

Assessment of Knowledge and Attitude Among Healthcare Workers Regarding Emergency Codes at a NABH-Accredited Hospital in Pune

Anuja C¹, Sarene Thomas², Vishvendra Mohite², Ketaki Chowdhari³, Ram Gudgila⁴, Shrikanth Muralidharan¹, Satyajit Singh Gill¹

¹Department of Medical Administration, Jehangir Hospital, Pune, Maharashtra, India, ²Hospital Administration, Center for Health Management Studies and Research, Bharati Vidyapeeth Deemed to be University, Pune, Maharashtra, India, ³School of Health Care Administration, Maharashtra University of Health Sciences, Pune, Maharashtra, India, ⁴School of Public Health, Maharashtra University of Health Sciences, Pune, Maharashtra, India

Submitted: 28-Sep-2025

Revised: 07-Nov-2025

Accepted: 09-Nov-2025

Published: 05-Jan-2026

INTRODUCTION

Hospital emergency codes are coded messages announced over public address systems to alert staff to on-site emergencies, conveying essential information quickly while minimizing panic among visitors.^[1] These codes facilitate rapid, coordinated responses to threats like fires, medical emergencies, or violence, which are critical in reducing morbidity and mortality during disasters.^[2] The health sector plays a pivotal role in disaster management, as emergencies can overwhelm facilities without proper planning.^[3] Standardized codes, such as Code Red for fire or Code Blue for medical emergencies, ensure uniformity and enhance safety.^[1] In India, NABH accreditation mandates emergency preparedness,

including drills and training.^[4] However, gaps in knowledge and attitude among healthcare workers can hinder effective responses.^[5] Previous studies have shown varying preparedness levels; for instance, nurses often demonstrate higher attitudes toward disaster management compared to other staff.^[6] This study assesses knowledge and attitudes regarding emergency codes in a NABH-accredited orthopedic hospital in Pune, aiming to identify areas for improvement.

Address for correspondence: Dr. Shrikanth Muralidharan,

Department of Medical Administration, Jehangir Hospital, Pune, Maharashtra, India.

E-mail: Shrikanth.muralidharan@jehangirhospital.com

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 License (CC BY-NC-ND), where it is permissible to download and share the work provided it is properly cited. The work cannot be changed in any way or used commercially without permission from the journal.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Anuja C, Thomas S, Mohite V, Chowdhari K, Gudgila R, Muralidharan S, et al. Assessment of knowledge and attitude among healthcare workers regarding emergency codes at a NABH-accredited hospital in Pune. J Pharm Bioall Sci 2026;18:S176-8.

ABSTRACT

Introduction: Emergency codes are crucial for managing hospital crises, and the knowledge and attitude of healthcare workers significantly influence response efficacy. Drills and training enhance preparedness. The aim of the study was to assess the knowledge and attitude of healthcare workers toward emergency codes in a NABH-accredited hospital in Pune. **Materials and Methods:** A cross-sectional study was conducted in a 120-bedded orthopedic specialty hospital in Pune. Data were collected via Google Forms from 167 participants, including doctors, nurses, technicians, and administrative staff. Knowledge was assessed through 15 multiple-choice questions, and attitude via 10 agree/disagree items. Chi-square tests were used for analysis. **Results:** Participants included 16 (9.6%) doctors, 55 (32.9%) nurses, 28 (16.8%) technicians, and 68 (40.7%) administrative staff. Administrative staff showed the highest knowledge (71%), followed by nurses (70%), technicians (69%), and doctors (63%). Differences were significant ($\chi^2 = 29.53, P < 0.00001$). Knowledge was highest for Code Blue (75%) and lowest for Code Red (57%). Attitudes were positive overall, with nurses exhibiting the most positive responses (84%), followed by administrative staff (70%), doctors (63%), and technicians (53%). Attitude differences were significant ($\chi^2 = 7.899, P < 0.05$). **Conclusion:** Knowledge and attitudes were generally good but varied by code and profession. Recommendations include regular training, mock drills, and guideline updates to improve preparedness.

KEYWORDS: Emergency codes, healthcare workers, hospital preparedness

Access this article online

Quick Response Code:



Website: <https://journals.lww.com/jpbs>

DOI: 10.4103/jpbs.jpbs_1626_25

MATERIALS AND METHODS

This prospective cross-sectional study was conducted in a 120-bedded NABH-accredited orthopedic specialty hospital in Pune, established in 1965 and specializing in orthopedic care since 2008. The hospital serves both local and international patients, emphasizing ethical practices and quality care. The study population included doctors, nurses, technicians (e.g., laboratory, CSSD, pharmacists, OT staff), and administrative staff. Inclusion criteria: voluntary participants from various departments. Exclusion criteria: unwilling staff or those absent during data collection. Out of 286 staff, 167 responses were collected using stratified random sampling. A self-administered questionnaire was developed based on hospital guidelines and divided into two sections. Section 1 covered demographics (age, gender, profession, experience) and knowledge (15 multiple-choice questions on code significance, activation, and protocols; scored as correct/incorrect). Section 2 assessed attitude (10 agree/disagree questions on guidelines, training, and drills). The questionnaire was circulated via Google Forms. Data were entered into Microsoft Excel and analyzed descriptively. Knowledge and attitude scores were calculated as percentages. Chi-square tests compared differences across groups ($P < 0.05$ considered significant).

RESULTS

Of 167 participants, 68 (40.7%) were administrative staff, 55 (32.9%) nurses, 28 (16.8%) technicians, and 16 (9.6%) doctors. Most (59%) had 0–5 years of experience, followed by 5–10 years (22%), 10–15 years (11%), and >15 years (8%).

Knowledge assessment

Overall knowledge was 70%. Administrative staff scored highest (71%), followed by nurses (70%), technicians (69%), and doctors (63%). Differences were significant ($\chi^2 = 29.53$, $P < 0.00001$). Code-specific knowledge was highest for Code Blue (75%) and lowest for Code Red (57%). Awareness of guidelines availability was 56%, and activation protocols varied (e.g., 79% knew the Code Blue activation number).

Attitude assessment

Attitudes were positive overall (82%). Nurses showed the highest positivity (84%), followed by administrative staff (70%), doctors (63%), and technicians (53%). Differences were statistically significant ($\chi^2 = 7.899$, $P < 0.05$). Most participants (83%) agreed on the need for mock drills and training.

DISCUSSION

This study reveals an overall knowledge level of 70% regarding emergency codes among healthcare

workers in a NABH-accredited orthopedic hospital in Pune, with a generally positive attitude toward preparedness and response protocols. The findings indicate variations across professional groups, where administrative staff demonstrated the highest knowledge (71%), closely followed by nurses (70%), technicians (69%), and doctors (63%); suggesting that roles with more routine involvement in operational aspects, such as administrative and nursing staff, may benefit from greater familiarity with emergency procedures.^[7] Doctors, often focused on clinical duties, showed comparatively lower scores, which could be attributed to less frequent direct engagement with code activations or training sessions.^[3] This pattern aligns with previous research in Indian tertiary care settings, where nonclinical staff sometimes exhibit stronger procedural knowledge due to their involvement in facility-wide compliance activities.^[3] Code-specific knowledge was notably higher for Code Blue (75%), reflecting its frequent association with life-threatening medical emergencies, a commonality in hospital environments that likely reinforces awareness through real-world application.^[8] In contrast, knowledge was lowest for Code Red (57%), involving fire emergencies, which may occur less frequently and thus receive less emphasis in routine training.^[9] Similarly, codes like Code Pink (66%) for child abduction showed moderate awareness, potentially due to the hospital's orthopedic specialty, where pediatric cases might be less prevalent, reducing perceived relevance. These disparities underscore the need for tailored educational interventions that prioritize less common but high-impact scenarios, as supported by studies emphasizing the role of targeted drills in bridging knowledge gaps.^[2] Attitudes toward emergency codes were overwhelmingly positive (82%), with nurses displaying the most affirmative responses (84%), followed by administrative staff (70%), doctors (63%), and technicians (53%). The significant differences highlight nurses' central role in disaster management, consistent with literature that positions them as key responders due to their multi-faceted involvement in patient care and coordination.^[6] Participants strongly endorsed the necessity of mock drills (83%), training sessions (80%), and guideline accessibility (71–80%), indicating a workforce motivated to improve but potentially hindered by systemic shortcomings, such as the absence of regular drills reported in the study. This echoes findings from other investigations, where positive attitudes did not always translate to practice due to inadequate institutional support.^[5,10] For instance, a study on disaster preparedness among nursing students reported similar average knowledge levels but stressed the importance of experiential learning like mock drills to enhance confidence and efficacy.^[5] The implications of

these results are critical for hospital safety, particularly in a disaster-prone country like India, where healthcare facilities must comply with NABH standards for emergency management.^[4] Inadequate knowledge in specific codes could delay responses, exacerbating risks to patients, staff, and visitors. The positive attitudes, however, present an opportunity for leveraging staff enthusiasm through structured programs. Limitations of this study include the voluntary nature of participation, which may have introduced selection bias toward more engaged individuals, and the exclusion of absent staff, limiting generalizability. Additionally, the cross-sectional design captures a snapshot without assessing long-term changes, and the focus on knowledge and attitude omits direct evaluation of practices, which future studies should incorporate using observational methods or simulations.^[1] A larger, multi-center sample could provide broader insights, especially including more clinical staff like doctors, who were underrepresented here due to scheduling constraints. In conclusion, while the hospital's staff exhibits solid foundational preparedness, targeted enhancements are essential. Recommendations include implementing periodic, department-specific training with pre- and post-evaluations to measure impact, conducting frequent mock drills followed by debriefings and corrective actions, regularly updating and disseminating written guidelines, performing surprise audits on training and drill records, and establishing well-defined response teams across all shifts. Such measures, informed by evidence from disaster management training programs, could significantly elevate readiness and align with global best practices for safe hospitals.^[2,10]

CONCLUSION

Knowledge and attitudes regarding emergency codes were generally good, with significant variations by profession and code. Enhanced training and drills are essential to bolster hospital preparedness, ensuring effective responses to emergencies.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Hospital Association of Southern California. Guide for Code Standardization. Los Angeles: HASC; 2009. Available from-<https://hasc.org/initiatives-resources/all-initiatives/hospital-security-public-safety/hospital-emergency-codes/>. [Last assessed on 2025 Aug 30].
2. Mirzaei S, Eftekhari A, Sadeghian MR, Kazemi S, Nadjarzadeh A. The effect of disaster management training program on knowledge, attitude, and practice of hospital staffs in natural disasters. *J Disaster Emerg Res* 2020;2:9-16.
3. Khirekar J, Badge A, Bandre GR, Shahu S. Disaster preparedness in hospitals. *Cureus* 2023;15:e50073.
4. Rahman AB, Chaklader MA, Muhamad F. Knowledge and awareness on disaster management among medical professionals of a selected public and private medical college hospital. *Int J Adv Medi* 2018;5:1.
5. Karuna, Thakur R, Choedon K, Awasthi AA, Taneja N, Singh AP, *et al.* Knowledge and attitude regarding disaster management and emergency preparedness among nursing students of Delhi, NCR. *Int J Sci Res* 2020;9:1-4.
6. Vidhyashree MD, Ramasubramanian R, Dharaneswari H. A study to assess the knowledge, attitude, and practice on occupational blood and body fluid spill management awareness among nursing students in a tertiary care hospital in Chennai, Tamil Nadu. *Asian J Med Sci* 2022;13:62-5.
7. Yeturu SK, Annapurani R, Janakiram C, Joseph J, Pentapati KC. Assessment of knowledge and attitudes of fire safety-an institution based study. *J Pharm Sci Res* 2016;8:1281.
8. Jackson JE, Grugan AS. Code blue: Do you know what to do? *Nursing* 2015;45:34-9; quiz 39-40. doi: 10.1097/01.NURSE.0000463651.10166.db.
9. Hammett A. Emergency management's role when campuses respond to bomb threats and suspicious packages. *Campus Saf Mag* 2022;30:1-5.
10. World Health Organization. Hospital Emergency Response Checklist: An All-Hazards Tool for Hospital Administrators and Emergency Managers. Copenhagen: WHO Regional Office for Europe; 2011. Available from: <https://iris.who.int/handle/10665/349374>. [Last assessed on 2025 Aug 30].