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Original Research Article

Awareness, Knowledge, Attitude, and Practice of Patient Safety Culture Among Healthcare Providers and Managers in a Tertiary Healthcare Hospital

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Abstract: *Patient safety culture is a cornerstone of quality healthcare delivery, yet unsafe practices, communication failures, and systemic barriers continue to compromise outcomes. Objective: To assess the awareness, knowledge, attitude, and practice of patient safety culture among healthcare providers and managers in a tertiary healthcare hospital, using the Hospital Survey on Patient Safety Culture (HSOPSC).* ***Methods:*** *This descriptive cross-sectional study was conducted at the Jinnah Postgraduate Medical Center and the National Institute of Child Health from January 2023 to September 2023. A total of 375 participants, including doctors, nurses, allied health professionals, and managers, were enrolled through non-probability consecutive sampling. Data were collected using a structured, pre-tested questionnaire that incorporated the HSOPSC, developed by the Agency for Healthcare Research and Quality (AHRQ). Domains assessed included awareness, knowledge, attitudes, practices, event reporting, and safety ratings.* ***Results:*** *Most participants demonstrated high awareness (68.0%) and knowledge (61.6%) of patient safety culture. Positive attitudes were reported by 70.1% of respondents, with teamwork (77.1%) and communication openness (66.1%) being rated as the highest. However, non-punitive responses to errors (52.5%), staffing adequacy (49.9%), and handoffs and transitions (44.8%) were identified as areas for improvement. Event reporting was limited, with 51.2% reporting no events in the past three months, and 64.8% rated their work units as excellent or very good. Knowledge of patient safety SOPs and awareness of safety unit availability were significantly associated with more positive perceptions of safety culture ($p < 0.05$).* ***Conclusion:*** *The study highlights that while awareness and attitudes toward patient safety culture are generally favorable, systemic barriers, particularly underreporting of events, fear of blame, inadequate staffing, and limited knowledge of global frameworks, persist as significant challenges to improving patient safety culture.*

Keywords: Patient safety, Safety culture, Healthcare providers, HSOPSC, Knowledge, Attitude, Practice, Event reporting

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Introduction

Patient safety has emerged as a cornerstone of modern healthcare delivery, representing a critical dimension of quality care and organizational performance. Unsafe medical practices, preventable errors, and system-related failures are leading to healthcare morbidity and mortality globally, and increasing healthcare expenditures (1). An estimated 2-3 million patients are injured per year because of unsafe practices, with the problem mainly falling on low- and middle-income countries, which contend with resource constraints, minimal training, and poor systems (2). To this end, the concept of patient safety culture has gained prominence as a systematic approach to mitigating harm, enhancing patient safety, and improving accountability within healthcare facilities (3).

Among healthcare providers and managers, awareness, knowledge, attitude, and practice regarding patient safety culture are crucial factors that contribute to creating safe clinical environments. Awareness refers to prioritizing safety, whereas knowledge involves the involvement of policies, reporting systems, and preventive measures (4). Attitude represents the beliefs, values, and perceptions of healthcare workers about safety, and practice signifies the degree to which safety principles have been worked into everyday routine clinical and administrative practice (5). The presence of a positive patient safety culture is associated with fewer medical errors, improved communication among team members, better reporting of adverse events, and more positive patient outcomes (6). In tertiary healthcare hospitals, where the complexity of care, patient load, and multidisciplinary interactions are at their peak, encouraging a good safety culture is not only challenging but also a necessity (7). Healthcare providers and managers can be used as frontline enablers of safety protocols, and their overall KAP is the ultimate determinant of the effectiveness of the safety initiatives in the institutions. Nevertheless, there is evidence that in most healthcare systems, notably those of resource-limited countries, deficiencies exist in training, underutilization of undesirable investigations, and a hierarchical structure that hinders open communication (8). These difficulties preclude the development of an effective safety culture. The implementation of an organizational culture that focuses on patient safety requires more than just developing policies; it entails a change in behavior on both individual and institutional levels (9). This begins by increasing understanding of how safety is a collective duty, not an individual responsibility. Medical personnel should acknowledge the importance of adhering to evidence-based standards, infection control measures, and medication safety recommendations (10). At the same time, knowledge must be enhanced through continuous education, simulation-based programs, and the integration of patient safety into pre-clinical and postgraduate programs (11). A lack of proper awareness and knowledge can render even the most developed systems underutilized. The attitudes toward patient safety are also instrumental. Optimism fosters free will in error reporting, promoting interdisciplinary collaboration and organizational resilience. Notwithstanding, in most healthcare settings, a punitive culture prevails, with individuals being held responsible for mistakes rather than the systems being held accountable for correction (12). These punitive cultures hinder communication, discourage the reporting of near-misses, and compromise overall safety. Changing the culture to adopt a more non-punitive, supportive approach is therefore essential for maintaining improvements (13).

The final challenge faced by patient safety culture is the ability to translate awareness, knowledge, and attitudes into practice (14). Efforts such as hand hygiene compliance, the use of surgical safety checklists, proper documentation, and patient monitoring of high-risk patients represent the practical backbone of a safety culture. Managers play a central role in ensuring the standardization of such practices, monitoring and regularly improving them (15). Their work as leaders can reinforce or undermine safety protocols by ensuring commitment and allocating resources for frontline behaviors, and by integrating safety measures into their clinical practices. The need to explore patient safety culture is even greater in the context of healthcare systems in developing countries (16).

This study was designed to assess the awareness, knowledge, attitude, and practice of patient safety culture among healthcare providers and managers in a tertiary healthcare hospital, using the Hospital Survey on Patient Safety Culture (HSOPSC).

Methodology

This was a descriptive cross-sectional study conducted at Jinnah Postgraduate Medical Centre and National Institute of Child Health from January 2023 to September 2023. A total of 375 participants were enrolled in the study. Non-probability consecutive sampling was used to recruit eligible participants until the required sample size was achieved. The study included healthcare providers (doctors, nurses, allied health professionals) and managers working in the hospital. Healthcare providers and managers are directly involved in patient care or healthcare management. Participants with at least 6 months of experience in the current institution. Willingness to participate and provision of informed consent. Administrative staff not involved in clinical or patient safety-related activities. Healthcare workers on prolonged leave during the study period. Data were collected using a pre-tested structured questionnaire. The primary tool used was the Hospital Survey on Patient Safety Culture (HSOPSC), developed by the Agency for Healthcare Research and Quality (AHRQ) in the USA. Internationally, this tested instrument has been widely used to evaluate hospital safety culture. The HSOPSC encompasses multiple domains, including teamwork within units, supervisor and manager expectations, organizational learning, communication openness, feedback and error communication, non-punitive responses to errors, staffing, hospital management support for safety, and handoffs and transitions. There are two versions: the original HSOPSC Version 1.0 (2004) and the more recent, simplified, and updated HSOPSC Version 2.0 (2019). The survey is available in English and has also been adapted into several languages, making it suitable for local cultural contexts such as translation into Urdu for Pakistan. It is a valuable tool for assessing the culture of patient safety in various healthcare systems due to its widespread use and free accessibility. The questionnaires were distributed to participants and completed self-administered after obtaining informed consent. To provide a comprehensive understanding of the topic, additional sections of the HSOPSC survey assessed participants' awareness, knowledge, attitudes, and practices regarding patient safety. Participants were encouraged to answer honestly without fear of repercussions, and anonymous responses were collected to ensure confidentiality and maintain participant trust. Consistency and response bias were minimized by having trained data collectors available to provide clarifications when needed.

Data were entered and analyzed using Statistical Package for the Social Sciences (SPSS) version 26.0. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize demographic information and responses within each domain. Inferential statistics, including chi-square test and independent t-test, were applied to examine associations between demographic variables and KAP scores. A p-value of ≤0.05 was considered statistically significant.

Results

A total of 375 healthcare providers and managers participated in the study. Most respondents were between 30 and 40 years old (42.1%), with females slightly outnumbering males (55.2%). Doctors (38.7%) and nurses (35.2%) comprised the bulk of the workforce, while managers accounted for 11.5%. The experience was relatively mature overall, with 66.4% having been in service for more than 5 years, which supported informed views on safety culture and operational realities.

Awareness of patient safety concepts was high in 255 (68.0%), moderate in 95 (25.3%), and low in 25 (6.7%). Knowledge of safety policies/guidelines was high in 231 (61.6%), moderate in 110 (29.3%), and low in 34 (9.1%). Knowledge of the incident reporting system was high in 204 (54.4%), moderate in 118 (31.5%), and low in 53 (14.1%). Knowledge of WHO/AHRQ initiatives was high in 182 (48.5%), moderate in 127 (33.9%), and low in 66 (17.6%).

Teamwork within units was rated positively by 289 (77.1%), neutrally by 60 (16.0%), and negatively by 26 (6.9%). Communication openness was positive in 248 (66.1%), neutral in 82 (21.9%), and negative in 45 (12.0%). A non-punitive response to errors was viewed positively by 197 (52.5%), neutral by 111 (29.6%), and negatively by 67 (17.9%). Management support for safety was positive in 221 cases (58.9%), neutral in 104 cases (27.7%), and negative in 50 cases (13.4%).

Hand hygiene was regularly practiced by 298 (79.5%), occasionally by 59 (15.7%), and rarely by 18 (4.8%). Surgical safety checklists were used regularly by 262 (69.9%), occasionally by 78 (20.8%), and rarely by 35 (9.3%). Near-miss reporting was regular in 178 (47.5%), occasional in 129 (34.4%), and rare in 68 (18.1%). Participation in safety training was regular in 193 (51.5%), occasional in 115 (30.7%), and rare in 67 (17.9%). Teamwork within units scored high in 284 (75.7%), moderate in 71 (18.9%), and low in 20 (5.4%). Supervisor/manager expectations: high 236 (62.9%), moderate 101 (26.9%), low 38 (10.2%). Organizational learning & improvement: high 244 (65.1%), moderate 91 (24.3%), low 40 (10.6%). Feedback & error communication: high (219, 58.4%), moderate (106, 28.3%), low (50, 13.3%). Staffing adequacy: high 187 (49.9%), moderate 112 (29.9%), low 76 (20.2%). Handoffs & transitions: high 168 (44.8%), moderate 125 (33.3%), low 82 (21.9%).

By age, high awareness was reported by 68/110 (61.8%) in <30 years, 114/158 (72.2%) in 30–40 years, and 73/107 (68.2%) in >40 years (p=0.042). By gender, high awareness was observed in 106 out of 168 males (63.1%) compared to 153 out of 207 females (73.9%) (p = 0.071). By profession, high awareness was observed in 111/145 doctors (76.6%), 80/132 nurses (60.6%), 30/55 allied staff (54.5%), and 38/43 managers (88.4%) (p = 0.009). Corresponding moderate/low awareness counts were 42/110 (38.2%), 44/158 (27.8%), 34/107 (31.8%) for age groups; 62/168 (36.9%) vs 54/207 (26.1%) for gender; and 34/145 (23.4%), 52/132 (39.4%), 25/55 (45.5%), 5/43 (11.6%) across professions.

Knowledge of patient safety culture was high in 231 (61.6%), moderate in 110 (29.3%), and low in 34 (9.1%). Attitude toward safety culture was positive in 263 (70.1%), neutral in 86 (22.9%), and negative in 26 (7.0%). Practice was regular in 257 (68.5%), occasional in 97 (25.9%), and rare in 21 (5.6%). In the past 3 months, 192 (51.2%) reported no events, 118 (31.5%) reported 1–2 events, and 65 (17.3%) reported ≥3 events. Overall patient safety ratings for the work area were excellent in 102 (27.2%), outstanding in 141 (37.6%), acceptable in 96 (25.6%), and poor/failing in 36 (9.6%)

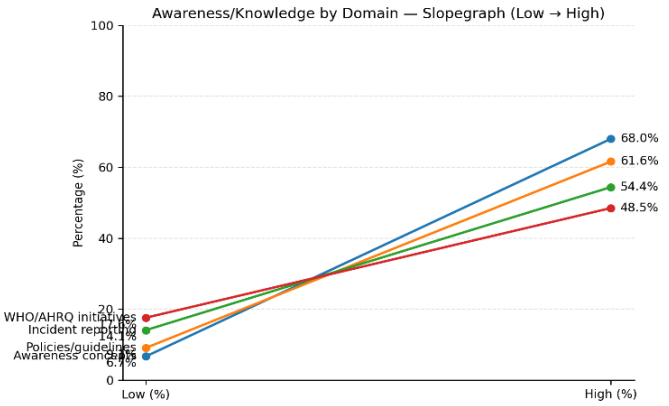

Figure 1. Awareness and Knowledge by Domain (Slopegraph: Low vs High Percentages)

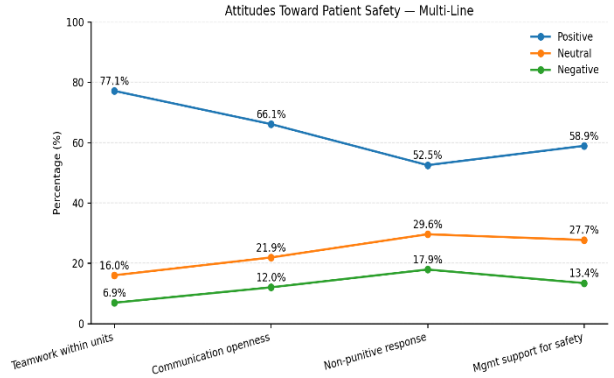

Figure 2. Attitudes Toward Patient Safety by Domain (Positive, Neutral, Negative Responses)

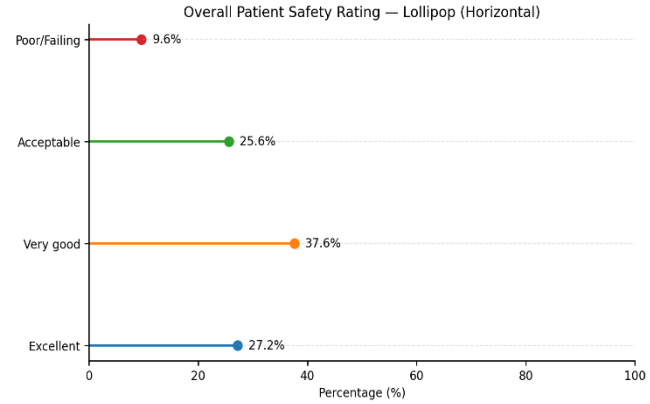

Figure 3. Overall Patient Safety Rating Presented as a Horizontal Lollipop Chart

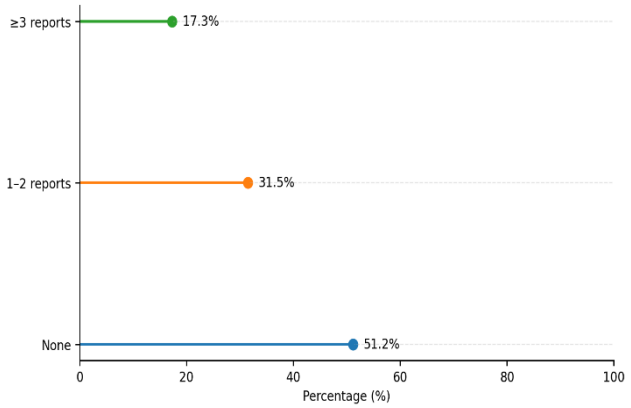

Figure 4. Frequency of Incident Reporting Shown as a Horizontal Lollipop Chart

Table 1. Demographic Characteristics of Participants (n = 375)

Variable	Category	n (%)
Age (years)	<30	110 (29.3)
	30–40	158 (42.1)
	>40	107 (28.5)
Gender	Male	168 (44.8)
	Female	207 (55.2)
Profession	Doctors	145 (38.7)
	Nurses	132 (35.2)
	Allied health staff	55 (14.7)
	Managers	43 (11.5)
Work Experience	<5 years	126 (33.6)
	5–10 years	148 (39.5)
	>10 years	101 (26.9)

Table 2. Awareness and Knowledge of Patient Safety Culture (n = 375)

Domain	High Awareness n (%)	Moderate Awareness n (%)	Low Awareness (%)
Awareness of patient safety concepts	255 (68.0)	95 (25.3)	25 (6.7)
Knowledge of safety policies/guidelines	231 (61.6)	110 (29.3)	34 (9.1)
Knowledge of the incident reporting system	204 (54.4)	118 (31.5)	53 (14.1)
Knowledge of WHO/AHRQ initiatives	182 (48.5)	127 (33.9)	66 (17.6)

Table 3. Attitude toward Patient Safety Culture (n = 375)

Attitude Domain	Positive Attitude n (%)	Neutral Attitude n (%)	Negative Attitude n (%)
Teamwork within units	289 (77.1)	60 (16.0)	26 (6.9)
Communication openness	248 (66.1)	82 (21.9)	45 (12.0)
Non-punitive response to errors	197 (52.5)	111 (29.6)	67 (17.9)
Management support for safety	221 (58.9)	104 (27.7)	50 (13.4)

Table 4. Patient Safety Practices Reported by Participants (n = 375)

Practice Domain	Regularly Practiced n (%)	Occasionally Practiced n (%)	Rarely Practiced n (%)
Hand hygiene compliance	298 (79.5)	59 (15.7)	18 (4.8)
Use of surgical safety checklists	262 (69.9)	78 (20.8)	35 (9.3)
Reporting of near-miss events	178 (47.5)	129 (34.4)	68 (18.1)
Participation in safety training	193 (51.5)	115 (30.7)	67 (17.9)

Table 5. HSOPSC Composite Domains (n = 375)

HSOPSC Domain	High Score n (%)	Moderate Score n (%)	Low Score n (%)
Teamwork within units	284 (75.7)	71 (18.9)	20 (5.4)
Supervisor/manager expectations	236 (62.9)	101 (26.9)	38 (10.2)
Organizational learning & improvement	244 (65.1)	91 (24.3)	40 (10.6)
Feedback and error communication	219 (58.4)	106 (28.3)	50 (13.3)
Staffing adequacy	187 (49.9)	112 (29.9)	76 (20.2)
Handoffs and transitions	168 (44.8)	125 (33.3)	82 (21.9)

Table 6. Association of Demographic Variables with Awareness of Patient Safety (n = 375)

Variable	Category	High Awareness n (%)	Moderate/Low Awareness n (%)	p-value
Age (years)	<30	68 (61.8)	42 (38.2)	0.042
	30–40	114 (72.2)	44 (27.8)	
	>40	73 (68.2)	34 (31.8)	
Gender	Male	106 (63.1)	62 (36.9)	0.071
	Female	153 (73.9)	54 (26.1)	
Profession	Doctors	111 (76.6)	34 (23.4)	0.009
	Nurses	80 (60.6)	52 (39.4)	
	Allied staff	30 (54.5)	25 (45.5)	
	Managers	38 (88.4)	5 (11.6)	

Table 8. KAP of Patient Safety Culture, Event Reports, and Overall Safety Ratings (n = 375)

Domain / Measure	Category	n (%)
Knowledge of patient safety culture	High	231 (61.6)
	Moderate	110 (29.3)
	Low	34 (9.1)
Attitude toward patient safety culture	Positive	263 (70.1)
	Neutral	86 (22.9)
	Negative	26 (7.0)
Practice of patient safety culture	Regular	257 (68.5)
	Occasional	97 (25.9)
	Rare	21 (5.6)
Event reports in the past 3 months	None	192 (51.2)
	1–2 reports	118 (31.5)
	≥3 reports	65 (17.3)
Overall patient safety rating (work area)	Excellent	102 (27.2)
	Very good	141 (37.6)
	Acceptable	96 (25.6)
	Poor/Failing	36 (9.6)

Discussion

The present study assessed the awareness, knowledge, attitude, and practice of patient safety culture among healthcare providers and managers in a tertiary healthcare hospital, using the validated Hospital Survey on Patient Safety Culture (HSOPSC) tool. One of the key findings in this study is that 68% of the participants had a high awareness of patient safety concepts, and 61.6% of the subjects possessed a high level of knowledge about safety policies and guidelines. This aligns with the findings of previous studies, which also reported that, although healthcare professionals in tertiary hospitals had a solid knowledge base, there was a notable variance in the subsequent application of that knowledge. Inadequate knowledge of international frameworks related to safety has also been exemplified by a disparity between 48.5 percent who are well-versed in the WHO guidelines and 48.5 percent who are well-versed in the AHRQ guidelines (17). These gaps are of special concern in resource-limited healthcare systems, where international standards can provide a means to align local practices with evidence-based safety practices (18).

The attitudes towards patient safety were mainly positive, with domains of teamwork and communication obtaining the highest values. The level of favorable perception of teamwork within units was approximately 77 percent; openness in communication was approximately 66 percent. These results align with the findings of previous research, which indicate that teamwork and effective communication are key characteristics of a strong patient safety culture. Positive perceptions of non-punitive responses to errors were erroneously reported by only 52.5% of respondents, indicating that the study setting has not yet adopted a blame-free culture (19). Previous studies have repeatedly shown punishment fears to be a hindrance to error reporting, so leadership needs to maintain a just culture that avoids blaming individuals for errors as malpractice, thereby increasing the chances of system improvement. In terms of practices, the study found that hand hygiene compliance was high (79.5%) and surgical safety checklist use was (69.9%). Such are positive pointers as both are well known to be pillars of the practice of preventing healthcare-associated infections and surgical complications (20).

This aligns with observations from earlier work, where underreporting of adverse events and near misses was a common challenge across healthcare systems. Low reporting not only makes it harder for employees to learn, but it also makes it more difficult to identify hidden system errors that could cause serious harm to patients (21). These findings align with previous studies that highlight workforce shortages and interdepartmental communication breakdowns as persistent barriers to patient safety in tertiary care settings. In environments where patient volumes are high and staff resources are limited, inadequate staffing can result in increased workloads, fatigue, and higher error rates (22). Similarly, miscommunication during handoffs can result in the loss of information and potentially lead to adverse outcomes. Therefore, addressing these systemic issues is crucial to establishing a robust safety culture. The study also explored the impact of knowledge on patient safety culture (23). Adequate knowledge of patient safety standard operating procedures (SOPs) and awareness of the hospital's patient safety unit were both significantly associated with more positive perceptions of safety culture. This finding underscores the importance of targeted training and awareness campaigns in strengthening safety culture (24). Previous research has similarly emphasized that healthcare workers who are better informed about safety policies and institutional support systems are more likely to engage in proactive safety practices and maintain positive attitudes toward safety improvement (25).

The institutional safety climate was further illuminated by event reporting and overall safety ratings. Over half of those polled (51.2%) reported no problems in the previous three months. While this might suggest low occurrence of reportable incidents, it more likely reflects underreporting, given the documented barriers such as fear of blame and lack of feedback (26). In addition, the majority of respondents gave their work unit an excellent or perfect rating for patient safety, which aligns with the generally positive attitudes expressed in other areas. However, the 9.6% of respondents who rated safety as poor or failing highlight that perceptions remain heterogeneous and that subgroups of staff continue to face significant safety concerns (27). To improve the safety climate, it is necessary to address the persistent blame culture, inadequate event reporting, inadequate knowledge of international frameworks, and perceived staffing deficiencies. Interventions could include structured training programs on international patient safety guidelines, implementation of anonymous and supportive reporting systems, periodic staffing assessments, and leadership-driven initiatives to foster open communication. Moreover, continuous monitoring of patient safety culture through validated tools such as HSOPSC can provide valuable feedback for ongoing quality improvement.

Conclusion

It is concluded that the overall awareness, knowledge, attitude, and practice of patient safety culture among healthcare providers and managers in this tertiary healthcare hospital were generally favorable, particularly in areas such as teamwork, communication, and adherence to core safety practices, including hand hygiene and checklist use. However, important gaps remain, most notably in the domains of knowledge of international patient safety frameworks, non-punitive responses to error, adequate staffing, effective handoffs, and consistent reporting of near-miss events.

Declarations

Data Availability statement

All data generated or analysed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department concerned. (IRBEC--24)

Consent for publication

Approved

Funding

Not applicable

Conflict of interest

The authors declared the absence of a conflict of interest.

Author Contribution

HM

Manuscript drafting, Study Design,

CL

Review of Literature, Data entry, Data analysis, and drafting an article.

DK

Conception of Study, Development of Research Methodology Design,

MAG

Study Design, manuscript review, and critical input.

All authors reviewed the results and approved the final version of the manuscript. They are also accountable for the integrity of the study.

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