shield personnel from environmental hazards such as pollution, noise, and extreme climatic conditions, thereby supporting safer and more efficient working conditions (Dhakal *et al*., 2017). The design, spatial configuration, and facilities within these booths play a crucial role in influencing the comfort, health, and overall performance of traffic personnel. Features such as adequate shelter, ventilation, and ergonomic design elements can significantly reduce physical strain and environmental exposure (Prajapati *et al*., 2015) [7]. However, despite their importance, many existing traffic booths remain inadequate in addressing the evolving needs of personnel. Traffic officers continue to face persistent challenges, including prolonged exposure to air pollution, extreme temperatures, and excessive noise, leading to respiratory issues, heat-related stress, and physical exhaustion (Prajapati *et al*., 2015; Yadav *et al*., 2023) [7].

In the Indian context, research primarily focuses on the occupational health and working conditions of traffic police personnel, highlighting a high prevalence of respiratory issues, hypertension, musculoskeletal pain, and eye problems due to prolonged exposure to pollution, extreme weather, and long working hours (Prajapati *et al*., 2015; Sridher *et al*., 2017; Shah *et al*., 2025) [7, 13, 16]. Studies also indicate that inadequate facilities, long duty hours, and poor work-life balance negatively affect well-being and job satisfaction (Gangwar & Kiran, 2017; Kumar, 2022; Hussain & Priya, 2022) [4].

Additionally, occupational stress is closely linked to physical health issues such as musculoskeletal disorders and mental health concerns (Dey *et al*., 2023; Krishnamurthy & Sharma, 2021) [3, 5].

Most studies on traffic police personnel focus on occupational health risks and working conditions, but often ignore the influence of physical infrastructure. Research on ergonomic and technological interventions is limited, particularly concerning the design and functionality of traffic police booths in India. The literature indicates a need for climate-responsive and ergonomically designed booths to improve personnel health and efficiency. This study aims to fill this gap by examining booth-related issues and proposing design solutions to enhance working conditions and performance.

Objectives

1. To assess the existing design of Traffic Police Booths in Vadodara city.
2. To find out the extent of Problems experienced by Traffic Personnel while working in the booth.
3. To propose design for selected Traffic Police Booth of Vadodara city.

Delimitations

The present study was limited to the Traffic Personnel of Vadodara city only.

Hypotheses

The Extent of Problems experienced by Traffic Personnel while working in the booth varies with their Personal variables (Age (in years), Gender, Educational Qualification) and Work-related variables (Designation, Years of Working Experience in the Traffic Department, Frequency of Shift Rotation, Number of Shift per day and Number of Shift hours).

Methodology

The present study adopted a purposive sampling technique for the selection of respondents. The sample selection process was carried out in two phases. Phase I involved obtaining permission from the Vadodara Traffic Police and identifying 527 traffic personnel were employed, from which 300 were shortlisted. In Phase II, 120 of the 300 individuals agreed to participate in the study on traffic police booth-related problems in Vadodara City. The data were collected between November 2025 and December 2025 using an Observation sheet and a Questionnaire. An observation sheet recorded the dimensions, infrastructure, and facilities available in traffic police booths. The questionnaire consisted of two sections wherein Section I comprised background information of the respondents, including selected demographic and work-related variables and Section II "Extent of Problems experienced by Traffic Personnel while working in the booth" consisting of 37 statements, measured using a using a five-point Likert scale with response categories of Strongly agree, Agree, Neutral, Disagree, and Strongly Disagree, which were scored 5, 4, 3, 2, and 1, respectively. The collected data were systematically coded, tabulated, and analyzed using appropriate statistical techniques. Descriptive statistics, including frequency, percentage, and mean, were applied to summarize the data, while relational statistics, specifically non-parametric test (Mann-Whitney U test, and Kruskal-Wallis H test) were used to examine variations among the selected variables. The study received ethical approval from the Institutional Ethics Committee for Human Research (IECHR), Faculty of Family and Community Sciences, The Maharaja Sayajirao University of Baroda, with approval number IECHR/FCSC/M.Sc./10/2025/33.

The reliability of the scale was established using the Cronbach's alpha, ensuring the consistency and dependability of the measurement tool.

Table 1: Overview of the scales with reliability values

Sr. No.	Scales	Values
1.	Extent of Problems experienced by Traffic Personnel while working in the booth	0.96

Results

Observation of Various Aspects of the Traffic Police Booth of Vadodara City



Fig 1: Traffic Police Booth Type 1 and Type 2

There were Two types of traffic police booths identified in Vadodara city. Based on observation, Booth Type 1 was larger, measuring 14 sq. ft., with a circular design. It featured minimal amenities such as seating and storage but lacked essential facilities like drinking water and lighting. It was primarily constructed of mild steel on an RCC platform. Booth Type 2 was smaller, measuring 9 sq. ft., with a square layout, and provided only a roof and platform without any additional facilities. Both types suffered from inadequate amenities and materials, resulting in discomfort and safety concerns during extended duties.

Background Information of the Respondents

Demographic Information of the Respondents

The study revealed that the majority of the respondents (70.00%) belonged to the age group of 25-32 years, followed by 20.83 per cent of the respondents in the age group of 33-40 years and only 9.17 per cent of the respondents in the age group of 41-49 years. Equal representation of male and female respondents (50.00% each) was observed in the study. In terms of educational qualification, the majority of respondents (65.83%) had completed 12th standard, followed by 23.33 per cent of the respondents were graduates, 6.67 per cent of the respondents completed their 10th standard, and only 4.17 per cent of the respondents had completed postgraduate.

Work Related Information of the Respondents

The study revealed that the majority of respondents (85.00%) were Traffic Brigade personnel and were employed on a temporary basis. Most of the respondents (75.00%) had 2-7 years of work experience. Morning shift was undertaken by 59.17 per cent of the respondents, Shift rotation was mainly monthly (93.33%). Most respondents (86.67%) worked one shift per day, and the majority of the respondents (95.83%) worked 8-10 hours daily.

Extent of Problems experienced by Traffic Personnel while working in the booth

This section focused on Four problems: Environmental Problems, Work-related Problems, Psychological Problems and Physiological Problems experienced by the respondents. It consisted of 37 statements measured using a five-point Likert scale with response categories of Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree, scored as 5, 4, 3, 2, and 1, respectively.

Table 2: Distribution of the respondents according to the Extent of Problems experienced by Traffic Personnel while working in the booth

Sr. No.	Extent of Problems	Respondents (n=120)		
		Range of Scores	*f*	%
A. Environmental Problems				
1.	To High Extent	33-45	106	88.33
2.	To Moderate Extent	21-32	13	10.83
3.	To Low Extent	9-20	1	0.83
B. Work-related Problems				
1.	To High Extent	33-45	113	94.17
2.	To Moderate Extent	21-32	7	5.83
3.	To Low Extent	9-20	-	-
C. Psychological Problems				
1.	To High Extent	30-40	106	88.33
2.	To Moderate Extent	19-29	12	10.00
3.	To Low Extent	8-18	2	1.67
D. Physiological Problems				
1.	To High Extent	41-55	109	90.83
2.	To Moderate Extent	25-40	9	7.50
3.	To Low Extent	11-25	2	1.67

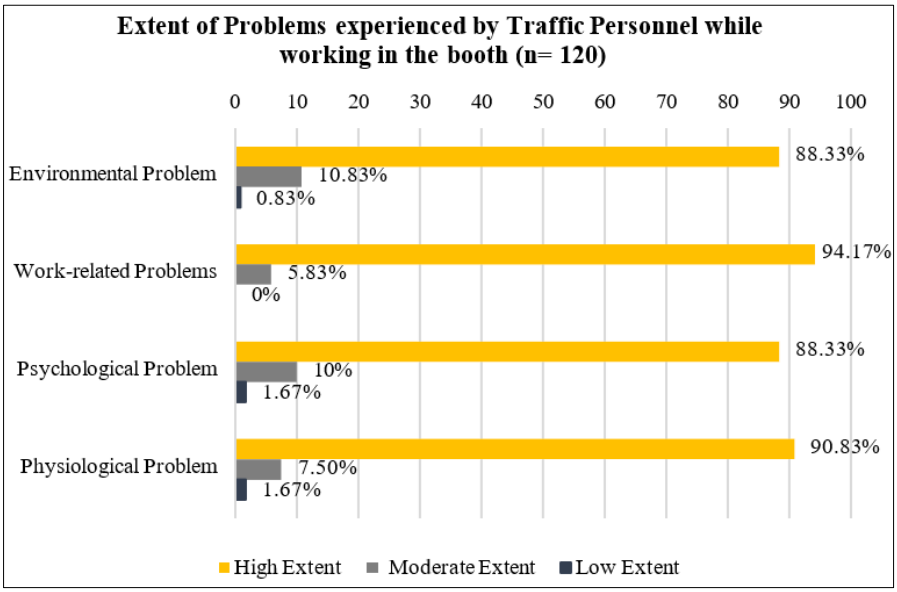


Fig 1: Extent of Problems experienced by Traffic Personnel while working in the booth

A. Environmental Problems

Extent of Environmental Problems experienced by Traffic Personnel while working in the booth included 9 statements assessed environmental problems such as inadequate protection from sun and rain, exposure to pollution and vehicle emissions, sunlight glare, lack of a raised platform, heat reflection from booth materials, high internal temperature, and water accumulation during the monsoon season. The result revealed that 82.50 per cent of respondents faced problems due to inadequate protection in the booth from sunlight, followed by 78.33 per cent of the respondents strongly agreed that they faced problems due to inadequate protection in the booth during rainy season. majority of the respondents 88.33 per cent experienced problems to a high extent while working in the booth due to environment, 10.83 per cent of the respondents experienced problems to a moderate extent, while only 0.83 per cent of the respondents reported experiencing them to a low extent.

B. Work-Related Problems

Extent of Work-related Problems experienced by Traffic Personnel while working in the booth included 9 statements assessed issues such lack of a fan, proper seating, inadequate storage facilities, and no charging point, lack of dust protection, lacks surveillance support, a first aid kit, communication devices. The result revealed that 87.50 per cent faced problems as there was lack of dust protection causing health issues among the respondents, followed by 85.83 per cent of the Respondents faced problems due to lack of charging point for mobile, lack of surveillance support (CCTV monitor), and lack of a first aid kit inside the booth. majority of the respondents 94.17 per cent of the respondents experienced problems to a high extent while working in the booth, 5.83 per cent of the respondents experienced problems to a moderate extent, none of the respondents reported experiencing work-related problems to a low extent.

C. Psychological Problems

The extent of psychological problems experienced by traffic personnel while working in the booth included 8 statements assessing issues such as inadequate working environment affecting mental well-being, insufficient space causing confinement and stress, poor maintenance reducing motivation, lack of reflective signage and markings. The result revealed that 58.33 per cent of the respondents strongly agreed that the lack of proper lighting inside the booth affected their mood and alertness while performing their duties. Similarly, 56.67 per cent of the respondents strongly agreed that they experienced stress due to the lack of an emergency alert system in the booths and stress due to the lack of reflective signage and markings around the booth. majority of the respondents 88.33 per cent of the respondents experienced problems to a high extent while working in the booth, 10.00 per cent of the respondents experienced problems to a moderate extent, while only 1.67 per cent of the respondents reported experiencing them to a low extent.

D. Physiological Problems

Extent of physiological problems experienced by traffic personnel includes 11 statements assessed problems such as foot and leg pain from prolonged standing, fatigue from long hours, and discomfort from extreme weather. Problems like dehydration due to lack of water, back pain from inadequate space and absence of seating, and irritation from dust exposure are noted. Glare leads to eye strain and headaches, while poor roof insulation causes excessive sweating, and uncomfortable flooring results in knee pain. The result revealed that 68.33 per cent of the respondents strongly agreed that the absence of seating arrangements in the booth caused lower back pain, followed by 67.50 per cent of the respondents strongly agreed that standing for long hours in the booth caused feet pain. majority of the respondents 90.83 per cent of the respondents experienced problems to a high extent while working in the booth, 7.50 per cent of the respondents experienced problems to a moderate extent, while only 1.67 per cent of the respondents reported experiencing them to a low extent.

Testing of Hypotheses

HO1: There exists no variation in the Extent of Problems experienced by Traffic Personnel while working in the booth with their Personal variables (Age (in years), Gender,

Educational Qualification) and Work-related variables (Designation, Years of Working Experience in the Traffic Department, Frequency of Shift Rotation, Number of Shift per day and Number of Shift hours).

To find out the difference between Extent of Problems experienced by Traffic Personnel while working in the booth with their Gender, Frequency of Shift Rotation, Number of Shift per day and Number of Shift hours Mann-Whitney U test was computed.

Table 3: Mann-Whitney U test showing the variation in Problems experienced by Traffic Personnel while working in the booth with their Gender, Frequency of Shift Rotation, Number of Shift per day and Number of Shift hours.

Variables	Groups	Mean Rank	U-value	p-value	Level of Significance
Gender	Male	62.38	1913	0.555	N.S.
	Female	58.63			
Frequency of Shift Rotation	Fortnightly	59.20	302.0	0.125	N.S.
	Monthly	58.63			
Number of Shifts per Day	1	64.39	1237	0.002	0.01**
	2	35.22			
Number of Shift Hours	8–10 hours	61.32	382.0	0.216	N.S.

Note: N.S.= Not Significant *p < 0.05, **p < 0.01, *** p < 0.001

Statistical analysis using the Mann-Whitney U test indicated that the problems experienced by traffic personnel while working in the booth do not vary significantly by gender, frequency of shift rotation, or number of shift hours. However, a significant difference was observed regarding the number of shifts per day (0.01 level of significance). Therefore, it can be concluded that the Problems experienced by Traffic Personnel while working in the booth differed significantly with Number of Shifts per Day.

To find out the difference between Extent of Problems experienced by Traffic Personnel while working in the booth with their Age, Educational Qualification, Designation and Years of Working Experience in the Traffic Department "Kruskal Wallis H test" was computed.

Table 4: Kruskal Wallis H test showing variation in Extent of Problems experienced by Traffic Personnel while working in the booth with their Age, Educational Qualification, Designation and Years of Working Experience in the Traffic Department.

Variables	n	df	p-value	Level of significance
Age (in years)	120	2	0.008	0.01**
Educational Qualification		3	< 0.001	0.001***
Designation		2	0.007	0.01**
Years of Working Experience in the Traffic Department		2	0.007	0.01**

df= degree of freedom, *p < 0.05, **p < 0.01, *** p < 0.001

The Kruskal Wallis H test results were found to be significant for Age (in years), Educational Qualification, Designation and Years of Working Experience in the Traffic Department at 0.01, 0.001, 0.01 and 0.01 levels of significance respectively. Hence, the null hypothesis was rejected for Age, Educational Qualification, Designation and Years of Working Experience in the Traffic Department.

Further Dunn's Multiple Comparison Test was applied for Age (in years), Educational Qualification, Designation and Years of Working Experience in the Traffic Department.

Table 5: Dunn's Multiple Comparison Test showing difference in Extent of Problems experienced by Traffic Personnel while working in the booth with their Age, Educational Qualification, Designation and Years of Working Experience in the Traffic Department.

Variables	Comparison Groups	n	p-value	Level of Significance
Age (in years)	25-32 ~ 33-40	120	0.095	N.S.
	25-32 ~ 41-49		0.004	0.01 **
	33-40~ 41-49		0.138	N.S.
Educational Qualification	Graduate ~Postgraduate	120	0.530	N.S.
	Graduate ~10th Pass		0.002	0.01 **
	Graduate ~12th Pass		< 0.001	0.001 ***
	Postgraduate ~10th Pass		0.011	0.05 *
	Postgraduate ~12th Pass		0.026	0.05 *
	10th Pass~12th Pass		0.269	N.S.
Designation	Traffic Brigade ~Constable	120	0.002	0.01 **
	Traffic Brigade ~Head Constable		0.325	N.S.
	Constable Head ~Constable		0.393	N.S.
Years of Working Experience in the Traffic Department	2-7 years~8-13 years	120	0.207	N.S.
	2-7 years~14-19 years		0.003	0.01 **
	8-13 years~14-19 years		0.294	N.S.

Note: N.S.= Not Significant, *p < 0.5, **p < 0.01, *** p < 0.001

A significant difference in problems experienced while working in traffic booths was observed across select demographic groups. With respect to age, differences were found only between the 25-32 and 41-49 age groups, indicating variation primarily between the youngest and oldest personnel. In terms of educational qualification, higher-qualified personnel (Graduates and Postgraduates) differed significantly from lower-qualified groups (10th and 12th Pass), while no differences were observed within these categories. Regarding designation, a significant difference was identified between Traffic Brigade personnel and Constables, with no variation involving Head Constables. Similarly, years of working experience showed significant differences between personnel with 2-7 years and 14-19 years of experience at 0.01 level.

The findings revealed that the extent of problems experienced by traffic personnel did not differ significantly with gender, frequency of shift rotation, and number of shift hours. However, a significant difference was observed with the number of shifts per day at the 0.01 level. Further, significant variations were found with age (0.01 level), educational qualification (0.001 level), designation (0.01 level), and years of working experience (0.01 level). Thus, the null hypothesis was partially rejected.

Proposed Design of the Traffic Police Booth for the Traffic Personnel

Based on the problems experienced by the respondents the researcher proposed traffic police booth. Researcher proposed the compact size 4′ × 4′ booth, elevated on a 1-foot platform to prevent waterlogging and improve visibility. Constructed with a steel frame, PUF-insulated panels, toughened glass, and stainless-steel flooring, the booth includes essential facilities like a foldable desk, storage, solar panels, fan, LED lighting, water dispenser, and safety equipment. This design enhances comfort, functionality, and safety, addressing the occupational challenges of traffic personnel.



Fig 2: Proposed Traffic Police Booth

Conclusion

The research underscores the considerable environmental, Work-related, psychological, and physical challenges encountered by traffic personnel in Vadodara city due to extended exposure to adverse outdoor conditions and a lack of adequate infrastructure. Factors such as daily shifts, age, education, job title, and experience significantly influence these challenges, whereas gender and shift patterns do not play a role. Current traffic booth designs fail to ensure thermal comfort, ventilation, and essential amenities, highlighting the necessity for improved design and ergonomics. The study calls for a user-centered, climate-adaptive booth design to enhance comfort and safety, advocating for an interdisciplinary approach that incorporates design,

ergonomics, and public planning to better the working environment for traffic personnel. Future studies should aim at the large-scale implementation and assessment of these designs across different urban contexts.

References

1. Babu KA, Sherjin P. Cooling arrangement for traffic police booth. Int J Therm Technol. 2016;6(3):233-242. Available from: https://inpressco.com/wp-content/uploads/2016/09/Paper6233-242.pdf
2. Crockett CD. Stress management treatments among police departments [doctoral dissertation]. Walden University; 2018. Publication No. 10977425.
3. Dey A, Saha A, Sahu S. Effect of occupational stress on musculoskeletal health of traffic police personnel. J Hum Ergol. 2023;52(1-2):23-29. doi:10.11183/jhe.52.1-2_23.
4. Gangwar R, Kiran U. Quality of life among traffic police personnel. Int J Community Med Public Health. 2017;4(6):1962-1966. Available from: https://www.homesciencejournal.com/archives/2017/vol3issue3/PartB/3-3-44-176.pdf
5. Krishnamurthy D, Sharma AK. Stress, depression, coping strategy and respiratory health status of traffic police at Anand district, Gujarat, India. J Clin Diagn Res. 2021;15(7):LC01-LC04. doi:10.7860/JCDR/2021/48266.15096
6. Mustiko J. The role and strategy of the traffic police of the Central Java Police to reduce the number of accidents. Int J Educ Res Soc Sci. 2022;3(4):1751-1760. doi:10.51601/ijersc.v3i4.446.
7. Prajapati P, Modi K, Rahul K, Shah A. A study related to effects of job experience on health of traffic police personnel of Ahmedabad City, Gujarat, India. Int J Interdiscip Multidiscip Stud. 2015;2(6):127-133. Available from: https://api.semanticscholar.org/CorpusID:74471705
8. Priyaranjani N, Williams S. A study to assess the effectiveness of health awareness programme on knowledge regarding selected health promotive behaviors among traffic police personnel in Mysuru city.

Int J Nurs Educ Res. 2015;3(3):321-324. doi:10.5958/2454-2660.2015.00015.0.
9. Shah H, Chavda N. Work stress among traffic police of Ahmedabad City, Gujarat, India: a cross-sectional study. Indian Police J. 2021;68(1):10-18. doi:10.7860/JCDR/2026/77544.22335.
10. Shah P, Sinha A, Dutta P, Sharma S, Pingle S, Saxena D. Occupational health status of traffic police personnel and traffic brigade members in Gujarat, India. Arch Environ Occup Health. 2025;80(1-2):23-37. doi:10.1080/19338244.2025.2478067.
11. Singh SK. Urban transport in India: issues, challenges and the way forward. Transp Eur. 2012;52:1-9. Available from: https://www.researchgate.net/publication/286966258_Urban_transport_in_India_Issues_challenges_and_the_way_forward
12. Sridher S, Thulasiram S, Rishwanth R, Sakthivel G, Rahul V, Uma Maheswari R. Health status of traffic police personnel in Chennai city. Public Health Rev Int J Public Health Res. 2017;4(4):98-103. doi:10.17511/ijphr.2017.i4.05.
13. Sumit K, Brijs K, Ross V, Wets G. A qualitative study to explore traffic police personnel perceptions towards road safety behaviour among young riders in Manipal, India. BMC Public Health. 2024;24:3132. doi:10.1186/s12889-024-20511-y.
14. Zhenjing G, Chupradit S, Ku KY, Nassani AA, Haffar M. Impact of employees' workplace environment on employees' performance: a multi-mediation model. Front Public Health. 2022;10:890400. doi:10.3389/fpubh.2022.890400.

How to Cite This Article

Veerkumar V, Rajput N. Assessment of traffic police booth-related problems among traffic personnel in Vadodara City. J Front Multidiscip Res. 2026;7(2):366-372. doi:10.54660/.JFMR.2026.7.2.366-372.

Creative Commons (CC) License

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0) License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.