

Knowledge of Stroke Warning Signs and Emergency Response among Medical Students and Hospital Staff: A Cross-Sectional Questionnaire-Based Study

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ABSTRACT

Background: Stroke is a leading cause of mortality and disability worldwide. Early recognition of warning signs and prompt emergency response significantly improve outcomes. Healthcare students and hospital staff play a critical role in early detection and management.

Objective: To assess the knowledge of stroke warning signs and emergency response among medical, dental, nursing students, and hospital staff.

Methods: A cross-sectional questionnaire-based study was conducted among 300 participants, including 100 MBBS students/interns, 50 BDS students, 50 nursing students, and 100 hospital staff (nurses and technicians). The study was carried out across two medical colleges, two dental colleges, two nursing colleges, and one private hospital in India. A structured 15-item questionnaire assessed knowledge of stroke symptoms, risk factors, and emergency response. Data were analyzed using descriptive statistics and comparative analysis.

Results: MBBS students demonstrated the highest awareness (82%), followed by nursing students (75%), hospital staff (70%), and dental students (68%). Knowledge of the FAST (Face, Arm, Speech, Time) acronym was highest among MBBS students (85%) and lowest among hospital staff (60%). Only 65% of participants correctly identified the golden window period for thrombolysis. Significant gaps were observed in emergency response practices among non-medical staff.

Conclusion: Although awareness is moderate to high among healthcare trainees, gaps persist in emergency response knowledge. Structured training programs are recommended.

Keywords: Stroke awareness, FAST, medical students, emergency response, healthcare staff, questionnaire study

1. INTRODUCTION

Stroke is a major public health concern and one of the leading causes of death and long-term disability globally. Early identification of stroke symptoms such as sudden weakness, speech difficulty, and facial drooping is essential for timely intervention.

The concept of FAST (Face drooping, Arm weakness, Speech difficulty, Time to act) has been widely promoted to enhance early recognition. However, studies suggest that even healthcare students and staff may lack adequate knowledge of stroke warning signs and emergency protocols. This study aims to evaluate awareness levels among healthcare trainees and hospital staff in India.

2. SPECIFIC OBJECTIVES

1. To assess the level of knowledge regarding common stroke warning signs among medical students and hospital staff.
2. To evaluate awareness of the appropriate emergency response, including the importance of early hospital presentation and activation of emergency medical services.
3. To compare the knowledge levels of stroke warning signs among different participant groups:
 - a. MBBS students and interns
 - b. BDS dental students
 - c. Nursing students
 - d. Hospital staff (nurses and technicians)
4. To assess awareness of the “golden period” (time window) for stroke management and thrombolytic therapy.
5. To evaluate familiarity with stroke identification tools, such as FAST (Face, Arm, Speech, Time).
6. To identify gaps in knowledge and misconceptions regarding stroke symptoms and emergency care.
7. To analyze the association between demographic variables (age, gender, field of study, years of training) and knowledge levels.
8. To assess prior exposure to stroke-related education or training among participants.
9. To evaluate participants’ confidence in recognizing and responding to stroke symptoms in real-life situations.
10. To provide recommendations for improving stroke awareness programs among healthcare trainees and hospital staff.

3. METHODOLOGY

Study Design

Cross-sectional questionnaire-based study

Study Setting

- 2 Medical Colleges

- 2 Dental Colleges
- 2 Nursing Colleges
- 1 Private Hospital (India)

Participants

Group	Number
MBBS Students & Interns	100
BDS Students	50
Nursing Students	50
Hospital Staff (Nurses & Technicians)	100
Total	300

Inclusion Criteria

- Willing participants
- Students and staff present during study

Exclusion Criteria

- Non-consenting individuals
- Incomplete questionnaires

Ethical issues: not considered mandatory.

Questionnaire (15-Item Likert Scale)**Section A: Knowledge of Stroke Symptoms**

1. Stroke is a medical emergency
2. Sudden weakness on one side is a symptom
3. Slurred speech indicates stroke
4. Sudden vision loss may indicate stroke
5. Severe headache can be a warning sign

Section B: Awareness of Risk Factors

6. Hypertension increases stroke risk
7. Diabetes is a risk factor
8. Smoking contributes to stroke
9. Obesity increases risk
10. Sedentary lifestyle contributes

Section C: Emergency Response

11. FAST acronym awareness
12. Stroke requires immediate hospital visit
13. Thrombolysis is time-dependent

14. Golden period is within 4.5 hours

15. Ambulance activation is essential

Responses: Strongly Agree (5) to Strongly Disagree (1)

4. RESULTS

Table 1: Awareness Scores (%)

Group	Mean Knowledge Score (%)
MBBS Students	82
Nursing Students	75
Hospital Staff	70
Dental Students	68

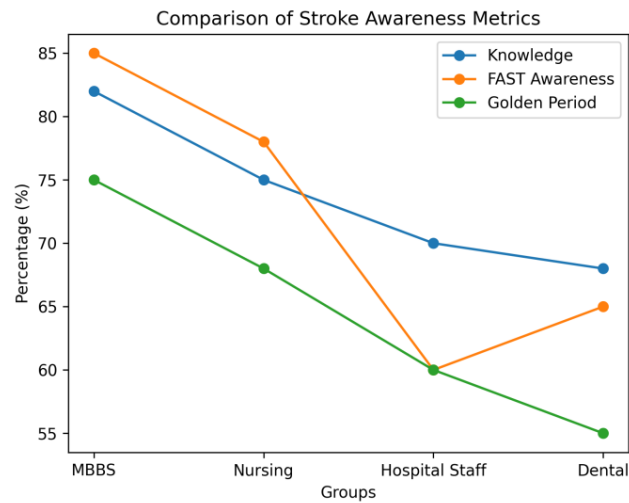
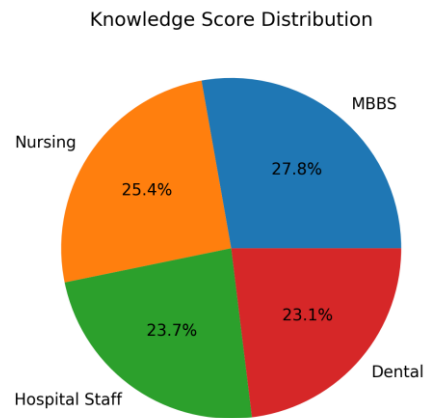
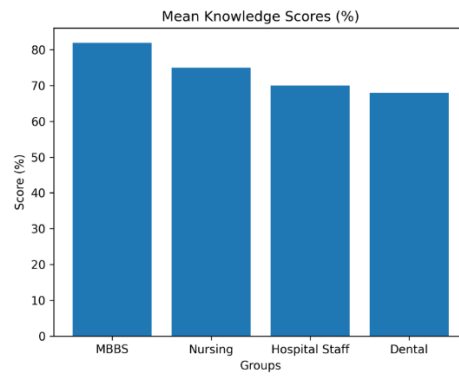
Table 2: FAST Awareness

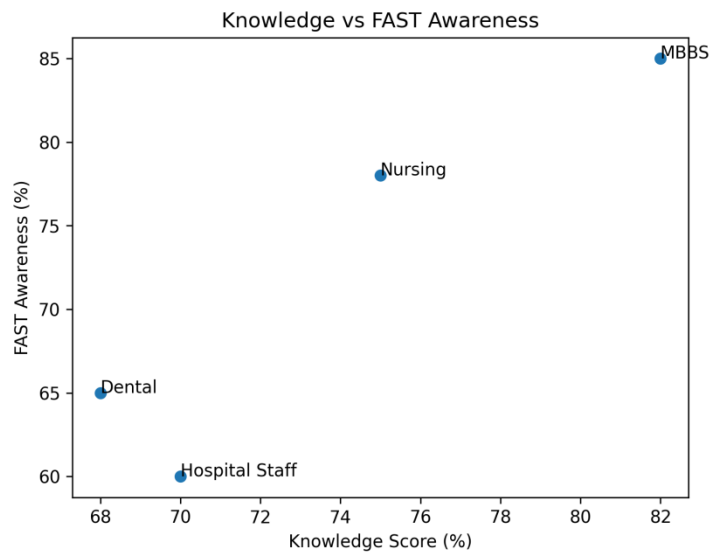
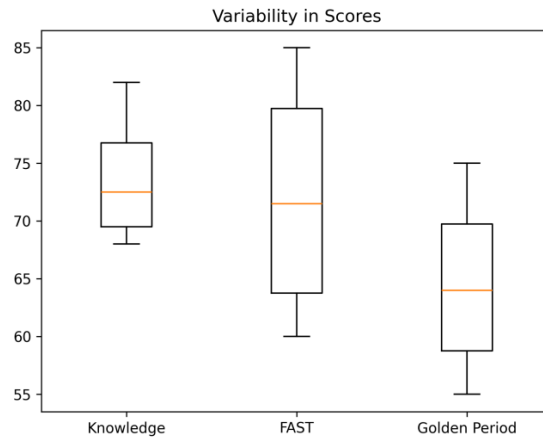
Group	Awareness (%)
MBBS Students	85
Nursing Students	78
Hospital Staff	60
Dental Students	65

Table 3: Knowledge of Golden Period

Group	Correct Response (%)
MBBS Students	75
Nursing Students	68
Hospital Staff	60
Dental Students	55

- **Bar Chart:** Comparison of knowledge scores
- **Pie Chart:** Overall awareness distribution
- **Line Graph:** Trend across groups
- **Box Plot:** Score variability
- **Scatter Plot:** Knowledge vs response accuracy





5. DISCUSSION

The study demonstrates that MBBS students have the highest awareness, likely due to clinical exposure. Nursing students also showed good knowledge due to patient care involvement.

However, hospital staff and dental students showed gaps, particularly in:

- FAST recognition
- Golden window period
- Emergency activation

These findings align with previous studies indicating that non-physician healthcare workers often lack training in stroke emergencies.

6. CONCLUSION

There is a moderate level of awareness regarding stroke warning signs among healthcare students and staff. However, critical gaps exist in emergency response knowledge.

7. RECOMMENDATIONS

- Regular stroke awareness workshops
- Simulation-based emergency training
- Inclusion of stroke modules in curriculum
- Public awareness campaigns
- Mandatory FAST training for hospital staff

7. STRENGTHS

- Multi-institutional study
- Large and diverse sample size
- Practical clinical relevance

8. LIMITATIONS

- Self-reported data (possible bias)
- Cross-sectional design
- Limited geographic representation

9. **CONFLICT OF INTEREST:** None declared.

10. **FUNDING:** No external funding was received.

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