CULTURE OF PATIENT SAFETY IN SURGICAL UNITS OF TEACHING HOSPITALS

CULTURA DE SEGURANÇA DO PACIENTE EM UNIDADES CIRÚRGICAS DE HOSPITAIS DE ENSINO

CULTURA DE SEGURIDAD DEL PACIENTE EN UNIDADES QUIRÚRGICAS DE HOSPITALES ESCUELA

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ABSTRACT

Objective: to analyze the safety culture in surgical units of three teaching hospitals in *Paraná*. **Method:** a cross-sectional survey, with data collection, carried out between 2017 and 2018, in three hospitals with federal, state and private administration. We used the Hospital Survey on Patient Safety Culture questionnaire, which analyzes 12 dimensions of the safety culture; we considered those with rates ≥75% as strengthened. **Results:** the dimension "teamwork within the units" was identified as strengthened in the private hospital (77.8%); in the others, no dimension showed a strengthened culture. The professionals of the private hospital significantly expressed a less negative perception in six dimensions of culture. Compared to medical professionals, Nursing showed a more positive perception, with a significant difference for four dimensions. **Conclusion:** private administration encourages a culture of security when compared to public administration. The fragile dimensions are expressive in all segments of workers, making it a challenge to promote a positive culture in surgical units of teaching hospitals.

Keywords: Patient Safety; Organizational Culture; Perioperative Care; Hospital Administration; Quality of Health Care; Hospitals, Teaching.

RESUMO

Objetivo: analisar a cultura de segurança em unidades cirúrgicas de três hospitais de ensino paranaenses. Método: survey, transversal, com coleta de dados realizada entre 2017 e 2018, em três hospitais com administração federal, estadual e privada. Utilizou-se o questionário Hospital Survey on Patient Safety Culture, que analisa 12 dimensões da cultura de segurança; aquelas com índices ≥75% foram consideradas fortalecidas. Resultados: a dimensão "trabalho em equipe dentro das unidades" foi identificada como fortalecida no hospital privado (77,8%); nos demais, nenhuma dimensão mostrou cultura fortalecida. Os profissionais do hospital privado externaram, significativamente, percepção menos negativa em seis dimensões de cultura. Comparados aos profissionais médicos, a Enfermagem apresentou percepção mais positiva, com diferença significativa para quatro dimensões. Conclusão: a administração privada estimula a cultura de segurança, quando comparada à pública. As dimensões frágeis são expressivas em todos os segmentos de trabalhadores, tornando-se desafio para promover cultura positiva em unidades cirúrgicas de hospitais de ensino.

Palavras-chave: Segurança do Paciente; Cultura Organizacional; Assistência Perioperatória; Administração Hospitalar; Qualidade da Assistência à Saúde; Hospitais de Ensino.

RESUMEN

Objetivo: analizar la cultura de seguridad en unidades quirúrgicas de tres hospitales docentes del estado de Paraná. Método: encuesta transversal, con recogida de datos realizada entre 2017 y 2018, en tres hospitales de administración federal, estatal y privada. Se utilizó el cuestionario Hospital Survey on Patient Safety Culture que analiza 12 dimensiones de la cultura de seguridad; aquéllas con tasas ≥75% se consideraron fortalecidas. Resultados: se identificó la dimensión "trabajo en equipo dentro de las unidades" como fortalecida en el hospital privado (77.8%); en los demás, ninguna dimensión mostró una cultura fortalecida. Los profesionales del hospital privado expresaron significativamente una percepción menos negativa en seis dimensiones de la cultura. En comparación con los profesionales médicos, la enfermería mostró una percepción más positiva, con una diferencia significativa en cuatro dimensiones. Conclusión: la administración privada fomenta una cultura de seguridad, en comparación con la pública. Las dimensiones frágiles son expresivas en todos los segmentos de los trabajadores. Por ello, promover la cultura positiva en las unidades quirúrgicas de los hospitales escuela se ha vuelto un reto.

Palabras clave: Seguridad del Paciente; Cultura Organizacional; Atención Perioperatoria; Administración Hospitalaria; Calidad de la Atención de Salud; Hospitales de Enseñanza.

INTRODUCTION

Hospital institutions are investing in initiatives to promote patient safety and quality of care. However, adverse surgical events are frequent.[1] Fifteen years after the publication of the *To err is human* report from the Institute of Medicine,[2] the theme on safety culture is still fundamental to the health system, as it is strongly associated with better results in clinical practice.[3]

The culture of safety is understood by the World Health Organization as values, attitudes, competencies, and patterns of individual and collective behaviors, which determine the commitment, style and proficiency of the administration for the development of a safe organization.[4] It is a managerial tool for safe care, considered as essential to measure the problems of institutions as a basis for planning and strengthening actions aimed at promoting proactive attitudes of the health team, reducing avoidable errors.[5]

Promoting a positive culture in health organizations depends heavily on organizational structure and institutional priorities, transformational leadership and effective communication between the parties involved in the care and management process.[6] Culture directly influences care, determines indirectly accepted practices and acts as a barrier or facilitator of the adoption of behaviors that encourage safe practices.[7] Thus, the institutional culture is reflected in the perioperative processes and can be a method in which hospitals promote the quality of surgical care[8] and, in particular, for the increase in global surgical capacity.[8,9]

In this perspective, besides recognizing the fundamental role of teaching hospitals in the training of human resources for the health system, composing a culture of positive safety in these institutions is an example for future professionals to implement systematic practices to the principles of safety and perioperative care quality. In this context of encouraging a safety culture, there are limitations of information about the differences in Brazilian hospitals, in different organizational arrangements and different characteristics. Analyzing the culture of patient safety in teaching hospitals with different administration stimulates the processes in favor of the quality of care and patient safety, with suggestions for improvement interventions.[10] Thus, this research aimed to analyze the culture of safety in surgical units of three teaching hospitals in Paraná.

METHOD

This is a cross-sectional survey with a quantitative approach. It was carried out in three teaching hospitals with different types of administration, from May 2017 to March 2018. The selection of the participating hospitals' providers of services to the Unified Health System (*Sistema Único de Saúde*-SUS) was for convenience, ensuring the investigation of those of larger size and education, installed in the capital of Paraná, under different forms of administration/financing being federal, private and state and they were named A, B, and C.

The target population was the medical and Nursing staff of seven surgical inpatient units and three surgical centers. This population was identified in information from the management of the units, totaling 248 professionals in hospital A, 205 in hospital B and 168 in hospital C. The sample was intentional, non-probabilistic and based on the instructional guide of the Agency for Healthcare Research and Quality (AHRQ), which establishes a minimum sample of 50% for populations below 500 individuals.[11]

The inclusion criteria were to be medical and Nursing professionals working in surgical centers and/or surgical inpatient units of the participating hospitals, during the data collection period; with a minimum weekly workload of 20 hours; with direct contact or interaction with surgical patients; and those without direct contact with the patient, but with a leadership, management or supervision role. Participants whose questionnaires did not have minimum completeness of 50%, those with only answers for socio-labor purposes and those with equal answers for all dimensions of the instrument were excluded.[11]

We collected the data using the Hospital Survey on Patient Safety Culture (HSOPSC) - Brazilian version.[12,13] It consists of 42 items, structured in 12 dimensions of safety culture. Most questions are assessed using a five-point Likert scale, with categories of answers in agreement degree.[11] The professionals were approached directly

or in groups for clarification; those who consented to participate were given two copies of the Free and Informed Consent Form and the instrument in a mobile electronic device, without an internet connection - ad hoc software or, optionally, in a printed instrument.

We inserted the data into a Microsoft Excel® 2016 spreadsheet, by double typing and correcting inconsistencies. After reversing the negatively formulated sentences, we grouped the answers into positive (totally agree/agree or usually/always), neutral (neither disagree or agree or sometimes) and negative (strongly disagree/disagree or never/rarely).[11] Dimensions with ≥ 75% of positive answers were considered strong; between 51 and 74% were neutral, and ≤50% indicated weakness for the patient safety culture.[11] Cronbach's alpha tested the reliability of the HSOPSC; the values ≥ 0.8.14 were considered satisfactory

Categorical variables were analyzed by descriptive statistics in measures of absolute and relative proportions. For the comparative analysis of the quantitative variables between the three hospitals, we used the variance analysis model (ANOVA) with one factor and the Kruskal-Wallis non-parametric test; and for categorical variables, we applied the chi-square test. The data were processed by the Statistical Package for the Social Sciences, version 20.0, with a significance value of $p < 0.05$, and statistical advice.

The research is part of the project "Evaluation of the safety culture and occurrence of adverse surgical events in Brazilian hospitals" and the Research Ethics Committee of the participating institutions approved it according to Opinion n° 1,990,760 (hospital A), 2,325,448 (hospital B) and 2,367,592 (hospital C).

RESULTS

The overall answer rate was 61.35% (n = 381) of the target population (n = 621). Of them, 63.7% (n = 158) in hospital A; 59% (n = 121) in hospital B; and 60.7% (n = 102) in hospital C. The average age of the participants was 43 years in hospital A (standard deviation -DP ± 12.3), 32.2 in hospital B (SD ± 8, 2) and 35 in hospital C (SD ± 9.7). The average professional performance (in years) in hospital A was 18, in hospital B was 4.7 and in hospital, C was 5.7 years. Table 1 shows the distribution of professionals according to socio-demographic and work profile.

Table 2 shows that the dimension "teamwork within the units" was the only one identified as strengthened in hospital B (77.8% of positive answers), besides that the professionals of this hospital expressed significantly less negative perception in six culture dimensions ($p < 0.001$). In others, no other dimension showed a strengthened culture. The questionnaire obtained satisfactory general reliability of 0.89 (hospital A), 0.90 (hospital B) and 0.91 for hospital C.

In hospital B, three dimensions were strengthened among Nursing professionals, with a positive answer score of ≥75% (Table 3). Compared to medical professionals, Nursing showed a

more positive perception, with a significant difference ($p < 0.05$) for four dimensions: "return of information and communication about the error", "frequency of event reports", "work between teams" and "shift change and transfers".

Table 4 shows the results related to the security score and the number of events notified/perceived by professionals in the last 12 months.

DISCUSSION

The results showed that the perception of health professionals about the safety culture is different between hospitals and may be associated with managerial differences in the organization's commitment to improving patient safety.[15] On the other hand, the fragile areas of safety culture were in general consonant in the three scenarios analyzed, based on the general positive score (≥75%) established by AHRQ.[11] This data corroborates with studies conducted in the Northeast[10] and South[16] regions of Brazil, which expressed scores of culture lower than the desirable by the US agency. A systematic review found that hospital organizational cultures in 21 countries, mostly European and Asian, are underdeveloped or fragile and require improvement.[17]

Facing the diversity of countries that demonstrate results of fragile security culture, it is possible to accept and recognize the need to value security promoting actions directed at institutions, strengthening the security culture construct. However, it also allows identifying that the index established to recognize a strengthened culture (≥75%) is above the Brazilian reality and, possibly, other countries.

The only dimension strengthened in this study was "teamwork within the units", with 77% positive answers in hospital B and with a significant difference from other hospitals. In Brazil, a study that aimed to assess the culture of patient safety in hospitals with different types of management found that the private hospital reached levels of strength (≥75%) in five dimensions.[10] In Peru, significant differences were observed in eight dimensions, when comparing the private sector with the public sector[15], corroborating these data, by revealing that health professionals from the private institution (hospital B) perceived six dimensions of culture, significantly closer to the positive score established. The managers of private institutions continuously invest in coordinated, integrated and cooperative actions for the work process between hospital units, avoiding fragmentation of care and possible incidents. The search for quality among these services is consistent with the desire to remain in the competitive market, and this is attributed to a more favorable safety climate in the private hospital.[18]

The dimensions "teamwork within the units" and "open communication" were limiting in the three institutions evaluated, mainly in medical residents, whose negative/neutral answers were

Table 1 – Distribution of demographic and labor characteristics of health professionals. *Curitiba*, 2017-2018

Variables	Hospital A		Hospital B		Hospital C	
	n	%	n	%	n	%
Gender						
Female	91	57.6	67	55.4	59	57.8
Male	67	42.4	54	44.6	43	42.2
Professional category						
Doctor	41	25.9	23	19.0	15	14.7
Doctor-resident	31	19.6	57	47.1	37	36.3
Nurse	15	9.5	15	12.4	15	14.7
Nursing Technician	24	15.2	18	14.9	25	24.5
Nursing assistant	47	29.7	08	6.6	10	9.8
Education level						
Complete high school	26	16.4	25	20.7	34	33.3
Incomplete higher education	12	7.7	-	-	-	-
Complete higher education	35	22.2	32	26.4	23	22.5
Postgraduate (specialization level)	59	37.3	55	45.5	37	36.3
Post-graduate (master's or doctoral level)	25	15.8	08	6.6	07	6.9
Ignored	01	0.6	01	0.8	01	1.0
Length of experience in the hospital (in years)						
Less than 1	22	13.9	15	12.4	14	13.7
1-5	43	27.2	81	66.9	58	56.9
6-10	06	3.8	19	15.7	25	24.5
11-15	23	14.6	-	-	-	-
16-20	10	6.3	-	-	-	-
21 or more	54	34.2	06	5.0	05	4.9
Length of working in the unit (in years)						
Less than 1	31	19.6	21	17.4	24	23.5
1-5	55	34.8	78	64.5	54	52.9
6-10	06	3.8	17	14.0	20	19.6
11-15	15	9.5	-	-	-	-
16-20	11	7.0	-	-	-	-
21 or more	40	25.3	05	4.1	04	3.9
Weekly workload						
20-39 hours	110	69.6	53	43.8	50	49.0
40-59 hours	17	10.8	04	3.3	15	14.7
60-79 hours	17	10.8	34	28.1	22	21.6
80-99 hours	07	4.4	26	21.5	10	9.8
100 hours or more	06	3.8	04	3.3	05	4.9
Ignored	01	0.6	-	-	-	-
Interaction/Direct contact with the patient						
Yes	158	100	120	99.2	101	99.0
No	-	-	01	0.8	01	1.0
Total	158	100	121	100	102	100

Table 2 – Distribution of the percentage of answers from the safety culture dimensions. *Curitiba*, 2017-2018

Dimension	Hospital	Percentage of answers			p-value*
		Negative	Neutral	Positive	
Teamwork within the units	A	23.4	20.6	56.0	<0.001
	B	6.6	15.5	77.8	
	C	13.8	20.4	65.8	
Expectations about their supervisor/boss and actions promoting safety	A	24.8	18.8	56.4	<0.001
	B	12.7	15.6	71.8	
	C	19.4	11.0	69.6	
Organizational learning - continuous improvement	A	20.3	20.3	59.5	<0.001
	B	8.6	18.8	72.6	
	C	14.1	17.8	68.1	
Management support for patient safety	A	36.8	32.5	30.8	<0.001
	B	32.6	18.9	48.5	
	C	30.5	27.5	42.0	
General perception of patient safety	A	35.4	18.9	45.8	<0.001
	B	56.6	15.3	28.1	
	C	45.1	18.1	36.8	
Feedback and communication about the error	A	30.4	31.8	37.8	0.010
	B	33.1	27.3	39.5	
	C	22.0	30.6	47.4	
Communication opening	A	26.1	23.1	50.8	0.023
	B	17.9	24.8	57.3	
	C	20.6	29.1	50.3	
Frequency of event reports	A	31.9	22.8	45.3	0.055
	B	28.4	29.2	42.4	
	C	27.1	21.8	51.2	
Teamwork between the units	A	42.4	26.8	30.7	<0.001
	B	23.9	18.4	57.7	
	C	34.3	20.7	44.9	
Adequacy of professionals	A	40.2	20.6	39.2	0.227
	B	41.0	23.9	35.1	
	C	45.0	22.1	32.9	
Shift change and transfers	A	41.5	26.0	32.5	<0.001
	B	30.9	21.9	47.2	
	C	39.0	22.5	38.5	
Non-punitive answers to errors	A	64.5	16.3	19.3	0.029
	B	75.1	11.6	13.3	
	C	68.5	14.8	16.7	

* Chi-square test, p<0.05.

prevalent and in several other dimensions, particularly in hospital A. Providing professional education to the main concepts, attitudes, and skills needed to perform safe practices are increasing demands.[19] Other approaches to improve teamwork can be adopted by surgical units, such as training and dynamics that support the development of attitudes and competencies for safe care,[20] given that the medical resident has a daily relationship with professionals from different departments.

Table 3 - Distribution of safety culture dimensions according to the percentage of positive answers, by a professional group. *Curitiba*, 2017-2018

Dimension	Professional	Percentage of positive responses		
		Hospital A	Hospital B	Hospital C
Teamwork within the units	Doctors	59.8	74.7	64.4
	Medicine residents	43.9	73.7	64.9
	Nursing	58.5	85.4	67.0
Expectations about their supervisor/boss and actions promoting safety	Doctors	53.0	64.1	56.7
	Medicine residents	56.5	71.7	66.9
	Nursing	58.0	76.2	75.5
Organizational learning - continuous improvement	Doctors	51.2	69.1	65.9
	Medicine residents	60.9	70.0	61.8
	Nursing	63.0	78.0	73.3
Management support for patient safety	Doctors	23.6	44.9	37.8
	Medicine residents	25.8	43.1	32.7
	Nursing	36.1	57.7	50.0
General perception of patient safety	Doctors	41.5	40.2	36.7
	Medicine residents	42.7	18.0	29.1
	Nursing	49.0	35.4	42.5
Feedback and communication about the error	Doctors	26.8	35.3	40.9
	Medicine residents	31.5	28.1	36.9
	Nursing	45.3	57.7	57.0
Communication opening	Doctors	55.7	60.9	53.3
	Medicine residents	36.6	45.0	36.0
	Nursing	53.7	72.4	60.0
Frequency of event reports	Doctors	35.0	27.5	31.1
	Medicine residents	29.0	26.3	32.4
	Nursing	56.3	73.2	71.4
Teamwork between the units	Doctors	25.0	44.6	40.0
	Medicine residents	17.1	52.5	36.1
	Nursing	38.5	72.2	53.0
Adequacy of professionals	Doctors	37.8	33.7	28.3
	Medicine residents	39.0	24.8	26.5
	Nursing	39.9	50.3	39.0
Shift change and transfers	Doctors	22.1	40.2	35.0
	Medicine residents	20.7	40.8	25.0
	Nursing	41.8	59.8	49.5
Non-punitive answers to errors	Doctors	13.0	17.4	17.8
	Medicine residents	15.1	6.4	9.0
	Nursing	23.9	20.7	22.1

Teamwork, assertive communication, hierarchies with a participatory management model and with more horizontal structures strengthen the institutional culture to obtain consistent perioperative practices and processes, ensuring perioperative assistance and contribute to the reduction of surgical errors.[8,21] Open and clear communication is attributed to the culture of positive security and is related to the management model. Leaders are instrumental in building a culture to

Table 4 - Distribution of the patient safety score and the number of events notified by health professionals. *Curitiba*, 2017-2018

Variable	Hospital A		Hospital B		Hospital C		p-value*
	n	%	n	%	n	%	
Patient safety score							
Excellent/very good	103	65.2	55	45.5	49	48.0	
Regular	50	31.6	62	51.2	46	45.1	0.005
Bad/very bad	05	3.2	04	3.3	07	6.9	
Number of events notified							
None	86	54.4	72	59.5	58	56.9	
1-2	42	26.6	41	33.9	34	33.3	
3-5	20	12.7	08	6.6	04	3.9	0.022
6 or more	09	5.7	-	-	05	4.9	
Ignored	01	0.6	-	-	01	1.0	
Total	158	100	121	100	102	100	

* Chi-square test; p<0.05.

disseminate errors and constructive feedback to prevent the recurrence of incidents.[6] Therefore, management must be engaged and committed to improving patient safety, not only providing support but also creating a culture in which learning from errors favors patient safety.[15]

Despite that health professionals working in the private hospital have more favorable attitudes towards the collective construction of the safety culture, characterized by higher scores of positive answers in seven dimensions, including those related to leadership and management, the findings do not seem to be reflected in the global score of safety and the notification of adverse events, which were inferior when compared to federal and state hospitals. Nor did they contribute to cultural change in the reporting and notification of adverse events, since the lowest percentages of positive answers were concentrated among the health team in the private sphere, denoting the need for systematic actions and time for changes to occur.

The culture and the work environment prevalent in hospitals have several prerequisites for safe practice. In many organizations, the punitive culture about errors persists, impairing their recognition, awareness, taking action and learning from errors.[19] This negative culture and focused on finding a culprit for the incidents sustains an insecure organizational climate and more prone to the occurrence of adverse effects.[22] In this research, based on the answers, the professionals refer to the existence of a punitive culture for errors, given that the lowest percentages of positive answers were identified in the dimension "non-punitive response to errors" in the private hospital (13.3%), with no significant difference with the others. This data are different from a study carried out in the Northeast region of Brazil[10] and in hospitals in the capital and port region of Peru,[15] which despite being lower than the recommendation by the AHRQ, the scores reflect this more positive dimension in the private sector than in the public sector.

Solidifying strategies to reverse this perception and, consequently, strengthening the safety culture in this important aspect is an attribute to be planned by management teams and consolidated by institutional policies. The punitive culture discourages the team from reporting errors, hindering to understand possible causes and prevents learning. Perhaps this shows the low prevalence of professionals who reported adverse events in the investigated institutions, a result corroborated by other studies.[16,21]

Promoting horizontal lines of communication among managers/coordinators and the operational level and proposing improvements in the use of written and oral communication tools enable the continuity of actions and encourage changes in attitudes, promoting organizational culture.[23] Mutual development of these actions by managers and preceptors to improve teamwork among professional categories contributes to enhancing through coherent and respectful communication, the interaction and cooperation between professional knowledge and practices.[21] This also favors and promotes improvements in the transition from surgical care and in the construction of a more solid and robust safety culture for the units studied.

The data in this research is about the idea that Nursing professionals are more satisfied with their leaders. This more positive perception of managerial support may explain the less negative scores in the dimensions in which Nursing showed a significant difference compared to doctors and residents. Other researchers showed that differences in perception are associated with a closer approximation of this category to the different aspects related

to patient safety,[24] especially in the dimensioning of the Nursing team, which in this research is one of the dimensions that require attention by managers by the high negative perception. Although factors contributing to this perception have not been investigated, fragility is notorious and possibly a reflection of dissatisfaction with working conditions, excessive load, exhausting work hours and work under pressure.[10]

The institutional safety culture, structured with the dissemination of safe practices aiming at excellence in care, involves fundamental basic factors, such as the management/leadership models adopted, structural issues, policies with well-designed processes, communication and collaboration between professionals.[6] The importance given to these actions by management and professionals is directly related to individual and collective beliefs and values, built for the valuation or not of the safety of the surgical patient. These actions must transcend the Nursing team professionals and add to the institutional culture[21], having positive effects on the attributes and competencies aimed at incorporating good perioperative practices in teaching hospitals.

CONCLUSION

The dimension "teamwork within the units" was identified as strengthened in the private hospital, and the private administration seems to stimulate the safety culture when compared to the state and federal public management. The fragile dimensions are expressive among all segments of workers and between the three teaching hospitals. There is a need to implement actions to promote a positive culture in surgical units of teaching hospitals, especially the teamwork, communication, and punitive culture.

Based on the health activities and considering professional training as a principle of understanding the processes and concepts that strengthen patient safety promotes the importance of including this theme in professional training curricula as well as incorporating it in continuing education actions and programs Brazilian residencies. The dissemination of safe health practices, or not, potentially influences the training and future performance of professionals.

As a limitation of this research, the low participation of managers/leaders is considered, whose results show the perception of the operational health team. Future investigations can complement the evaluation and the findings of this research, especially in the identification of the factors that contribute to the negative perception in the dimensions of safety culture.

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