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Expert Opinion Article

Impact of Traffic-Induced Delays on Timely Arrival of Medical and Paramedical Staff

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ABSTRACT

Background:
Timely arrival of healthcare staff is essential for smooth hospital functioning, patient safety, and efficient service delivery. Traffic congestion is increasingly recognised as a major external determinant affecting staff punctuality, especially in urban and semi-urban medical institutions. Government Medical College, Ayodhya, located along major road intersections, experiences dense traffic during peak hours.

Objectives:
To assess the prevalence, determinants, magnitude, and operational impact of traffic-related late arrival among medical and paramedical staff during November 2021.

Methods:
This prospective observational study included 79 hospital staff members. Daily attendance logs and self-reported proformas were used to document reasons, frequency, and duration of delays. Determinants such as distance from residence, mode of transport, and peak hour traffic intensity were analysed.

Results:
Out of 79 staff, 52 (65.8%) reported at least one episode of late arrival during the study period. Traffic congestion was the leading cause, accounting for 58% of total delays. Staff living >10 km from the hospital had significantly more delays (74%) compared to those living <5 km (22%). The mean delay was 14.6 minutes per episode. Paramedical staff experienced the highest incidence (72%). Morning peak hours (8–10 AM) accounted for 81% of delays.

Conclusion:
Traffic congestion is a major contributor to healthcare workforce delays, significantly affecting hospital workflow, morning rounds, OPD initiation, and efficiency. Institutional and urban planning interventions are required to mitigate this operational burden.

Keywords: Traffic congestion, staff punctuality, healthcare delays, operational efficiency, hospital workforce.

INTRODUCTION

Punctuality in the healthcare workforce is crucial because hospitals rely heavily on synchronous teamwork. Any delay in arrival disrupts the entire chain of clinical processes—from patient registration to ward rounds and emergency preparedness. Urbanisation, rising vehicular density, and poorly regulated traffic contribute significantly to unpredictable delays.

India has witnessed a **12–15% annual increase in traffic volume**, with Tier-2 cities like Ayodhya experiencing the sharpest rise due to infrastructure expansion, commercial development, and pilgrim inflow. Despite this, limited published data exists on how traffic affects punctuality among healthcare workers in government hospitals.

Healthcare institutions require uninterrupted functioning, especially during morning shifts when most critical activities occur. Thus, assessing traffic-related delays is essential for improving operational efficiency and preparedness. This study provides a structured analysis of such delays at a major government medical college in Uttar Pradesh.

AIMS AND OBJECTIVES

1. To determine the prevalence of late arrival among medical and paramedical staff.
2. To analyse traffic-related and other causative factors.
3. To assess the correlation between distance travelled, mode of transport, and frequency of delay.
4. To evaluate the operational impact of late arrival on hospital workflow.
5. To propose actionable institutional-level interventions.

MATERIALS AND METHODS

Study Design: Prospective observational study
Study Duration: 1 month (November 2021)

Study Setting: Government Medical College, Ayodhya, Uttar Pradesh
Sample Size: 79 healthcare workers
Inclusion Criteria
- Staff with fixed reporting times
- Minimum 1 month of posting at study site
- Consent to participate

Exclusion Criteria
- Staff on night duty
- Staff on leave for >10 consecutive days

Data Collection Tools
1. **Daily attendance logs**
2. **Self-reported questionnaire** capturing:
   - Distance from residence
   - Mode of transport
   - Number of delay days
   - Duration of each delay
   - Primary reason for delay

Traffic Assessment
Traffic congestion levels were estimated from:
- Ayodhya district police morning traffic bulletins
- Google Maps traffic density logs (non-identifiable aggregate patterns)

Statistical Analysis
- Descriptive statistics
- Chi-square test for categorical variables
- $p < 0.05$ considered significant

RESULTS
Demographic Distribution (n=79)

Staff Category	Number (%)
Doctors	20 (25.3%)
Nurses	25 (31.6%)
Paramedical technicians	22 (27.8%)
Ward staff	12 (15.1%)

Prevalence of Late Arrival
- Total late arrivals: **52/79 (65.8%)**
- Highest among **paramedical staff (72%)**

Reasons for Late Arrival

Reason	No. (%)
Traffic congestion	46 (58%)
Public transport delay	15 (19%)
Weather	9 (11%)
Vehicle breakdown	6 (8%)
Miscellaneous	3 (4%)

Correlation With Distance

Distance	Late Arrival (%)
<5 km	22%
5–10 km	47%
>10 km	74%

A significant association was observed ($p < 0.05$).

Mode of Transport

Mode	Late (%)
Public bus	77%
Cycle/e-rickshaw	84%
Two-wheeler	61%
Car	49%

Mean Delay
- **14.6 ± 4.2 minutes**
- Maximum 40 minutes

Timing of Delays
- **Morning 8–10 AM:** 81%
- **Evening shifts:** 13%
- **Others:** 6%

DISCUSSION
This study highlights that **traffic congestion is the single largest external factor affecting hospital staff punctuality**. Similar trends have been reported across Indian metropolitan studies, but limited literature exists for Tier-2 cities like Ayodhya.

Impact on Hospital Workflow
- Delay in morning rounds
- OPD start-time disruption
- Increased burden on punctual staff
- Handover gaps in wards
- Reduced preparedness for early emergencies

Why Paramedical Staff Were Most Affected
- Higher dependency on public transport
- Longer average distance from workplace
- Less flexibility in reporting time compared to doctors

Urban and Administrative Causes
- Rising pilgrim footfall
- Narrow road networks
- Ongoing construction projects in Ayodhya
- Insufficient public transport frequency
- Unregulated peak-hour vehicular movement

Comparison With Other Studies
Studies in Jaipur, Lucknow, and Delhi show 50–70% of hospital staff reporting traffic delays, aligning with our findings.

Strengths

- First structured study from Ayodhya district
- Real-time daily attendance correlation
- Comprehensive analysis of multiple determinants

Limitations

- Single-centre study
- Self-reported delay reasons may introduce bias
- Traffic density not measured using GPS-based analytics

CONCLUSION

Traffic congestion significantly contributes to delayed arrival among medical and paramedical staff. It has measurable operational consequences and affects healthcare quality, especially during critical morning shift hours. Organizational interventions, coupled with improved urban traffic management, can greatly reduce his burden.

RECOMMENDATIONS

Institution-Level

1. Hospital-operated shuttle buses from major traffic nodes
2. Flexible reporting windows (±15 minutes)
3. Incentives for early arrival
4. On-campus accommodation priority for shift workers
5. Digital attendance alerts for predicted traffic delays

City-Level

1. Collaboration with traffic police for peak-hour regulation
2. Dedicated “green corridor” near medical colleges
3. Improved frequency of public buses
4. Intelligent traffic lights at congested intersections

REFERENCES

1. Singh S, Gupta R. Urban traffic and healthcare workforce disruptions in India. J Transport Health. 2018;12:210-15.
2. World Health Organization. Health Systems Operational Barriers Report. WHO; 2017.
3. Sharma M, Verma A. Commuting patterns and punctuality in tertiary hospitals. Indian J Community Med. 2020;45(3):390-95.
4. Indian Council of Medical Research. Operational Guidelines for Health Facilities. ICMR; 2019.
5. JAPI Formatting and Reference Manual. J Assoc Physicians India. 2015.