PATIENT SAFETY CLIMATE IN SURGICAL CENTERS: ASSESSMENT BY THE MULTIDISCIPLINARY TEAM

Clima de segurança do paciente em centro cirúrgico: avaliação pela equipe multidisciplinar

Clima de seguridad del paciente del centro quirúrgico: evaluación del equipo multidisciplinario

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ABSTRACT: Objective: To assess the patient safety climate in the surgical center of a public teaching hospital, from the perspective of the multidisciplinary team. **Method:** This is a cross-sectional, descriptive study developed in the surgical center of a teaching hospital located in the state of Paraná, Brazil. The Brazilian and validated version of the *Safety Attitudes Questionnaire/Operating Room Version* was applied to a sample of 36 multidisciplinary professionals. In the descriptive statistical analysis, scores higher than 75 points were considered positive. **Results:** The average perception of the multidisciplinary safety climate was 61.8±38.8 points. Only Factor 8 – Job satisfaction (82.6±23.4) and Factor 12 – Surgeon as team leader (77.1±27.2) achieved positive scores in the study. The worst domain evaluated was "Stress recognition" (34.2±34.1). The category "nursing assistants" was the one that best evaluated the patient's safety climate, even without reaching the cutoff point. **Conclusion:** Patient safety climate in the surgical center was negatively assessed by the multidisciplinary team, which indicates the need for reviewing processes to achieve greater safety in care.

Keywords: Patient safety. Organizational culture. Surgicenters. Patient care team. Perioperative nursing.

RESUMO: Objetivo: Avaliar o clima de segurança do paciente no centro cirúrgico de um hospital público de ensino, sob a ótica da equipe multidisciplinar. **Método:** Estudo transversal, descritivo, desenvolvido no centro cirúrgico de um hospital universitário do Paraná, Brasil. Aplicou-se a versão brasileira validada do *Safety Attitudes Questionnaire/ Operating Room Version* a uma amostra de 36 trabalhadores multidisciplinares. Na análise estatística descritiva, os escores acima de 75 pontos foram considerados positivos. **Resultados:** A média da percepção do clima de segurança multiprofissional foi de 61,8±38,8 pontos. Apenas o Fator 8 - Satisfação no trabalho (82,6±23,4) e o Fator 12 - Cirurgião como coordenador da equipe (77,1±27,2) alcançaram escores positivos no estudo. O pior domínio avaliado foi "percepção de estresse" (34,2±34,1). A categoria "enfermeiro assistencial" foi a que melhor avaliou o clima de segurança do paciente, mesmo sem atingir o ponto de corte. **Conclusão:** O clima de segurança do paciente no centro cirúrgico obteve avaliação negativa pela equipe multidisciplinar, o que indica a necessidade de revisão de processos para possível maior segurança no cuidado.

Palavras-chave: Segurança do paciente. Cultura organizacional. Centros cirúrgicos. Equipe de assistência ao paciente. Enfermagem perioperatória.

RESUMEN: Objetivo: Evaluar el clima de seguridad del paciente en el Centro Quirúrgico de un hospital público docente, desde la perspectiva del equipo multidisciplinario. **Método:** Estudio descriptivo transversal, desarrollado en el Centro Quirúrgico de un hospital universitario de Paraná, Brasil. Se aplicó la versión brasileña validada del *Safety Attitudes Questionnaire / Operating Room Version* a una muestra de 36 trabajadores multidisciplinarios. En el análisis estadístico descriptivo, los puntajes superiores a 75 puntos fueron considerados positivos. **Resultados:** La percepción media del clima de seguridad multiprofesional fue de 61,8±38,8 puntos. Solo el Factor 8- Satisfacción laboral (82,6±23,4) y el Factor 12- Cirujano como coordinador del equipo (77,1±27,2) obtuvieron puntuaciones positivas en el estudio. El peor dominio evaluado fue la "Percepción de estrés" (34,2±34,1). La categoría "Enfermero asistencial"

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fue la que mejor evaluó el clima de seguridad del paciente, incluso sin alcanzar el punto de corte. **Conclusión:** El clima de seguridad del paciente en el Centro Quirúrgico fue evaluado negativamente por el equipo multidisciplinario, lo que indica la necesidad de revisar los procesos para una posible mayor seguridad en la atención.

Palabras clave: Seguridad del paciente. Cultura organizacional. Centros quirúrgicos. Grupo de atenciónal paciente. Enfermería perioperatoria.

INTRODUCTION

Patient safety is inseparable from the quality of health care, and must be a constant commitment of policies, institutions, and professionals working in the area. Hence, actions that favor the safe provision of care must be constantly (re)planned, even due to the high occurrence of adverse events (AE) in the provision of care.[1]

Identifying risks and managing them, as well as notifying, analyzing, and preventing AE, are some activities associated with safe practices.[1,2] In Brazil, the notification of errors and AE is an important passive way of mapping the reality of incidents that affect patient safety[1] and is recurrently deficient, as demonstrated by studies carried out in the states of Paraná[3] and Minas Gerais.[4] Research carried out in a hospital in the state of São Paulo showed that professionals are afraid of reporting errors and being punished.[5] This scenario tends to indicate that punitive culture can be present in many healthcare institutions, especially translated into the fear and/or apprehension of notifying incidents related to safety in the provided care.[3-5]

Punitive culture is not in line with the development of the patient safety culture. This is because a positive safety culture requires a set of individual and collective factors that include aspects such as:

- a culture in which all professionals involved in the provision of care take responsibility for their own safety, for the safety of their colleagues, patients, and family members;
- a culture that prioritizes safety over financial and operational goals;
- a culture that encourages and rewards the identification, notification, and resolution of safety-related issues;
- a culture that, based on the occurrence of incidents, promotes organizational learning; and
- a culture that provides resources, structure, and accountability for the effective maintenance of safety.[6]

The assessment of patient safety culture provides elements of interest for developing strategies for concrete improvements in the provision of care, as it is based on the principle of systematic appreciation of a set of institutional and professional values that can be developed/improved and, therefore, impact on practices aimed at healthcare safety.[7] According to some theoretical perspectives, safety climate is understood as the measurable sphere of the patient safety culture, whose objective is based on metrics, through specific instruments for this purpose.[8]

It is known that some care environments favor risks to patient safety, such as the surgical center (SC), where the evident complexity of care provision tends to expose patients and the healthcare team to the potential incidence of harms. In this context, a systematic literature review[9] carried out by English researchers, which aimed to quantify the potentially preventable harms to the surgical patient by evaluating the frequency, severity, and preventability of the causes and consequences of surgical AE, demonstrated that, according to the analysis of 14 primary studies (totaling 16,424 surgical patients), 14.4% of the evaluated patients experienced some type of AE, and 5.2% of AE were potentially preventable. Among the consequences of these events, 3.6% were fatal; 10.4% were classified as severe; 34.2%, as moderate; and 52.5%, as mild.[9]

Taking this into consideration, the social and scientific relevance of investigating patient safety climate in the surgical context is evidenced, in such a way to promote improvements in patient safety. Therefore, the following study question was raised: what is the assessment of the patient safety climate among professionals from the multidisciplinary team of the SC of a public teaching hospital in the state of Paraná?

OBJECTIVE

To assess the patient safety climate in the SC of a public teaching hospital, from the perspective of the multidisciplinary team.

METHOD

This is a cross-sectional, descriptive research with a quantitative approach. It was carried out in the SC of a public teaching hospital in the state of Paraná, Brazil, which exclusively serves patients from the Brazilian Unified Health System (SUS). The institution has 210 beds, including inpatient beds in medical and surgical units, adult intensive care unit (ICU),

pediatric ICU, neonatal ICU, intermediate care unit (IMCU), emergency room (ER), surgical centers (SC), obstetric center (OC), and specialty outpatient clinics.

The SC under study has five operating rooms and a post-anesthesia care unit (PACU) and performs about 400 surgeries/month.[10] The sector has a nurse responsible for coordinating the SC, who works eight hours a day. The nursing care team is composed of one nurse in each work shift (morning, afternoon, and three night shifts), five nursing technicians in the morning shift, five in the afternoon shift, and three in each night shift. In addition to the nursing team, the sector has a multidisciplinary team composed of surgeons, anesthesiologists, residents in medicine, nursing, pharmacy, and dentistry (maxillofacial surgery), and support professionals (pharmacy, laboratory, cleaning and technical administrative professionals).

The study population consisted of the multidisciplinary team working in the SC, as previously described. The convenience sampling consisted of the following inclusion criteria: professionals working in the SC for at least one year. All participants signed an informed consent form. Professionals absent from work for any reason during the field research and those who did not respond to three attempts/reminders for data collection were excluded. After verifying the eligibility criteria, 78 data collection questionnaires were handed out, of which, after due attempts, 36 professionals from the multidisciplinary team returned the completed questionnaires.

Data collection was carried out from January to June 2019, using the translated, adapted, and validated Brazilian version of the *Safety Attitudes Questionnaire/Operating Room Version*, which in Portuguese is called *Questionário de Atitudes de Segurança/Centro Cirúrgico* (SAQ/CC) [SAQ/Surgical Center].[11] This instrument was developed based on the Safety Attitudes Questionnaire (SAQ) developed by researchers at the University of Texas, United States of America (USA), in 2006.[12]

The SAQ/CC is an instrument composed of three parts: the first part contains 15 items aimed at describing the quality of communication and collaboration experienced between professionals working in the SC. The second part contains 40 items on the perception of safety that permeates patient care; and the third part contains questions for the characterization of the respondents (professional category, length of experience in the specialty, length of experience in the study hospital, work arrangement, work shift, ethnicity, age, sex, and country of origin). The open-ended question about the three main recommendations to improve the patient safety climate in the SC was not evaluated in the present study due to insufficient responses from the participants.[11]

The 40 items of the SAQ/CC[11] are grouped into six domains and six factors, namely: safety climate (seven items), management perception (five items), stress recognition (four items), work conditions (six items), communication in the surgical environment (four items), and perception of professional performance (four items).[11] The questionnaire factors do not have specific nomenclature, and they were named as follows:

- Factor 7 (three items);
- Factor 8 (one item);
- Factor 9 (two items);
- Factor 10 (two items);
- Factor 11 (one item); and
- Factor 12 (one item).

Finally, there is a question about having already answered the referred instrument.[11]

Each item in the questionnaire is arranged for responses on a Likert-type scale, which ranges from "strongly disagree – option A" (0 points) to "strongly agree – option E" (100 points); a score of zero corresponds to the worst perception of safety culture; and a score of 100, to the best perception of safety in the SC. Option B is equivalent to 25 points (partially disagree); option C, to 50 points (neutral); and option D, to 75 (partially agree). Option X, "not applicable," does not score.[11] To obtain the final scores for each domain and factor, the answers to the questions for each domain/factor must be added together and divided by the number of questions for each domain/factor.

For data analysis, positive patient safety attitudes were considered as those with scores ≥75 points on the Likert scale (equivalent to partially agree or totally agree), per SAQ/CC domain and in the general evaluation.[11]

Data manually collected were entered into electronic spreadsheets of Microsoft Office Excel® software. Next, they were imported into the *Comma-separated values* (CSV) program and a code was created to compile and export data to perform descriptive statistical analysis, in which categorical variables were analyzed by absolute and relative (%) frequencies and 95% confidence interval for proportions; and the ordinal variables, which were transformed into quantitative variables (scale score), by measures of central tendency (mean and median) and dispersion (standard deviation).

The study was submitted to the Research Ethics Committee of Universidade Estadual do Oeste do Paraná (UNIOESTE), with Opinion No. 3062301/2018 and Certificate of Presentation for Ethical Consideration (CAAE) 50066815.8.0000.0107.

RESULTS

The study included 36 (46.1% of the population) professionals from the multidisciplinary team who worked in the SC unit. Characterization data of the professionals are presented in Table 1. Most workers were women (55.6%); aged between 31 and 40 years (30.6%); self-reported to be white (80.6%); and were part of the team of surgical technicians/circulating nurses (25.0%) and of the support teams (25.0%).

The descriptive analysis of the first part of the SAQ/CC instrument is presented in Table 2, concerning the quality of communication and collaboration experienced with the other professionals of the multidisciplinary team during the work

Table 1. Characterization of professionals of the multidisciplinary team who worked in the surgical center and who composed the study sample (n=36).

Variables	n	%	95%CI*
Sex			
Women	20	55.6	[38.1–72.1]
Men	16	44.4	[27.9–61.9]
Time working in the sector			
Up to 11 months	04	11.1	[3.1–26.1]
1 to 2 years	05	13.9	[4.7–29.5]
3 to 4 years	02	5.6	[0.7–18.7]
5 to 10 years	08	22.2	[10.1–39.2]
11 to 20 years	12	33.3	[18.6–51.0]
21 to 39 years	05	13.9	[4.7–29.5]
Age group			
Up to 30 years old	08	22.2	[10.1–39.2]
31 to 40 years old	11	30.6	[16.3–48.1]
41 to 50 years old	06	16.7	[6.4–32.8]
51 to 60 years old	10	27.7	[14.2–45.2]
Over 60 years old	01	2.8	[0.1–14.5]
Ethnicity			
White	29	80.6	[64.0–91.8]
Black	03	8.3	[1.8–22.5]
Mixed-race	03	8.3	[1.8–22.5]
Asian	01	2.8	[0.1–14.5]
Work shifts			
Full time	01	2.8	[0.1–14.5]
Part time	17	47.2	[37.4–64.5]
Night	07	19.4	[8.2–36.0]
Variable shifts	11	30.6	[16.3–48.1]
Professional category			
Surgical technicians/Circulating nurses	09	25.0	[12.1–42.2]
Support team	09	25.0	[12.1–42.2]
Anesthesiologist	05	13.9	[4.7–29.5]
Nursing assistants	05	13.9	[4.7–29.5]
Surgeon	04	11.1	[0.1–14.5]
Surgical resident/Internist	03	8.3	[1.8–22.5]
Coordinating nurse	01	2.8	[0.1–14.5]
Total	36	100.0	[90.3–100]

*95% confidence interval for proportions.

routine, showing that only the surgical technicians/circulating nurses category achieved the minimum score (≥75).

The descriptive analysis according to domains/factors resulting from the application of the SAQ/CC in the SC under study is presented in Table 3, showing that only Factor 8 and Factor 12 obtained the minimum established score.

The scores of each professional category per domains/factors of the SAQ/CC are presented in Table 4, showing

Table 2. Scores for each professional category and the overall score related to the quality of communication and collaboration experienced with the multidisciplinary team (n=36).

Professional Category	Mean	Median	Standard Deviation
Surgical technicians/Circulating nurses	80.0	75	18.7
Support team	71.5	75	21.5
Anesthesiologist	71.2	75	22
Surgeon	70.3	75	23.8
Coordinating nurse	70.1	75	27.5
Nursing assistants	67.3	75	28.9
Surgical resident/Internist	66.9	75	26.2
Total	70.05	75	25.75

Table 3. Descriptive analysis according to domains/factors resulting from the application of the Safety Attitudes Questionnaire/Surgical Center (SAQ/CC) in a public teaching hospital (n=36).

Domain/factors	Mean	Median	Standard Deviation
Safety climate	68.0	75	28
Management perception	55.6	50	32.9
Stress recognition	34.2	25	34.1
Work condition	61.4	75	33.6
Communication in the surgical environment	72.4	75	32.2
Perception of professional performance	71.5	75	33.8
Factor 7	58.7	75	31.2
Factor 8	82.6	100	23.4
Factor 9	56.9	75	34.7
Factor 10	66.7	75	26.4
Factor 11	58.3	50	33.3
Factor 12	77.1	75	27.2
Overall	61.8	75	38.8

Table 4. Mean scores and standard deviation per factor/domain and overall, according to professional category.

Professional Category	8	12	CSE	PPP	SC	10	WC	7	11	9	MP	SR	OM	SD
Surgeon	93.8	68.8	73.4	64.1	69.6	62.5	53.1	62.5	87.5	53.1	53.6	18.8	58.6	38.3
Surgical resident/Internist	83.3	83.3	77.1	83.3	64.3	79.2	58.8	79.2	50.0	62.5	48.3	56.3	65.7	26.8
Surgical technicians/ Circulating nurses	69.4	86.1	59.0	64.4	63.1	69.4	58.8	48.6	47.2	54.2	48.3	36.1	57.5	35.7
Anesthesiologist	85.0	75.0	76.2	56.3	72.7	60.0	53.3	40.0	70.0	57.5	47.0	25.0	57.6	36.4
Nursing assistants	90.0	80.0	72.5	83.8	70.7	67.5	71.7	60.0	55.0	60.0	61.0	38.8	66.6	31.2
Coordinating nurse	75.0	100.0	81.3	68.8	57.1	75.0	45.8	37.5	25.0	87.5	75.0	62.5	62.8	27.1
Support team	86.1	66.7	80.6	75.0	70.2	63.9	69.0	72.2	58.3	54.2	65.6	31.3	65.7	31.4
Total	82.6	77.1	72.4	71.5	68.0	66.7	61.4	58.7	58.3	56.9	55.6	34.2	61.8	38.8

SC: safety climate; MP: management perception; SR: stress recognition; WC: work condition; CSE: communication in the surgical environment; PPP: perception of professional performance; OM: overall mean; SD: standard deviation; 7: Factor 7; 8: Factor 8; 9: Factor 9; 10: Factor 10; 11: Factor 11; 12: Factor 12.

that no professional category obtained the minimum score determined as the cutoff point.

Regarding the last item on the scale (open-ended question), all participants indicated that they had not previously answered the aforementioned instrument.

DISCUSSION

The authors observed a prevalence of women (55.6%), with an average age of 31 to 40 years (30.6%), which corroborates the literature.[13] Professionals who most adhered to the survey were the surgical technicians/circulating nurses (25.0%) and the support team (25.0%). There was a predominance of professionals who have worked between 11 and 20 years (33.3%) in the sector and with part-time work schedule (47.2%). Stability in a certain sector for a long period may be related to the working arrangement of the institution,[14] which, in this case, is mostly statutory.

Regarding the quality of communication and collaboration experienced with other professionals of the multidisciplinary team in their work routine, the mean scores ranged from 66.9 to 80.0 points. Only surgical technicians/circulating nurses obtained positive scores in this regard, which denotes weakness in the interprofessional communication process in the investigated SC.

Communication is among the ten primary goals for safe surgery,[15] enabling quality care and prevention of adverse events.[16] However, research carried out on patient safety culture states that effective communication still faces major barriers.[3,5] This leads to the reflection that some safe care strategies do not require financial investment, but rather behavioral and relational changes.

Surgical technicians/circulating nurses are the professionals who account for the greater number of employees in the aforementioned SC. In addition, they spend most of the time in contact with the medical team and with the patient, and they are responsible for the operationalization of the surgical procedure. The present study demonstrates that communication is positive among these professionals. Conversely, it is deficient in the perception of other team members.

Factor 8 corresponds to the worker's perspective on job satisfaction. This is considered an important factor to improve the quality of the provided care, reducing the possibility of illness at the service location.[17] Therefore, job satisfaction is a quality indicator in human resource management, as it reflects the organization models of professional activity, interfering with the worker's perception of their occupation, which in turn affects the quality of care – especially in the case of nursing, which directly deals with human care.[18]

Working in a closed environment as the SC, which requires intense action from different professional teams, can result in interpersonal conflicts that must be well managed for the surgical procedure to be successful.[5,19] This allusion can be verified in the low scores among most professional categories regarding collaboration at work.

Factor 12 questions whether "the surgeon should be formally coordinating the operating room team during the surgical procedure." According to the literature, surgeons are responsible for planning, executing, and coordinating the team within the operating room, and the nurse is responsible for ensuring that the procedure is performed in the best possible way, through the prediction and provision of material and human nursing-related resources.[19]

It was possible to verify that the safety climate of the multidisciplinary team working in the SC had an overall mean of 61.8±38.8 points, indicating weakness in the institutional safety climate. Thus, it is worth noting that professional healthcare practice is permeated by numerous risk situations, which requires organizations to implement strategies that change the institutional culture and values over time, reflecting in safe care and mitigation of care-related risks.[1,6]

The domains "safety climate," "stress recognition," and "work condition" had negative scores in all isolated professional categories. Regarding the domain "safety climate," it was verified, considering the participants' responses, great difficulty in dealing with the responsibilities concerning safety in the work environment, which indicates local institutional weakness in supporting safe practices as for the specificity, complexity, and hazards of the research site. The safety climate characterizes the perception of workers about the safety of the work environment, associated with behaviors of better adherence to concrete and safe practices for the patient.[7]

Regarding the domain "stress recognition," it was possible to verify that occupational stress is negatively evaluated among professionals working in the SC. It can lead to psychological, physiological, or even behavioral problems, culminating in work-related suffering.[20] In this context, (re)thinking about occupational stress seems to benefit the quality of life at work, but also the safety of the surgical patient.

The burden of professionals and the accumulation of work arrangements is a problem frequently experienced by the healthcare team. Furthermore, in the context of the nursing team, a recent study also carried out in a teaching hospital in the state of Paraná identified a deficit of nurses working in the SC and an abundance of the technical team, which can compromise the planning of qualified and safe care.[21]

One of the great challenges of the nurse as a manager is the constant readjustment of work schedules according to requirements of the unit.[22] Inadequate work conditions can generate occupational burnout, favoring absenteeism and turnover, which, in turn, increase the risks to patient safety.[22]

The professional category "nursing assistants" (67.3±28.9), even without reaching the cutoff point, obtained the best assessment of the patient safety climate. Although the scores among nurses also indicate the need for improvements, this finding reinforces the position of this professional as a promoter of patient safety strategies,[19] as their work has been historically associated with direct assistance articulated with the management of care and also of the healthcare team and/or services.[18]

Regarding the domain "work condition," all professional categories mentioned the conditions in which they perform their work as negative. It is assumed that this finding, considering its predominance, may have had an impact on the evaluation of other items and domains regarding patient safety climate. That is, negatively evaluating their work conditions, SC professionals may perceive, in a distorted way, some aspects (perhaps positive) that influence the provision of safe care.

Overall, the evaluation of professionals regarding safety climate in the study site was negative. A research carried out in northern Paraná on 437 nursing workers showed similar results and suggests that the impact of this assessment can result in financial, social, and psychological damages, both for professionals and patients.[23] The authors emphasize that identifying local weaknesses concerning institutional safety favors the planning of strategies to obtain more promising results.[23]

In the scenario of surgical specificity, it is noteworthy that patient safety indicators are relevant for the SC manager to guide the planning and implementation of interventions that provide safety for both the patient and the professionals.[24] Thus, monitoring the performed and implemented actions must be a management commitment toward better quality and safety[3], also in the surgical center.

The authors verified great difficulty, on the part of professionals who worked in the studied SC, in accepting to participate in the study. Those who answered the questionnaire pointed out that its length may have prevented volunteers from participating in the present research.

The exclusively descriptive content, the geographic restriction, and the small sample of professionals were the main limitations of this study. However, the authors believe that the research brings important contributions to the context of surgical patient safety, as it emphasizes that the assessment of safety climate in the SC is possibly the first step toward the development of improvement actions for a safer surgical care. The study also indicates that the reduction of stress in the team, the articulation of nurses in increasing the safety of surgical patients, and better interprofessional communication can be effective strategies.

CONCLUSION

It is concluded that the assessment of patient safety climate by the multidisciplinary team of the SC under study was negative. The mean of the total scores of the domains/factors of the SAQ/CC was 61.8 points (SD=38.8), ranging from 34.2 to 82.6 points. "Stress recognition" was the worst domain assessed by the team. Only two domains/factors (Factor 8 – Job satisfaction and Factor 12 – Surgeon as team leader) achieved positive scores in the research, which was insufficient to change the negative overall assessment verified in the study. The professional category with the best evaluation, even with a score lower than the cutoff point, was "nursing assistants."

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