Perspectives of the surgical team on patient safety culture in surgical centers

Perspectiva da equipe cirúrgica acerca da cultura de segurança do paciente em centro cirúrgico

Perspectiva del equipo quirúrgico sobre la cultura de seguridad del paciente en el centro quirúrgico

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ABSTRACT: Objective: To evaluate the safety culture in the surgical setting and to identify, together with the team, information that can support the development of strategies to promote and strengthen safe practices in the surgical environment. **Methods:** This is a quantitative, descriptive study conducted with operating room staff at a philanthropic hospital located in southern Brazil. Data were collected between May and September 2022 using the Hospital Survey on Patient Safety Culture questionnaire. Statistical tests were used for data analysis. **Results:** The study included 89 professionals, of whom 44.9% belonged to the nursing team and 46.1% to the medical team. The overall rating attributed to patient safety was considered "very good," with a score of 60.6%. The dimensions "organizational learning" and "hospital management support for patient safety" achieved the highest mean scores (3.73). The dimensions "frequency of reported events," "teamwork," and "non-punitive response to errors" showed the lowest performance. **Conclusion:** The results highlighted the need to develop strategies to strengthen the multidisciplinary team, emphasizing the promotion of a safety culture to foster a safe surgical environment.

Keywords: Patient safety. Organizational culture. Surgicenters.

RESUMO: Objetivo: Avaliar a cultura de segurança no contexto cirúrgico e identificar, com a equipe, informações que subsidiem o desenvolvimento de estratégias para promoção e fortalecimento de práticas seguras no ambiente cirúrgico. **Métodos:** Trata-se de estudo quantitativo, descritivo, desenvolvido com profissionais do centro cirúrgico de um hospital filantrópico localizado na Região Sul do Brasil. Os dados foram coletados entre maio e setembro de 2022, por meio da aplicação do questionário *Hospital Survey on Patient Safety Culture*. Para a análise dos dados, foram utilizados testes estatísticos. **Resultados:** Participaram do estudo 89 profissionais, dos quais 44,9% pertenciam à equipe de enfermagem e 46,1% à equipe médica. A nota geral atribuída à segurança do paciente foi considerada "muito boa", com índice de 60,6%. As dimensões "aprendizado organizacional" e "apoio da gestão hospitalar para a segurança do paciente" apresentaram as melhores médias (3,73). As dimensões "frequência de eventos comunicados", "trabalho em equipe" e "resposta não punitiva aos erros" registraram os menores desempenhos. **Conclusão:** Os resultados evidenciaram a necessidade de desenvolvimento de estratégias para o fortalecimento da equipe multiprofissional, com ênfase na promoção da cultura de segurança, de forma a fortalecer um ambiente cirúrgico seguro.

Palavras-chave: Segurança do paciente. Cultura organizacional. Centros cirúrgicos.

RESUMEN: Objetivo: Evaluar la cultura de seguridad en el contexto quirúrgico e identificar, con el equipo, información que subsidie el desarrollo de estrategias para la promoción y fortalecimiento de prácticas seguras en el ambiente quirúrgico. **Método:** Se trata de un estudio cuantitativo, descriptivo,

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desarrollado con profesionales del centro quirúrgico de un hospital filantrópico ubicado en la Región Sur de Brasil. Los datos fueron recolectados entre mayo y septiembre de 2022, mediante la aplicación del cuestionario *Hospital Survey on Patient Safety Culture*. Para el análisis de los datos se utilizaron pruebas estadísticas. **Resultados:** Participaron en el estudio 89 profesionales, de los cuales el 44,9% pertenecían al equipo de enfermería y el 46,1% al equipo médico. La calificación general atribuida a la seguridad del paciente fue considerada "muy buena", con un índice del 60,6%. Las dimensiones "aprendizaje organizacional" y "apoyo de la gestión hospitalaria para la seguridad del paciente" presentaron las mejores medias (3,73). Las dimensiones "frecuencia de eventos reportados", "trabajo en equipo" y "respuesta no punitiva a los errores" registraron los peores desempeños. **Conclusión:** Los resultados evidencian la necesidad de desarrollar estrategias para el fortalecimiento del equipo multiprofesional, con énfasis en la promoción de la cultura de seguridad, para consolidar un ambiente quirúrgico seguro.

Palabras clave: Seguridad del paciente. Cultura organizacional. Centros quirúrgicos.

INTRODUCTION

Safety culture is defined as a set of individual and collective elements, such as perceptions, competencies, values, beliefs, and attitudes that shape the characteristics of health management and organizational safety[1,2]. Assessing the extent to which healthcare professionals understand safety culture is, therefore, a critical step in interpreting the institution's organizational vision and in guiding actions aimed at improving patient safety and the quality of the work environment for staff within the unit[3,4].

As the surgicenter (SC) is a setting where highly complex procedures are performed and where there is frequent circulation of a multidisciplinary team, it is particularly susceptible to a high incidence of adverse events and incidents. These may range from mild to severe, including critical events, potentially resulting in irreparable harm to both patients and staff[5]. In the surgical environment, such events are often associated with procedural factors, including anesthesia-related complications, accidental punctures/lacerations, retention of foreign bodies, surgical complications, and errors in marking the correct surgical site[1,2].

The implementation of practices such as the Surgical Safety Checklist, along with the promotion of open communication among team members, is essential for preventing adverse events. Evidence suggests that proactive leadership and the active involvement of the multidisciplinary team are critical for strengthening safety culture, facilitating the identification of high-risk areas, and supporting the adoption of continuous improvement strategies[4-6].

From this perspective, it is essential for each healthcare institution to assess its safety culture, as this provides an opportunity to understand the specific context and challenges of its environment while also fostering awareness and engagement with the issue. Evaluating safety culture further supports the development of targeted interventions to address identified weaknesses and allows for the monitoring of progress and changes over time[5,6].

Given this context, it is evident that varying scenarios related to safety culture exist within the surgical environment in both Brazil and other countries. Therefore, conducting new studies aimed at understanding this reality[1-6], alongside evaluating the dimensions and the team's perspectives on safety culture in the surgical setting, is essential to support managers, healthcare professionals, and policymakers in planning actions that promote the dissemination and strengthening of safety culture in this healthcare context[7].

To date, the institution where the research was conducted has not carried out a safety culture assessment within the surgical environment. Considering the institution's size and the complexity of its procedures, a systematic evaluation of safety culture will offer managers and care teams a new perspective on promoting and managing a safe environment grounded in the principles of safety culture.

Certainly, understanding safety culture data within the surgical environment of each institution facilitates the planning and implementation of practices aimed at strengthening and promoting a culture of safety, thereby contributing to the reduction of adverse events and healthcare-related errors.

From this perspective, the present study was guided by the following research question: What is the healthcare team's perception of the safety culture in a surgical center?

OBJECTIVES

To assess the safety culture in the surgical context and identify, in collaboration with the team, information that supports the development of strategies to promote and strengthen safe practices within the surgical environment.

METHODS

This descriptive, observational field study with a quantitative approach was conducted at a philanthropic hospital in Brazil's Itajaí Valley region of Santa Catarina state. Data collection occurred between May and September 2022.

Participants

The participants comprised 89 professionals from the hospital team working in the surgical center of the institution, including 46 nurses, two radiology technicians, 14 anesthesiologists, and 27 surgeons active during the month of data collection.

Inclusion criteria: professionals who had worked in surgical care for at least 30 days. Exclusion criteria: those not part of the surgical center team or those covering vacations and/or shift changes.

Development of data collection

The first stage involved measuring safety culture using the self-administered Hospital Survey on Patient Safety Culture (HSOPSC), employing the validated and culturally adapted Brazilian version of the instrument[8]. Initially, authorization to conduct the research was obtained from the institution. Following approval by the Research Ethics Committee, further contact was made with the institution to gain access to professionals working in the surgical environment. Subsequently, an email detailing the research objectives was sent to potential participants. Upon agreeing to participate, all individuals signed the Informed Consent when scheduling data collection with the researchers.

Participants completed the HSOPSC instrument individually within their work environment, with an average completion time of 20 minutes. The instrument includes sociodemographic variables to characterize the sample and contains 42 questions addressing patient safety culture, grouped into 12 dimensions: D1 — Teamwork within the unit; D2 — Supervisory expectations for continuous improvement and promotion of patient safety; D3 — Organizational learning; D4 — Hospital management support for patient safety; D5 — Overall perception of patient safety; D6 — Communication and feedback about errors; D7 — Openness in communication; D8 — Frequency of event reporting; D9 — Teamwork across units; D10 — Staffing; D11 — Internal transfers and handovers; and D12 — Non-punitive response to errors[8].

A result with more than 75% positive responses ("I totally agree" or "I agree") indicates that the dimension represents a strength in the patient safety culture. In contrast, a result with less than 75% positive responses signifies a weakness in that dimension, highlighting the need for targeted interventions to improve patient safety culture within the hospital[9].

The collected data were tabulated in a Microsoft Office Excel® spreadsheet, with double-checking performed to ensure accuracy and correct any inconsistencies. Categorical variables were presented as absolute and relative frequencies. Quantitative variables were expressed as mean and standard deviation, median and interquartile range (median [P25; P75]), and range. The distribution of the 12 dimensions was assessed using the Shapiro-Wilk normality test.

A parametric test (Student's *t*-test for independent samples) was used to compare the means of the variables gender and position/function. When any category of the categorical variables had fewer than 12 participants (n), nonparametric tests were applied due to the sensitivity of the normality test. For variables with two categories, comparisons of dimension distributions were conducted using the Mann-Whitney test; for those with three or more categories, the Kruskal-Wallis test was applied. When the Kruskal-Wallis test showed statistical significance, Dunn's pairwise (post-hoc) test was used, with a letter-based system to indicate statistically different categories. A significance level of 0.05 was adopted. All analyses were conducted using SPSS version 25.

Ethical aspects

All ethical and legal standards for research involving human subjects were observed, in accordance with Resolution No. 466/2012. All participants signed the Informed Consent Form. The study was approved by the Research Ethics Committee of Universidade Federal de Santa Catarina, under Opinion No. 5.425.353.

RESULTS

The results are presented in the following tables, highlighting sample characteristics, average scores for the HSOPSC dimensions, and response frequencies. Table 1 displays the participants' sociodemographic variables, responses regarding knowledge of the safe surgery checklist, and the overall patient safety score in the surgical environment. For analytical purposes, roles were grouped into two categories:

Table 1. Sample characterization: description of categorical variables by absolute and relative frequency.

Characteristics	N	(%)
What is your gender identity?		
Female	49	(55.1)
Male	40	(44.9)
Professional training		
Nurse	4	(4.5)
Nursing intern	2	(2.2)
Physician	41	(46.1)
Nursing technician	40	(44.9)
Radiology technician	2	(2.2)
Level of education		
Doctorate degree	1	(1.1)
Postgraduate degree	15	(16.9)
Incomplete postgraduate degree	1	(1.1)
Completed undergraduate degree	30	(33.6)
Incomplete undergraduate degree	5	(5.6)
Completed technical course	37	(41.6)
Positions and roles		
Anesthetist	14	(15.7)
Nursing (technician + intern)	42	(47.2)
Surgeon	27	(30.3)
Nurse	4	(4.5)
Radiology technician	2	(2.2)
Positions and roles (grouped into two categories)		
Medical team	41	(46.1)
Care team	48	(53.9)
Do you know the surgical safety checklist?		
No	3	(3.4)
Yes	86	(96.6)
Overall patient safety rating in your work area/unit		
Excellent	10	(11.3)
Very good	54	(60.6)
Fair	24	(27.0)
Poor	0	(0.0)
Very poor	1	(1.1)

medical staff (anesthesiologists and surgeons) and care staff (nurses, nursing interns, nursing technicians, and radiology technicians).

According to the data presented in Table 1, the majority of participants identified as female. In terms of professional background, most were nursing technicians and physicians. Regarding educational level, high school and bachelor's degrees were the most common. As for professional function, circulating nurses and scrub nurses predominated. The overall rating of patient safety in the unit was considered very good.

Table 2 presents the average scores for each dimension, as measured by the HSOPSC instrument. Among the results, dimensions 3 and 4 showed the highest average scores (3.73), whereas dimensions 8, 9, and 12 recorded the lowest averages.

Table 3 presents the frequencies of negative, neutral, and positive responses. The dimensions with the lowest percentages of positive responses, considered weak areas, were dimensions 9, 11, and 12. Dimensions 4, 6, and 7 showed the highest percentages of positive responses; however, none of the dimensions reached the threshold of 75% or more positive responses required to be classified as "strong areas for patient safety."

DISCUSSION

The participants in this study were predominantly young adult females who had been working in the surgical environment of the institution for more than eight years. In terms of experience, professionals with over eight years in the institution's surgical center were the majority. Notably, there was significant participation from the medical team.

In line with findings from other studies that assessed safety culture in the surgical environment, the data from this study revealed similarities in participant profiles, particularly regarding the length of time the healthcare team had been working at the institution[1,2].

The overall patient safety score for participants' respective work areas/units in the hospital was rated as "very good," consistent with findings reported in both national and international studies[1,10,11]. A noteworthy finding of this study is that 96% of participants reported being familiar with the safe surgery checklist.

The findings of this study may reflect the awareness and commitment of professionals to implementing the recommended steps for patient safety in the surgical environment. However, the data do not indicate whether the safe surgery checklist is consistently applied in daily practice. National and international studies have shown that, although healthcare professionals recognize the importance and purpose of the checklist, barriers to adherence and proper completion by the team remain[12–14].

Table 2. Mean of the dimensions, according to the Hospital Survey on Patient Safety Culture instrument.

Dimension	Mean	(SD)
D1 — Teamwork within the unit	3.20	(0.84)
D2 — Supervisory expectations for continuous improvement and promotion of patient safety	3.14	(1.06)
D3 — Organizational learning	3.73	(0.67)
D4 — Hospital management support for patient safety	3.73	(0.78)
D5 — Overall perception of patient safety	3.36	(0.75)
D6 — Communication and feedback about errors	3.39	(0.76)
D7 — Openness in communication	3.23	(0.88)
D8 — Frequency of event reporting	**2.83**	**(0.64)**
D9 — Teamwork across units	**2.83**	**(0.61)**
D10 — Staffing	3.15	(0.89)
D11 — Internal transfers and handovers	2.97	(0.80)
D12 — Non-punitive response to errors	2.82	(0.83)

Table 3. Negative, neutral, and positive frequencies, according to the Hospital Survey on Patient Safety Culture instrument.

Dimension	Negative frequency (1-2)	Neutral frequency (3)	Positive frequency (4-5)
	n (%)	n (%)	n (%)
D1 — Teamwork within the unit	116 (32.6)	67 (18.8)	173 (48.6)
D2 — Supervisory expectations for continuous improvement and promotion of patient safety	89 (17.6)	117 (23.1)	301 (59.4)
D3 — Organizational learning	53 (14.9)	108 (30.3)	195 (54.8)
D4 — Hospital management support for patient safety	30 (5.3)	159 (27.9)	381 (66.8)
D5 — Overall perception of patient safety	81 (22.8)	77 (21.6)	198 (55.6)
D6 — Communication and feedback about errors	66 (12.2)	135 (24.9)	341 (62.9)
D7 — Openness in communication	82 (11.0)	185 (24.9)	476 (64.1)
D8 — Frequency of event reporting	109 (11.7)	276 (29.7)	543 (58.5)
D9 — Teamwork across units	164 (46.1)	78 (21.9)	114 (32.0)
D10 — Staffing	82 (17.9)	147 (32.0)	230 (50.1)
D11 — Internal transfers and handovers	127 (35.7)	104 (29.2)	125 (35.1)
D12 — Non-punitive response to errors	149 (41.9)	97 (27.2)	110 (30.9)

Among the HSOPSC safety culture dimensions, dimension 4 (organizational learning) showed a comparatively higher average score. This finding suggests that the team and management have been learning from past mistakes and actively seeking to reassess and improve processes within the complex surgical center environment. Notably, this dimension plays a critical role in fostering continuous improvement in patient safety education and in enhancing the quality of care provided.

Findings from other authors support these assertions, emphasizing that a positive outcome in the *organizational learning* dimension reflects opportunities for growth and improvement in patient safety–focused learning[5,6]. This dimension also promotes an environment that encourages open dialogue, respectful collaboration, and the development of safer organizations. Furthermore, it contributes to creating a more supportive atmosphere for reporting adverse events and reducing punitive responses to errors. As such, this dimension is considered a key strength in advancing patient safety[5,6].

Additionally, dimension 4 demonstrated a positive result, indicating that hospital management is engaged and available to address patient safety issues. These findings suggest

a level of openness within the team to collaborate and support one another in the pursuit and implementation of new strategies aimed at strengthening the safety culture in this environment.

Existing studies on safety culture emphasize the importance of hospital management establishing accessible channels to support healthcare professionals in reporting errors and contributing to efforts aimed at minimizing them. In turn, understanding the underlying factors that lead to errors enables the proposal of improvements not only in patient safety but also in the quality of life of professionals, thereby helping to reduce the risk of burnout[3,13,14].

Regarding the dimension scores, communication about errors and feedback received an average rating, with a median score relative to the other dimensions. However, the dimension related to openness in communication scored below average in comparison.

Considering these findings, the data from this study underscore the importance of measuring safety culture in each surgical setting, as they reveal the actual areas requiring improvement. At the study institution, the results indicate substantial opportunities to enhance communication and relationships within the multidisciplinary team. In particular, these findings highlight vulnerabilities related to mutual respect among team members.

Other studies indicate that teamwork and communication among healthcare professionals are essential for fostering a safety culture within healthcare institutions. These authors emphasize the importance of employing additional strategies, such as group dynamics and training programs, to enhance teamwork in surgical units by promoting the development of attitudes and skills necessary for safe care among all team members[3,15–17].

Given that most of the dimensions with below-average scores relate to communication, safe communication, team relationships, and information exchange among professionals, it is essential for managers to prioritize strategies aimed at improving the culture of care through targeted actions addressing these specific issues.

National and international studies report similar findings, highlighting the fundamental importance of strengthening teamwork, providing ongoing education, and implementing timely and effective actions to improve team dynamics. Improved communication, in particular, has a direct and positive impact on patient safety.

Furthermore, these studies emphasize the critical role of strong support from hospital administration in promoting effective teamwork to help alleviate fear, distress, and suffering among healthcare professionals[3,15,16].

Among the study's limitations, low participation by medical professionals was notable. This represents a significant weakness, as these professionals play a crucial role in improving safety culture in the surgical environment. Additionally, the institution lacked an annual patient safety culture survey, preventing comparison of results over time and the identification of areas improved through interventions. Furthermore, no longitudinal studies on safety culture were available within the institution for comparison.

CONCLUSION

The data from this study indicated that most professionals rated patient safety as very good. However, no dimension reached the threshold of positive responses required to be considered a strength in patient safety culture.

Organizational learning and management support stood out as notable strengths, both of which directly influence openness to discussion and the dissemination of safety culture within the SC. Conversely, the weakest dimensions were frequency of reported events, internal transfers and handovers, teamwork, and non-punitive response to errors. These findings indicate that communication and teamwork require significant strengthening and improvement at the institution to enhance patient safety.

In conclusion, this study contributes to education in the field and encourages the development of future research aimed at generating diverse interventions for professionals working in the surgicenter.

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CONFLICT OF INTERESTS

The authors declare there is no conflict of interests.

AUTHORS' CONTRIBUTION

AMS: Writing — original draft — and writing — review & editing. NSK: Conceptualization, data curation, formal

analysis, writing — original draft. PT: Formal analysis, Writing — original draft — and writing — review & editing. ALPM: Formal analysis, Writing — original draft — and writing — review & editing. MAS: Writing — original draft — and writing — review & editing. DCCB: Formal analysis, Writing — original draft — and writing — review & editing. KCN: Formal analysis, Writing — original draft — and writing — review & editing.

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