Medical and Health Care Applications, Vol. 211, 2026, 97–104
https://doi.org/10.54941/ahfe1007472

Exploring Patient Safety Awareness and Risk Perception Among Clinical Staff and Inpatients

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ABSTRACT

Patient safety is a critical component of healthcare quality, emphasizing the prevention of avoidable human- and system-level errors throughout the care continuum. This study employed a structured questionnaire to evaluate patient safety awareness and risk perception among healthcare professionals, patients, and family members. A total of 125 valid responses from healthcare professionals and 161 responses from patients and family members were included in the analysis. Healthcare professionals most frequently reported patient safety incidents involving patient falls (58.4%), tube dislodgement (53.6%), and medication errors (40.8%). Workload assessments indicated that temporal demand and effort were rated highest, implying that increased multitasking requirements and elevated workload intensity may heighten vulnerability to error. In contrast, patients and family members demonstrated heightened awareness of risks related to falls and infections but expressed substantially lower concern regarding medication errors. This discrepancy highlights a noteworthy perceptual divergence between frontline clinical staff and care recipients concerning patient safety priorities. Overall, the findings underscore that patient safety is shaped by the interaction of human factors and organizational systems. Incorporating user-centric interface design, strengthening patient engagement strategies, and integrating ergonomic principles into clinical workflows may contribute to reducing preventable medication errors and fostering a more robust, collaborative culture of safety within healthcare organizations.

Keywords: Patient safety awareness, Risk perception, Healthcare workers, Inpatients, Questionnaire

INTRODUCTION

Patient safety is widely recognized as a core pillar of healthcare quality, encompassing the prevention and mitigation of avoidable harm arising from human, organizational, and system-level failures. Landmark reports such as To Error is Human (Committee on Quality of Health Care in America, Institute of Medicine, 2001) and global initiatives including the WHO Global Patient Safety Action Plan 2021–2030 (World Health Organization, 2019) have emphasized the urgent need to strengthen systemic safeguards in healthcare delivery.

Hospitalized patients are routinely exposed to multiple potential threats, including falls, tube dislodgement, medication errors, and

Received January 13, 2026; Revised April 9, 2026; Accepted April 27, 2026; Available online July 20, 2026

healthcare-associated infections. These events often stem from complex interactions among care processes, workload demands, communication patterns, and human factors considerations. Human factors and systems engineering approaches have been identified as critical strategies for reducing preventable harm by improving the design of workflows, technologies, and organizational systems (Carayon et al., 2018).

Excessive mental workload, time pressure, and multitasking demands may degrade staff performance and increase vulnerability to slips or lapses during medication administration. Evidence shows that medication administration errors frequently arise from environmental distractions, label misinterpretation, and systemic process failures (Keers et al., 2013; Erdmann et al., 2016). At the same time, international patient-safety initiatives advocate for patient and family engagement, noting that their involvement can help prevent misunderstandings and enhance safety outcomes during hospitalization (Mohsin-Shaikh, Garfield & Franklin, 2014; Dukhanin et al., 2023).

However, the extent to which patients and families recognize and prioritize specific risks may differ considerably from the concerns of frontline healthcare providers. For example, patients often prioritize highly visible risks such as falls or infections, whereas medication errors—though more frequently reported in clinical practice—may be less salient to them (Rasool et al., 2020; Ministry of Health and Welfare, 2025). Understanding how healthcare staff and care recipients differ in safety attitudes and risk perception is essential for designing user-centered interventions and communication strategies.

Medication safety is a particularly critical domain where perceptual gaps may emerge. Although medication errors represent one of the most preventable categories of adverse events worldwide, the visibility of the medication-use process remains low for patients, reducing their perceived relevance and engagement in verification behaviors. Technologies such as barcode medication administration have been shown to alleviate some risks but introduce behavioral and workflow barriers that must be addressed through human-centered design (Grailey et al., 2023).

The present study aims to explore patient safety awareness and risk perception among clinical staff, inpatients, and family members. By examining incident experience, concern levels, and subjective workload among healthcare professionals, as well as safety awareness and perceived risk among patients and families, the study provides empirical grounding for the development of future patient-engagement tools and safety-enhancing design interventions.

METHODS

Study Design

This study employed a cross-sectional survey approach using two structured questionnaires developed for different respondent groups: one for clinical healthcare professionals and one for inpatients and their accompanying family members. The questionnaires were designed based on literature related to patient safety, human factors, and hospital risk management. Content

validity was evaluated through expert review by clinicians and human factors specialists, and revisions were made to ensure clarity, relevance, and appropriateness for the target populations.

Following validation, the staff questionnaire was distributed to frontline healthcare professionals, while the patient/family questionnaire was administered to hospitalized patients and their accompanying relatives. Completed questionnaires were collected and subjected to statistical analysis to identify patterns in safety awareness, incident experience, workload perception, and risk concerns. Through comparative analysis of the two respondent groups, medication errors emerged as a particularly salient and recurrent patient safety issue in clinical practice.

Participants

Clinical Staff

A convenience sample of nurses and other frontline care providers was recruited from medical, surgical, and intensive care units. A total of 125 valid responses were collected. Most respondents were female, aged 18–25 years, and held university degrees. Over two-thirds reported fewer than seven years of clinical experience, and a similar proportion worked rotating shifts.

Patients and Family Members

A total of 161 valid responses were obtained from hospitalized patients, family members, and accompanying friends. Respondents were predominantly female, with education levels generally at or above the university level. Many were first-time inpatients, and most were admitted to medical or surgical wards.

Questionnaire Development

Both questionnaires were developed based on patient safety literature and expert input from clinicians and human factors specialists. The staff questionnaire included:

(1) demographic and job-related characteristics;
(2) experience with patient safety incidents;
(3) concern about various safety events; and
(4) subjective workload using the NASA-TLX.

The patient/family questionnaire included demographic items and statements assessing safety awareness and concern regarding common hospital risks.

Measures

Patient Safety Incident Experience and Concern (Staff)

Clinical staff reported whether they had encountered specific safety incidents, including falls, tube dislodgement, medication errors, documentation

omissions, pressure injuries, infections, and needle-related events. Concern levels were rated on a five-point Likert scale ranging from "never worry" to "always worry."

NASA-TLX Workload Assessment

Subjective workload was assessed across six NASA-TLX dimensions: mental demand, physical demand, temporal demand, performance, effort, and frustration. Scores ranged from 0 to 100, with higher scores indicating greater workload.

Safety Awareness and Risk Perception (Patients/Families)

Respondents rated their awareness of and concern regarding falls, tube dislodgement, medication errors, infections, injection complications, and misinterpretations of clinical instructions on five-point Likert scales.

Data Analysis

Descriptive statistics were used to summarize sample characteristics, incident frequencies, concern levels, and workload scores. ANOVA was applied to examine workload differences across shift types and experience levels among clinical staff. Data analysis was conducted using standard statistical software with significance set at $p < 0.05$.

RESULTS

Participant Characteristics

Clinical staff respondents were predominantly young, female, and early-career professionals. Most worked in internal medicine or surgical wards and were engaged in rotating shift schedules. Patient and family respondents represented a broad range of ages and hospitalization experiences, with most admitted to medical or surgical units.

Incident Experience Among Clinical Staff

The most frequently encountered incidents were patient falls (58.4%), tube dislodgement (53.6%), and medication errors (40.8%)(Table 1). Additional events included needle-related complications, documentation omissions, and pressure injuries. Fewer staff had encountered self-harm incidents or hospital-acquired infections.

Although medication errors were not the most frequently encountered or most highly rated concern, they remain a critical patient safety issue due to their high potential severity, low detectability, and strong dependence on cognitive performance. This combination of moderate occurrence but high consequential risk highlights medication safety as a priority for human factors–driven interventions.

Table 1: Frequency of patient safety incidents managed by clinical staff.

Item	n	Percentage (%)
Patient falls	73	58.4
Patient-initiated removal of nasogastric tubes or other indwelling lines	67	53.6
Patient elopement or discharge against medical advice	35	28.0
Wrong medication administered or incorrect dosage	51	40.8
Development of pressure injuries	44	35.2
Omissions in nursing documentation or handover information	47	37.6
Patient showing self-harm or suicidal tendencies (including attempted self-harm)	26	20.8
Expired, loose, or infiltrated intravenous catheter, or accidental needlestick injury	53	42.4
In-hospital infections (e.g., contact or droplet transmission)	31	24.8

Concern About Patient Safety Events (Staff)

Concern was highest for patient falls, tube dislodgement, and documentation omissions, followed by moderate concern regarding medication errors and infections. Many staff reported "often" or "always" worrying about fall-related risks.

Safety Awareness and Risk Perception (Patients/Families)

Patients and families reported strong awareness of falls, tube dislodgement, and infection risks (Table 2). However, concern about medication errors was notably lower than concern about other events (Table 3). This pattern suggests limited visibility into medication-related processes and risk consequences.

Table 2: Patients' and family members' awareness of and perceived importance of patient safety statements.

Item	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)	M	SD
I am aware that falls may occur during hospitalization.	.6	1.2	6.2	45.3	46.6	4.36	.71
I know that self-removal of nasogastric tubes, urinary catheters, or other lines can cause physical harm.	.6	1.9	2.5	41.0	54.0	4.46	.70
I believe that nurses will proactively explain patient safety risks.	1.2	3.1	15.5	46.0	34.2	4.09	.85
I know which behaviors increase the risk of infection.	1.9	5.6	12.4	48.4	31.7	4.02	.92
I am able to understand warning signs and how to use equipment in the ward.	1.9	5.0	14.9	42.9	35.4	4.05	.93
I consider patient safety to be one of the most important issues during hospitalization.	1.2	.6	3.7	39.1	55.3	4.47	7.2

Table 3: Concern about patient safety events among patients and family members.

Item	Never Worry (%)	Occasionally Worry (%)	Sometimes Worry (%)	Often Worry (%)	Always Worry (%)	M	SD
I worry that I might fall during hospitalization.	11.2	22.4	32.9	21.1	12.4	3.01	1.18
I worry that the patient will self-remove nasogastric tubes or other indwelling lines.	31.1	19.9	20.5	18.0	10.6	2.57	1.37
I worry about medication errors (e.g., wrong medication or incorrect timing).	24.8	24.2	28.0	14.3	8.7	2.58	1.25
I worry about getting an infection during hospitalization (e.g., intravenous line or wound infection).	8.7	19.9	33.5	19.9	18.0	3.19	1.20
I feel uncertain about what I should do because I do not fully understand explanations from healthcare staff (e.g., mobility, diet).	22.4	21.7	25.5	17.4	13.0	2.77	1.33
I worry that hospital warnings or signs are unclear or difficult to understand.	32.9	25.5	20.5	13.7	7.5	2.37	1.27
I worry that, during injections or intravenous infusions, the needle may come out, cause swelling, or result in extravasation.	9.9	29.2	28.6	19.9	12.4	2.96	1.18

NASA-TLX Workload

Workload scores indicated high effort, temporal demand, and performance pressures. Mental demand and frustration were also moderately high. ANOVA showed significantly higher frustration among rotating-shift workers and higher effort among staff with more than six years of experience.

CONCLUSION

This study examined patient safety awareness, risk perception, and workload-related factors among clinical staff, inpatients, and family members in a regional teaching hospital. Findings revealed clear perceptual differences between frontline healthcare personnel and care recipients. Clinical staff reported frequent exposure to patient safety incidents—particularly falls, tube dislodgement, and medication errors—and demonstrated high levels of temporal demand and effort based on NASA-TLX assessments. These workload pressures may increase susceptibility to slips and lapses, especially in medication-related processes.

In contrast, patients and family members showed high awareness and concern regarding falls and infections but expressed substantially lower concern about medication errors. This discrepancy suggests limited visibility or understanding of the medication-use process among patients, which may hinder their engagement in verification behaviors that could enhance safety.

Overall, the results highlight the importance of addressing both human factors and patient engagement when designing safety interventions. Strengthening communication, enhancing the transparency of medication processes, and developing user-centered verification tools may reduce preventable medication errors and foster a more collaborative culture of safety. These insights provide a foundation for future simulation-based evaluations and interface design strategies aimed at supporting safer, more participatory medication practices.

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