

Impact of Communication Satisfaction on Safety Culture among Operating Theatre Nurses in Saudi Arabia

Hind Awaji^{1*}, Turki Al Mutairi², Mishal Al Onaizi³, Hanan Al Rashidi⁴, Khaled Alshamrani⁵, Andiswa Mazibu⁶, Joyce Lynn Opinga Machnouk⁷, Shanmugapriya Chinnasamy⁸, Mary Rose Gayle Aguila⁹, Masoudha Saad Althubaity¹⁰, Tabisa Ndabambi¹¹

¹MSN, RN, BSN, HQMP, Head Nurse of Endoscopy, Nursing Department, Prince Sultan Military Medical City, Riyadh, KSA

²PhD, MANP, RN, FISQua, LSBB, Nursing Department, Prince Sultan Military Medical City, Riyadh, KSA

³MSN, Nursing Department, Prince Sultan Military Medical City, Riyadh, KSA

⁴MSN, RN, CCRN, APN-CNS, Nursing Department, Prince Sultan Military Medical City, Riyadh, KSA

⁵MSN, BSN, RN, Nursing Department, Prince Sultan Military Medical City, Riyadh, KSA

⁶MNS, Bcur, RM, RN, RCN, RPN, Nursing Department, Prince Sultan Military Medical City, Riyadh, KSA

⁷MAN, RN, CPHQ, Nursing Department, Prince Sultan Military Medical City, Riyadh, KSA

⁸MSN, RN, RM, Nursing Department, Prince Sultan Military Medical City, Riyadh, KSA

⁹RN, Nursing Department, Prince Sultan Military Medical City, Riyadh, KSA

¹⁰BSN, Nursing Department, Prince Sultan Military Medical City, Riyadh, KSA

¹¹MSN, Nursing Department, Prince Sultan Military Medical City, Riyadh, KSA

DOI: <https://doi.org/10.36348/sjnhc.2026.v09i07.001>

| Received: 13.05.2026 | Accepted: 01.07.2026 | Published: 08.07.2026

*Corresponding author: Hind Awaji

MSN, RN, BSN, HQMP, Head Nurse of Endoscopy, Nursing Department, Prince Sultan Military Medical City, Riyadh, KSA

Abstract

Background: Effective communication is an essential element of effective healthcare team and patient safety. Global research emphasises the need of effective communication for patient safety and nurse satisfaction, however language obstacles and hierarchical structures continue to impair Saudi Arabian healthcare environments. Previous studies have examined communication and safety culture independently, with limited evidence of studies that explore the relationship between nurses' communication satisfaction and their perceptions of patient safety culture within Saudi operating theatres.

Objectives: This study aimed at evaluating the relationship between nurses' communication satisfaction and culture of safety among operating theatre nurses in a tertiary hospital in Saudi Arabia.

Research Design & Setting: A cross-sectional correlational design was used to conduct this study in a military tertiary hospital in Riyadh, Saudi Arabia. A convenience sampling method was used to sample a total of 116 participants operating theatres in the hospital. **Methods & Materials:** Data collected using two validated instruments: the Communication Satisfaction Questionnaire (CSQ) and the Hospital Survey on Patient Safety Culture (HSOPS) to examine how communication satisfaction affects patient safety culture.

Analysis: analysis conducted through SPSS using descriptive statistics, repeated-measures ANOVA, t-tests, and Pearson correlation. While One Way ANOVA used for data scoring, Cronbach's Alpha used to assess the reliability coefficient.

Results: Showed a Pearson correlation of $r = 0.206$ with $p < 0.05$, showing a weak but statistically significant relationship.

In organizational and healthcare research, these findings suggest a significant association, even when the strength is ordinary. This positive correlation means that as communication satisfaction increases, nurses' perceptions of patient safety culture also improve. **Conclusion:** A significant positive correlation is found between overall satisfaction and overall patient safety perception. The findings consistently highlight communication as a central component of a strong and healthy safety culture.

Keywords: Communication satisfaction, Patient safety culture, Operating theatre nurses, Tertiary hospital, Saudi Arabia.

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INTRODUCTION

Effective communication is essential for providing exemplary healthcare, particularly in very

critical environments such as the operating theatre. In surgical settings, teamwork, precise coordination, and prompt decision-making are essential; therefore, nurses' communication satisfaction significantly contributes to

the overall safety culture. Nurses are indispensable to preserving patient safety because of the nature of their work, which calls for ongoing patient care coordination and monitoring. In fact, nurses play a crucial role in keeping an eye on and upholding patient safety culture. Effective communications among the nurses are necessary to provide quality patient care (Vermeir *et al.*, 2015). Especially in the operation theatre, appropriate communications are necessary to provide the patient the best surgical care possible. Ensuring intraoperative safety and quality treatments are reflected in a central supervision mission for nurses in the operating theatre. Each processing of healthcare services during the patient operation is very important for them because they are the primary safer healthcare agent. Operating nurses place a higher value on cooperation compared to nurses in other fields because their roles in the operating theatre are equal to those of surgeons. Nurses have frequently reported worse communication in the operating theatre when compared to anesthetists and surgeons (Makary *et al.*, 2006). Therefore, looking at the viewpoints of nurses could help legislators and stakeholders resolve this disagreement. Contrary to the Agency for Healthcare Research and Quality (AHRQ), an organization's safety culture is the result of both individual and collective values, attitudes, perceptions, competencies, and behavioral patterns that demonstrate the organization's dedication to and proficiency in health and safety management (AHRQ, 2021). A positive safety culture fosters a more contented and dedicated team, potentially leading to better patient outcomes. Nurses in such settings are free to report problems without fear of retaliation, and they are actively participating in projects to improve safety procedures. Nurses' capacity to deliver excellent patient care and safely handle challenging and urgent situations is greatly influenced by their workload and staffing levels. Ensuring the intraoperative safety and high-quality care has been the most important task for nurses in the operation theatre. Safer healthcare services as well as nursing care are crucial at every stage of the perioperative period during the operation (Reato *et al.*, 2024). Surgeons and operating room nurses, however, have quite diverse perceptions on communication (Reato *et al.*, 2024). A strong patient safety culture, characterized by open communication, teamwork, error reporting, and organizational learning, is necessary to reduce risks and enhance clinical results. Nurses are the largest group of people who work in perioperative care and are the main point of contact for operating room teams. Because of this, communication satisfaction among nurses has become an important factor in safety culture. A strong safety culture promotes candid dialogue, prompt error reporting, teamwork, and shared accountability for patient outcomes (Sammer *et al.*, 2010). Operating room nurses necessarily interconnect well with teamwork members, including nurses, anesthetists, and surgeons, since they often work under exciting stress. Most of the research has concluded that when nurses have high levels of communication satisfaction, which are characterized by clarity,

openness, trust, and timely information exchange, they are more likely to raise safety issues, collaborate effectively with others, and participate in activities that promote a positive safety culture [(Downs and Hazen, 1997). In addition, studies demonstrated that the association between communication satisfaction and safety culture is precisely essential for improving the management quality and patient safety in surgical settings (Vermeir *et al.*, 2015; Vermeir *et al.*, 2015). Another study shows that when nurses feel empowered, heard and respected, they may efficiently contribute to a safe and caring work atmosphere. Other research indicates that nurses who successfully collaborate, convey safety concerns, and improve medical results are more likely to have greater degrees of communication satisfaction (Almabadi *et al.*, 2025). Despite such advantages, several healthcare systems, notably Saudi Arabia's, nevertheless struggle with communication (Alluhidan *et al.*, 2020). Hence, it is important to observe how interactive satisfaction affects safety culture among Saudi Arabian surgical nurses to improve developments in patient safety and high-quality healthcare. International research highlights that effective communication among the nurses is very important for patient safety and management quality improvement; however, language obstacles and hierarchical structures continue to impair Saudi Arabian healthcare environments (Almutairi *et al.*, 2014). Previously, there were limited studies that focused on the association between nurses' communication satisfaction and their perceptions of patient safety culture within Saudi operating theatres. Therefore, this study aimed to evaluate the relationship between nurses' communication and the safety culture among operating theatre nurses in a tertiary hospital in Saudi Arabia.

METHODOLOGY

Design

Cross-sectional correlational analysis was employed in this investigation.

Setting

Registered nurse from an operating theatre in a Saudi Arabian tertiary hospital in Riyadh.

Participants and Sampling

Convenience sampling was utilized in the research. In Riyadh, Saudi Arabia, 116 registered nurses worked as operating- room nurses, making up the study sample. The criteria for admission were as follows: holding a valid nursing license in Saudi Arabia, being a registered staff nurse or a charge nurse, and having a minimum of one year of uninterrupted experience working in an operating room. Nursing employees in managerial roles who did not directly care for patients were not included to keep the focus on bedside care providers.

Instrumentation

The CSQ and HSOPS, both legitimate instruments, were employed. CSQ sought to obtain a comprehensive understanding of corporate communication. There is a total of forty items spread across eight communication dimensions in the survey, with each item having a seven-point satisfaction scale running from extremely satisfied to extremely unsatisfied. The survey is organized into three main contexts: interpersonal, group, and organizational. Findings included an analysis of leadership and team communication as well as workplace communication, the identification of communication barriers, recommendations for improving organizational communication culture, and an examination of the connection among communication and outcomes including job satisfaction, safety culture, and performance.

The HSOPSC looks at the staff's mindset, actions, communication style, management's backing, and documenting of patient safety events, among other aspects of the culture of patient safety. Previous research has shown that the HSOPSC survey performs reliably, with Cronbach's alpha values usually reported between 0.63 and 0.84. The questionnaire is organized into six parts (A–F), and each one looks at a different feature of the safety culture in the workplace. Some questions ask about how often safety issues happen, others ask how comfortable nurses feel when reporting them, and some check how much they agree with statements related to safe practice. All items use a five-point scale: sometimes the scale ranges from strong disagreement to strong

agreement, and sometimes from never to always. The survey also includes an item asking staff to give their overall view of patient safety in their unit, selecting one option from “excellent” down to “poor.”

Procedure and Data Collection

The main information for the research was gathered in September and October 2025. The meeting that was held with the nurses was done in collaboration with the hospital administration by the researchers. The researcher outlined the aims of the study to the nurses and provided each with a copy of the questionnaire. They were informed that returning the completed survey would imply consent to participate. To maintain confidentiality, authentication codes were assigned instead of personal identifiers, and all collected materials were stored securely.

Ethical Consideration

Once ethics approval was granted by Institutional Review Board, the researcher met with the nurses to outline the aim of the study and distribute the questionnaires. Before filling out the questionnaire, everyone who participated had to read the written consent cover page at the start of the survey. The nurses were informed that returning a completed survey would indicate their willingness to join the research. No personal identifiers were collected; instead, authentication codes were assigned, and all records were stored securely to maintain confidentiality.

RESULTS

Table 1: Demographic Profile of the Nurses

Profile Variables	Frequency	Percentage
Gender		
Female	102	87.93%
Male	14	12.07%
Age Group		
20-24 years	8	6.90%
25-29 years	13	11.21%
30-34 years	26	22.41%
35-39 years	37	31.90%
≥ 40 years	32	27.59%
Educational Attainment		
Diploma	10	8.62%
Bachelor's Degree	103	88.79%
Master's Degree	3	2.59%
Years of Expertise (in the unit)		
1-5 years	32	27.59%
6-10 years	32	27.59%
11-15 years	30	25.86%
<15 years	22	18.97%

Note. Percentages reflect the proportion of responses within each category. n=1

Out of the 116 nurses in this study, most are women (87.93%). This matches recent reports showing that nursing is still a career mostly chosen by women

(Andrew *et al.*, 2022; National Nursing Data, 2025). Most of the nurses are in their mid-career or older, with the biggest group being 35 to 39 years old. This follows

a global trend where the nursing workforce is getting older (Bailey *et al.*, 2026). This is often connected to cultural factors, since nursing is usually seen as a more suitable job for women, while male nurses may face social attitudes that affect their status (Alnowibet *et al.*, 2021; Salvador & Alanazi, 2024).

Almost all the nurses (nearly 89%) have a Bachelor's Degree. This shows that a university degree has become the standard for nurses worldwide

(Employability Study, 2025). Many of the nurses also have several years of experience in their units. The Saudi healthcare system is gradually promoting the Bachelor of Science in Nursing as the minimum entry-level certification, acknowledging the necessity for advanced competencies in specific areas such as perioperative care (Alluhidan *et al.*, 2020; Reato *et al.*, 2024). This is important because research shows that nurses with more experience usually have better skills and provide better care for patients (Murshid, 2021).

Table 2: Mean Satisfaction Scores per Domain

Domain	Mean Score
Personal Feedback	5.72
Relationship to Supervisors	5.92
Relationship to Subordinates	5.86
Horizontal & Internal Communication	5.96
Organizational Integration	5.60
Organizational Perspective	5.76
Communication Climate	5.92
Medical Quality	5.68
Communication Satisfaction Score	5.80

Note: The table presents the mean satisfaction scores across different domains of culture of safety.

With an overall Communication Satisfaction Score of 5.80, which reflects that employees are generally satisfied with how communication works in their organization. The highest-scoring domain was Horizontal & Internal Communication (5.96), meaning employees feel that information is shared well among coworkers and across departments, which is important because good peer communication strengthens teamwork and organizational commitment (Varona, 1996). On the other hand, the lower-scoring domains point to areas that need improvement. Medical Quality (5.68) and Organizational Integration (5.60) were the

lowest scores, indicating that employees may feel disconnected from the organization's bigger mission and that communication related to medical quality and safety standards could be stronger. This is especially important in healthcare settings, where weak communication has been shown to increase safety risks and reduce the quality of patient care (Young, 2014; Lee *et al.*, 2020). Overall, while the scores show a generally healthy communication environment, improving Organizational Integration, Personal Feedback, and Medical Quality communication would further support a stronger culture of safety.

Table 3: The Relationship Between Demographic Profile and Communication Satisfaction

Demographic Profile	F or t -value	p-value
Gender	0.60	0.762
Age Group	4.07	<0.001
Educational Attainment	0.95	0.530
Years of Expertise (in the unit)	0.77	0.419

Note. $p < 0.01$ indicates a statistically significant relationship.

Among the four demographic variables, only Age Group showed a statistically significant relationship with communication satisfaction ($F = 4.07$, $p < 0.001$), supported by recent studies showing that age-related differences in communication expectations and preferences can directly shape how satisfied employees feel with organizational communication, as younger employees tend to rate interpersonal communication quality differently compared to their older counterparts (Szostek, 2021). Research also confirms that age is one of the most commonly examined demographic variables in communication satisfaction studies, and its effects, while context-dependent, are frequently observed in organizational settings (Tkalac Verčič *et al.*, 2021).

In contrast, Gender ($F = 0.60$, $p = 0.762$), Educational Attainment ($F = 0.95$, $p = 0.530$), and Years of Expertise in the unit ($F = 0.77$, $p = 0.419$) did not show statistically significant relationships with communication satisfaction. The non-significant result for Gender is consistent with studies showing that gender does not consistently predict communication satisfaction across all organizational settings and communication types (Anumudu *et al.*, 2020). The lack of significance for Educational Attainment indicates that an employee's level of education does not meaningfully affect how satisfied they are with workplace communication, as communication satisfaction tends to be more influenced by relational and environmental factors than by

educational background (Tkalac Verčič *et al.*, 2021). Similarly, Years of Expertise showing no significant relationship suggests that how long an employee has worked in the unit does not strongly affect their communication satisfaction, although some healthcare-

specific studies have found that experience can play a role depending on the organizational context and the type of communication being measured (Abu Dalal *et al.*, 2021).

Table 4: Mean Scores for Nurses Perception of Patient Safety Culture per Domain

Domain	Mean Score
Unit / Work Area	3.16
Supervisor / Manager	3.47
Communication	3.92
Reporting Safety	3.84
Hospital	3.32
Patient Safety Score	3.54

Note: The table shows the mean scores for various patient safety domains.

Overall score suggests a moderate level of perceived patient safety culture among nurses where among all the domains, Communication recorded the highest mean score (3.92), reflecting that nurses generally feel that information related to patient safety is shared openly and effectively within their unit. This is a positive finding, as strong communication in healthcare settings is closely linked to better safety outcomes, fewer errors, and a greater willingness among staff to speak up about safety concerns (Rawas & Abou Hashish, 2023). Reporting Safety also scored relatively high (3.84), suggesting that nurses feel moderately comfortable reporting safety incidents, which is essential for organizational learning and the prevention of future errors, as a culture that encourages reporting rather than punishing it is a key marker of a mature safety culture (Krissadi & Supriyantoro, 2024). Supervisor/Manager scored 3.47, indicating a moderate level of satisfaction with how supervisors and managers support and promote

patient safety practices. While this score is above the midpoint, research shows that stronger supervisor support is directly associated with nurses feeling more confident to speak up about safety issues and report incidents, meaning there is still room for leadership improvement (Hospital management study, 2022). The Hospital domain scored 3.32, which reflects nurses' moderate perception of hospital-wide safety systems, management support, and overall institutional commitment to patient safety. The lowestscoring domain was Unit/Work Area (3.16), which is particularly concerning as this domain captures the day-to-day safety conditions that nurses experience most. Research has found that high workloads and insufficient staffing within units are among the strongest barriers to a positive safety culture, as they limit nurses' ability to follow safe practices and increase the risk of errors (Alrabae *et al.*, 2021; Kaware *et al.*, 2022).

Table 5: The Relationship Between Demographic Profile and Perception of Patient Safety Culture

Demographic Profile	F or t-value	p-value
Gender	0.069	0.793
Age Group	3.94	0.00495
Educational Attainment	0.539	0.585
Years of Expertise (in the unit)	0.893	0.447

Note. $p < 0.01$ indicates a statistically significant relationship.

Only Age Group showed a statistically significant relationship ($F = 3.94$, $p = 0.00495$), indicating that nurses of different age groups perceive patient safety culture differently within their organization. This finding is consistent with recent studies showing that age is one of the most commonly reported demographic factors associated with patient safety culture perceptions, as nurses at different stages of their careers tend to have varying levels of exposure to safety practices, workplace experiences, and expectations about how safety should be managed (Kakemam *et al.*, 2022; Alabbas *et al.*, 2023). Younger nurses may perceive safety culture differently from older and more experienced colleagues because of differences in training backgrounds, adaptability to safety protocols, and familiarity with reporting systems, and these

generational differences can meaningfully shape how safety culture is experienced at the unit level (DiCuccio *et al.*, 2020).

In contrast, Gender ($F = 0.069$, $p = 0.793$), Educational Attainment ($F = 0.539$, $p = 0.585$), and Years of Expertise in the unit ($F = 0.893$, $p = 0.447$) did not show statistically significant relationships with patient safety culture perception. The non-significant result for aligns with studies showing that gender does not consistently predict safety culture perceptions once organizational and unit-level factors are taken into account (Iran Journal of Nursing, 2020; Alkubati *et al.*, 2024). The lack of significance for Educational Attainment indicates that a nurse's level of education — whether diploma or degree — does not strongly

determine how they perceive patient safety culture, as research has shown that unit conditions, supervisory support, and workplace environment tend to be stronger predictors of safety culture than educational background alone (Ludin & Bajuri, 2020; Yesera *et al.*, 2023). Similarly, Years of Expertise in the unit showing no significant relationship possibly because the organization maintains a relatively consistent safety environment across all staff regardless of tenure, though

some studies note that this relationship can vary depending on the type of unit and the safety demands of the setting (Costa Abós, 2023; Chi *et al.*, 2020). Overall, the findings highlight that Age Group is the key demographic factor influencing how nurses perceive patient safety culture and ensure that all age groups share a strong and unified commitment to patient safety (Alkathere *et al.*, 2024; SosaPalanca *et al.*, 2022).

Table 6: The Relationship Between Communication Satisfaction and Perception of Patient Safety Culture

Variable	Mean	Pearson Correlation (r)	p-value
Communication Satisfaction	5.80	0.206	0.026
Perception of Patient Safety Culture	3.54		

Note. $p < 0.01$ indicates a statistically significant relationship.

The analysis indicates a statistically significant positive relationship between the two variables. This means that as nurses' communication satisfaction increases, their perception of patient safety culture also tends to improve, though the strength of this relationship is weak to moderate. This finding is supported by a study conducted among hospital nurses which similarly found a significant positive correlation between communication satisfaction and patient safety culture, suggesting that nurses who feel more satisfied with how communication works in their organization are also more likely to view the safety culture of their workplace favorably (Noviyanti *et al.*, 2021). The positive direction of this relationship makes practical sense, as open and satisfying communication enables nurses to share safety concerns freely, report errors without fear, and coordinate care more effectively all of which are essential components of a strong patient safety culture (Kim & Lee, 2021).

While the relationship is statistically significant, the correlation value of $r = 0.206$ reflects a weak positive association that indicates that improvements in communication satisfaction alone are unlikely to fully transform safety culture, and that other organizational factors such as leadership support, work environment, staffing, and teamwork must also be addressed simultaneously (Lee & Jang, 2023). Research confirms that communication satisfaction is a significant predictor of safety culture perceptions, but it works alongside other variables, including professionalism and work environment, to shape the overall safety climate that nurses experience (Lee & Jang, 2023). Furthermore, studies have shown that organizational communication satisfaction influences not only how nurses perceive safety culture but also their actual safe care behaviors (Korean Nursing Study, 2022; Clinical Nurses Study, 2023).

DISCUSSION

This study investigated the impact of nurses' communication satisfaction in promoting a culture of safety among operating theatre nurses in Saudi Arabia, framing these dynamics within the nation's Health Sector

Transformation Program. Under the ambitious framework of Saudi Vision 2030, the Kingdom is fundamentally restructuring its healthcare infrastructure. It is moving from fragmented systems into a highly integrated, patient-centered model that explicitly prioritizes the quality and efficiency of clinical services. Frontline nurses are recognized as indispensable change agents in achieving these national benchmarks. Regarding the first and second study objectives, the findings reveal that operating theatre nurses generally express high communication satisfaction, though this baseline varies significantly by sex. This variation highlights an operational challenge for hospital leadership; while the national strategy pushes for uniform excellence, individual surgical units still face disparities in communication consistency and localized management styles. Maintaining a transparent and reliable communication climate is vital, as inconsistent information exchange can lower morale and jeopardize the precise execution of surgical care (Dietl *et al.*, 2023).

The overall patient safety culture was rated at a moderate level, with age emerging as the sole demographic characteristic shaping these perceptions. This age dynamic aligns closely with Vision 2030's healthcare quality goals, which depend on enhancing clinical capabilities and cultivating deep professional judgment. Older nurses likely possess the accumulated exposure needed to spot systemic vulnerabilities and safely navigate complex safety protocols. Conversely, younger or less mature staff may hesitate to engage in open dialogue due to a perceived punitive atmosphere, reinforcing the need for secure spaces where medical errors can be reviewed constructively without fear of blame (Lee *et al.*, 2023). When evaluating the primary objective, the statistical analysis identified a positive yet statistically insignificant connection between communication satisfaction and safety culture perceptions. Although the dataset lacks strict statistical significance, the weak positive trend indicates that even incremental enhancements in communication can lift the overall safety culture. Within the broader lens of Saudi healthcare transformation, this non-significant result shows that satisfying communication alone cannot fulfill

national safety expectations. Broad global literature heavily supports the idea that communication satisfaction improves safety culture by building trust, collaboration, and better patient outcomes (Noviyanti *et al.*, 2021). Conversely, poor communication can cause serious medical errors, lower job satisfaction, and decrease the overall quality of treatment (Noviyanti *et al.*, 2021). Vision 2030's mandates require that communication satisfaction be paired with broader structural interventions—such as unified digital health systems, balanced workloads, and robust leadership accountability (Rawas & Hashish, 2023). Ultimately, alternative high-stress variables in the operating theatre, such as rapid surgical turnover or staffing shortages, likely exerted a heavier influence on safety culture perceptions than communication alone, or the study may have simply lacked the sample size required to mathematically capture this vital relationship. To translate these findings into actionable change, three strategic recommendations are proposed for hospital administrations and nursing leadership in Saudi Arabia. First, hospital leaders must standardize communication practices across all surgical units to eliminate variations linked to sex or localized unit cultures (Dietl *et al.*, 2023). Implementing standardized tools, such as structured SBAR (Situation-Background-Assessment-Recommendation) protocols, ensures that critical patient data is handed over uniformly regardless of shift or staff demographics (Noviyanti *et al.*, 2021). Second, nursing managers should design targeted mentorship programs that pair experienced, older operating theatre nurses with younger staff. This mentorship utilizes the strong safety perceptions of mature nurses to teach younger colleagues how to navigate complex clinical risks and confidently utilize error-reporting systems (Lee *et al.*, 2023). Third, healthcare organizations must address the structural barriers that overshadow communication satisfaction. To meet Vision 2030 quality targets, leaders must balance heavy surgical workloads, optimize staffing ratios in high-stress operating rooms, and actively build a "just culture" that removes the fear of retribution, ensuring that open communication directly transforms into a stronger institutional safety culture (Rawas & Hashish, 2023).

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