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EFFECT OF THE ADMINISTRATIVE TRANSITION OF HOSPITAL MANAGEMENT ON THE SAFETY CULTURE IN SURGICAL UNITS

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ABSTRACT

Objective: to analyze the safety culture in surgical units of a teaching hospital in different periods of hospital management.
Method: this is a descriptive and analytical study developed with health professionals working at a surgical center and at five surgical inpatient units in two different periods of hospital management in southern Brazil. The Hospital Survey on Patient Safety Culture questionnaire was answered by 73 professionals in period I (2014/2015) and by 158 professionals in period II (2017). The analysis was based on descriptive statistics and on inferential analysis and reliability analysis using Cronbach's alpha coefficient; the dimensions were considered strong when the percentage of positive answers was ≥75%.
Results: the administrative transition had a positive influence on the "Staffing" and "Handoffs and transitions" dimensions and a negative influence on "Teamwork within units" ($p<0.001$), with no difference in the remaining nine dimensions. In both periods, no dimension was considered strong; there were no changes with regard to the notification of adverse events and to the overall safety assessment; and the overall reliability of the instrument was satisfactory (0.89).
Conclusion: the administrative transition of hospital management had little impact on the dimensions of the organizational safety culture, and there are still challenges in the progressive development of this predictor of patient safety.

DESCRIPTORS: Organizational culture. Hospital administration. Quality management. Patient safety. Nursing.

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EFEITO DA TRANSIÇÃO ADMINISTRATIVA DA GESTÃO HOSPITALAR NA CULTURA DE SEGURANÇA EM UNIDADES CIRÚRGICAS

RESUMO

Objetivo: analisar a cultura de segurança em unidades cirúrgicas de hospital de ensino em períodos distintos da gestão hospitalar.
Método: descritivo e analítico desenvolvido com profissionais de saúde atuantes em um centro cirúrgico e em cinco unidades de internação cirúrgica em dois distintos períodos de gestão hospitalar no sul do Brasil. Responderam ao questionário *Hospital Survey on Patient Safety Culture* 73 profissionais no período I (2014/2015) e 158 no período II (2017). A análise se deu por estatística descritiva e análise inferencial e da confiabilidade pelo alfa de Cronbach; dimensões foram consideradas fortes quando apresentaram escores ≥75% de respostas positivas.
Resultados: a transição administrativa influenciou positivamente nas dimensões "Adequação de profissionais" e "Passagem de plantão/transferências" e negativamente em "Trabalho em equipe dentro das unidades" (p<0,001), sem diferença nas demais nove dimensões. Em ambos os períodos nenhuma dimensão foi considerada forte; não ocorreram mudanças referentes **à** notificação de eventos adversos e na avaliação global de segurança; a confiabilidade geral do instrumento foi satisfatória (0,89).
Conclusão: a transição administrativa da gestão hospitalar pouco impactou nas dimensões da cultura de segurança organizacional, mantendo-se os desafios na construção progressiva desse preditor de segurança do paciente.

DESCRITORES: Cultura organizacional. Administração hospitalar. Gestão da qualidade. Segurança do paciente. Enfermagem.

EFECTO DE LA TRANSICIÓN ADMINISTRATIVA DE LA GESTIÓN HOSPITALARIA SOBRE LA CULTURA DE SEGURIDAD EN UNIDADES QUIRÚRGICAS

RESUMEN

Objetivo: analizar la cultura de seguridad en unidades quirúrgicas de un hospital escuela en diferentes períodos de la gestión hospitalaria.
Método: estudio descriptivo y analítico desarrollado con profesionales de la salud que se desempeñan en un centro quirúrgico y en cinco unidades de internación quirúrgica en dos períodos distintos de gestión hospitalaria en el sur de Brasil. El cuestionario *Hospital Survey on Patient Safety Culture* fue respondido por 73 profesionales en el período I (2014/2015) y por 158 en el período II (2017). El análisis se realizó por medio de estadística descriptiva y análisis inferencial y de la confiabilidad a través del coeficiente alfa de Cronbach; las dimensiones se consideraron como puntos favorables cuando presentaron puntuaciones ≥75% de respuestas positivas.
Resultados: la transición administrativa ejerció una influencia positiva sobre las dimensiones "Dotación de personal" y "Cambios de turno/transiciones" y una influencia negativa sobre "Trabajo en equipo dentro de las unidades" (p<0,001), sin diferencia alguna en las otras nueve dimensiones. En ambos períodos, ninguna dimensión fue considerada como un punto favorable; no se registraron cambios referentes a la notificación de eventos adversos ni en la evaluación global de la seguridad; y la confiabilidad general del instrumento fue satisfactoria (0,89).
Conclusión: la transición administrativa de la gestión hospitalaria tuvo escaso efecto sobre las dimensiones de la cultura de seguridad organizacional, manteniéndose así los desafíos en la construcción progresiva de este predictor de la seguridad del paciente.

DESCRIPTORES: Cultura organizacional. Administración hospitalaria. Gestión de la calidad. Seguridad del paciente. Enfermería.

INTRODUCTION

Patient safety, a current and relevant topic, is understood by the World Health Organization (WHO) as the reduction of the risks of unnecessary harms associated with health care to an acceptable minimum.[1] The theme raises clinical, economical, managerial, and organizational concern, since most of the adverse health care events are preventable and occur due to structural failures in the health care system.[2]

Some of the barriers to improve care are related to the managerial and professional practice actions associated with the patient safety culture, understood as the individual and collective values, attitudes, skills, and behavioral patterns that determine commitment, style, and management proficiency for a safe organization.[1,3] This is one of the Joint Commission requirements for hospital accreditation[4] and, when positive, it is associated with improvements in patient safety, leading to a reduction in the number of adverse events,[5–6] including those related to the surgical setting.[7] A report of the British National Health Service pointed out organizational safety as the main challenge to promote patient safety.[8] Furthermore, weaknesses related to the safety culture, personal and collective engagement, and health team communication were identified as limiting factors for the effective adherence to safety protocols in hospital institutions.[9]

Among the factors that interfere with the promotion and maintenance of this culture, the most important are organizational processes, managerial decisions, health service infrastructure,[10] work and power relationships between the different professional profiles,[11] and organizational structures that imply certain management models.[12] These phenomena move through the organization's culture, are influenced by leaders and change processes,[10] and are relevant for the implementation of and adherence to safety practices in hospital and cross-departmental organization.

In hospitals, the safety culture can have varied maturity levels, with the possibility of evolving over time. This progression can be classified into five stages: the "pathological" culture is the lowest maturity level, in which safety is seen as a problem caused by the workers; the "reactive" culture corresponds to the second stage, in which the hospital starts to take safety more seriously, but actions are implemented only after incidents; the third stage is known as the "calculative" culture, in which safety is managed, but there is still a top-down approach, with risk management systems and focus on data collection. The fourth stage corresponds to the "proactive" culture, in which there is a greater number of professionals involved in the identification of safety problems, foreseeing their occurrence; and, finally, the fifth and highest maturity stage is called the "generative" culture, in which there is active participation of the employees at all hierarchical levels, showing that patient safety is an inherent part of all hospital activities and that complacency in relation to lack of safety generates unease.[13]

This information allows the organizations to perform the diagnosis of their current maturity level, identify strengths and weaknesses, and develop actions to progress to the next level.[14] Therefore, it is hypothesized that the managerial transition occurring in Brazilian federal university hospitals, with the signing of contracts with the Brazilian Company of Hospital Services (*Empresa Brasileira de Serviços Hospitalares*, EBSERH), may interfere with the organizational safety culture, as well as with indicators of structure, process, and outcomes, thus becoming the object of this research in different management periods, which were herein named as periods I and II, respectively.

In 2002, the directors of the hospital under study progressively adopted a care theoretical model that included the creation of administrative or health care units known as Management Units,[15] and have been developing several actions aimed at obtaining an accreditation certificate by the Brazilian Accreditation System - National Accreditation Organization since 2010.[16] The hospital has been experiencing a management transition since 2014, with changes in political orientation, culminating in the signing of an official contract with the EBSERH in that same year. Although the

current administration has not fully taken office, the transition to the proposed new organizational structure favored discontinuity in the actions aimed at quality and patient safety and required for hospital accreditation.

Considering the current context of encouragement for the progressive development of a safety culture and for changes in the organizational arrangements of federal university hospitals, it is relevant to evaluate the short-term effect of the transition of the management model in composites of the organizational safety culture. Thus, the aim of this research was to analyze the safety culture in surgical units of a teaching hospital in different periods of hospital management.

METHOD

This is a descriptive and analytical study developed with health professionals working in a surgical center and in five surgical inpatient units (orthopedics, general surgery, digestive tract surgery, neurosurgery and plastic surgery, and liver transplant) of a federal teaching hospital in southern Brazil.

This hospital, a national reference in several specialties, is the largest public hospital in the state of Paraná and the third largest federal university hospital in Brazil, with a capacity of 608 beds and exclusive assistance to the Unified Health System. According to information from the institution's managerial report, in the period from October 2014, when the contract with the EBSERH was signed, to December 2017, 9.74% (190) of the employees hired under the Legal Regime of the Union (RJU) and 13% (115) of the employees of the Support Foundation for the Federal University of Paraná (FUNPAR) were dismissed. However, 557 employees were hired up to December 2016, and another 904 employees were admitted in December 2017 after being approved in a civil servant exam held by the EBSERH, which contributed to a 32% increase in the hospital staff. At the end of 2017, the hospital staff, considering the three employment contracts, increased by 21% compared to October 2014 (Table 1).

Table 1 – Number of employees by contract. Curitiba, PR, Brazil, 2014-2017.

Contract	Period			
	10/30/2014	2015	12/31/2016	12/27/2017
Legal Regime of the Union	1,951	–	1,805	1,761
Brazilian Company of Hospital Services	0	–	557	902
Support Foundation for the Federal University of Paraná	883	–	828	768
Total	**2,834**	–	**3,190**	**3,431**

The target population of this research consisted of professionals of the nursing and medical teams working at the units under study, corresponding to 135 workers in period I and to 248 in period II. A total of 74 professionals were invited to participate in the research in period I, and 166 in period II, in order to compose a non-probabilistic, intentional sample based on the instructional guide of the Agency for Healthcare Research and Quality (AHRQ), which establishes a minimum sample of 50% of the target population.[17] The inclusion criteria were the following: being a medical professional (surgeon, anesthesiologist, surgical or anesthesiology resident), nurse, or nursing assistant/technician with a minimum weekly workload of 20 hours working in direct or indirect contact with surgical patients. The analysis excluded participants who completed less than 50% of the questionnaire, who completed only the socio-labor profile, and/or who provided the same answer for all the dimensions of the instrument.[17]

In order to compose the data of this research related to the first management period, data from a previous research study on safety culture of the hospital under study were used. These data come from a cross-sectional survey and were prospectively collected from October 2014 to July 2015 among an intentional sample of 645 professionals working in several hospital units.[18] After the database was made available by the authors, the data of interest were retrieved to compose the sample and the results for period I. Data on the safety culture related to period II were prospectively collected from May to September 2017. The same methodology was applied in both periods, with the use of a self-administered instrument developed by the AHRQ called Hospital Survey on Patient Safety (HSOPSC) and translated, cross-culturally adapted, and validated to Brazilian Portuguese.[19–20]

The HSOPSC covers nine sessions that include 42 questions written in a positive and negative way and grouped into12 dimensions. Seven dimensions are related to the hospital department or work unit: (a) communication openness; (b) feedback and communication about error; (c) organizational learning - continuous improvement; (d) supervisor/manager expectations and actions that promote patient safety; (e) nonpunitive response to error; (f) teamwork within units; and (g) staffing. Three dimensions assess safety culture awareness at the hospital level: (a) management support for patient safety; (b) handoffs and transitions; and (c) teamwork across units. Two dimensions encompass outcomes: (a) overall perceptions of patient safety; and (b) frequency of events reported.[17]

The items are answered by means of a five-point Likert scale, with categories of answers in agreement level, and contain eight questions on the participants' demographic and occupational characteristics.[17,19–20] The professionals who accepted to participate in the research received the HSOPSC in a sealed envelope, along with the free and informed consent form, which was collected by the researcher himself, and the participants were coded according to the numerical sequence in which the answers were received. In period II, a tablet loaded with the instrument on the ad hoc platform of the *QuickTapSurvey* application was used for the participants, optionally.

The data were typed in a Microsoft Office Excel 2016® spreadsheet. For the descriptive analyses, after inconsistencies were verified and corrected, the participants were divided into the medical or nursing professional categories. After reversing the negatively written questions, the answers were grouped into positive (agree/totally agree or almost always/always), neutral (neither agree nor disagree or sometimes), and negative (disagree/totally disagree or never/rarely).[17] The dimensions/items with a percentage of positive answers ≥75% were selected as strengthened areas in patient safety; neutral areas were identified as those with a percentage of positive answers >51% and <74%; and weak dimensions/areas were those with a percentage of positive answers ≤50%.[17] The reliability of the instrument was assessed by Cronbach's alpha. Values ≥0.8 were considered satisfactory.[21]

The data were processed using the Statistical Package for the Social Sciences software, version 20.0, and with the counseling of statistics professional. The quantitative variables were described as mean and standard deviation (SD); and the qualitative variables were presented as absolute and relative frequencies. For comparisons between the two management periods, the quantitative variables were compared using the Student's t test for independent samples and the Mann-Whitney's non-parametric test. The categorical variables were compared using the Fisher's exact test and the chi-square test. The level of significance was set at $p<0.05$.

RESULTS

The study included 73 professionals in period I and 158 in period II. Their mean age, in years old, increased from 40.4 (SD ± 12,6) in period I to 43.0 (SD ± 12.3) in period II; and the mean working time of the professionals was 14.8 and 18 years for period I and II, respectively. The workers' sociodemographic and occupational profile was similar between the periods and is shown in Table 2. There was a prevalence of nursing team professionals among the participants in both periods (73.98%; n=54 and 54.43%; n= 86).

Table 2 – Sociodemographic and occupational characteristics of the health professionals working at surgical units in different periods of hospital management. Curitiba, PR, Brazil, 2017. (Period I: n = 73; Period II: n = 158)

Variables	Period I		Period II		*p*-value*
	n	%	n	%	
Gender					
Female	57	78.1	91	57.6	0.003†
Male	16	21.9	67	42.4	
Title/Function					
Clinical body physician/Assistant physician	06	8.2	41	26	
Resident physician/Physician in training	13	17.8	31	19.6	
Nurse	18	24.7	15	9.5	0.002‡
Nursing technician	10	13.7	24	15.2	
Nursing assistant	26	35.6	47	29.7	
Schooling					
Complete high school	13	17.8	26	16.5	
Incomplete higher education	07	9.6	12	7.6	
Complete higher education	19	26	35	22.2	0.443‡
Post-graduation (specialization level)	28	38.4	59	37.3	
Post-graduation (MS or PhD level)	05	6.8	25	15.8	
Unknown	01	1.4	01	0.6	
Working time in the hospital					
Less than 1 year	16	21.9	22	13.9	
1 to 5 years	10	13.7	43	27.2	
6 to 10 years	10	13.7	06	3.8	0.007‡
11 to 15 years	06	8.2	23	14.6	
16 to 20 years	08	11.0	10	6.3	
≥ 21 years	23	31.5	54	34.2	
Working time in the unit					
Less than 1 year	23	31.5	31	19.6	
1 to 5 years	14	19.2	55	34.8	
6 to 10 years	11	15.1	06	3.8	0.005‡
11 to 15 years	06	8.2	15	9.5	
16 to 20 years	03	4.1	11	7.0	
≥ 21 years	16	21.9	40	25.3	

Table 2 – Cont.

Variables	Period I		Period II		*p*-value*
	n	%	n	%	
Weekly workload					
Between 20 and 39 hours	35	48.0	111	70.2	
Between 40 and 59 hours	12	16.4	17	10.8	
Between 60 and 79 hours	23	31.5	17	10.8	0.001‡
Between 80 and 99 hours	03	4.1	07	4.4	
≥ 100 hours	00	0.0	06	3.8	
Interaction/Direct contact with the patient					
Yes	71	97.3	158	100	0.313†
No	02	2.7	00	0.0	
Total	**73**	**100**	**158**	**100**	

**p-value;* †Fisher's Exact Test; ‡Chi-square Test

When comparing the percentages of positive answers between the periods, there was a positive difference for dimensions 10 and 11 ("Staffing" and "Handoffs and transitions") and a negative difference for dimension 1 ("Teamwork within units"). It is observed that none of the 12 dimensions was considered a strong area (≥75% of positive answers) for the safety culture (Table 3). The overall Cronbach's alpha coefficient was 0.89 in both periods, ranging from 0.10 to 0.82 across the dimensions.

Table 3 – Comparison of the positive answers of the health professionals working at surgical units in different periods of hospital management according to the dimensions of the organizational safety culture and to Cronbach's alpha. Curitiba, PR, Brazil, 2017. (Period I: n = 73; Period II: n = 158)

	Period	Cronbach's Alpha	Percentage of answers			p-value*
			Negative	Neutral	Positive	
1. Teamwork within units	I	0.62	27.3	9.7	63.0	
	II	0.75	23.4	20.6	56.0	<0.001†
2. Supervisor/Manager expectations and actions that promote patient safety	I	0.62	21.6	13.9	64.5	
	II	0.70	24.8	18.8	56.4	0.057†
3. Organizational learning - continuous improvement	I	0.62	25.0	13.4	61.6	
	II	0.59	20.3	20.3	59.5	0.066†
4. Management support for patient safety	I	0.79	42.1	26.6	31.3	
	II	0.70	36.8	32.5	30.8	0.256†
5. Overall perceptions of patient safety	I	0.46	41.8	11.1	47.0	
	II	0.46	35.4	18.9	45.8	0.009†
6. Feedback and communication about error	I	0.58	31.8	32.7	35.5	
	II	0.76	30.4	31.8	37.8	0.840†
7. Communication openness	I	0.71	23.3	23.3	53.4	
	II	0.55	26.1	23.1	50.8	0.722†
8. Frequency of events reported	I	0.74	30.5	25.4	44.1	
	II	0.82	31.9	22.8	45.3	0.758†
9. Teamwork across units	I	0.53	51.7	22.7	25.5	
	II	0.74	42.4	26.8	30.7	0.033†

Table 3 – Cont.

	Period	Cronbach's Alpha	Percentage of answers			p-value*
			Negative	Neutral	Positive	
10. Staffing	I	0.47	54.7	12.9	32.4	
	II	0.26	40.2	20.6	39.2	<0.001†
11. Handoffs and transitions	I	0.73	61.3	10.5	28.2	
	II	0.74	41.5	26.0	32.5	<0.001†
12. Nonpunitive response to error	I	0.50	56.7	16.7	26.5	
	II	0.10	64.5	16.3	19.3	0.082†

**p-value;* †Chi-square Test

Table 4 shows the items/questions that compose the dimensions that best report the managerial perception ("Supervisor/Manager expectations and actions that promote patient safety" and "Management support for patient safety"). Among the seven items/questions analyzed, a very low frequency of positive answers of the health team in four of them was observed.

Table 4 – Distribution of the positive answers of the health professionals working at surgical units in different periods of hospital management according to the dimensions/items of the organizational safety culture. Curitiba, PR, Brazil, 2017. (Period I: n = 73; Period II: n = 158)

Dimensions and items/questions	Percentage of positive answers	
	Period I	Period II
Supervisor/Manager expectations and actions that promote patient safety	64.5	56.4
My supervisor/manager says a good word when he/she sees a job done according to established patient safety procedures.	47.9	43.9
My supervisor/manager seriously considers staff suggestions for improving patient safety.	63.9	51.6
Whenever pressure builds up, my supervisor/manager wants us to work faster, even if it means "taking shortcuts".	63.9	63.9
My supervisor/manager overlooks patient safety problems that happen over and over.	81.9	66.2
Management support for patient safety	31.3	30.8
Hospital management provides a work climate that promotes patient safety.	37.5	31.6
The actions of hospital management show that patient safety is a top priority.	25.0	33.8
Hospital management seems interested in patient safety only after an adverse event happens.	22.2	26.9

In the comparison between the periods (Table 5), there was no difference in the patient safety grade (p=0.355) and in the number of events notified (p=0.202).

Table 5 – Distribution of the patient safety grade and of the number of events notified in the last twelve months by the health professionals working at surgical units in different periods of hospital management. Curitiba, PR, Brazil, 2017. (Period I: n = 73; Period II: n = 158)

Variables	Period I		Period II	
	n	%	n	%
Patient safety grade				
Excellent	02	2.7	09	5.7
Very good	37	50.7	94	59.5
Acceptable	29	39.7	50	31.6
Bad/Very bad	04	5.5	05	3.2
Unknown	01	1.4	00	0.0
Number of events notified in the last twelve months				
None	36	49.3	86	54.4
1-2	18	24.7	42	26.6
3-5	07	9.6	20	12.7
6 or more	10	13.7	09	5.7
Unknown	02	2.7	01	0.6
Total	**73**	**100**	**158**	**100**

DISCUSSION

The results enabled the identification of weak and strong areas of the safety culture that were usually consonant in both management periods and with regard to the participants' demographic and occupational profile. That is, this research indicates the perception of qualified professionals experienced in the field and whose working time in the unit and in the hospital was sufficient to understand aspects of the institutional culture and of the changes that occurred in the organizational structure. The management transition had a significant positive influence on two dimensions of the organizational safety culture ("Staffing" and "Handoffs and transitions") and a negative influence on the "Teamwork within units" dimension. This finding is contrary to that of a study that assessed the safety culture among professionals of a tertiary teaching hospital located in Saudi Arabia, in two time periods (2012 and 2015), in which the culture exhibited significant progress in all the dimensions.[22]

However, the progress in these two composites deserves attention, because they reflect on the care practice of the professionals who work in the surgical context, considering that proper communication is a protective factor against errors. The sizing of the workforce is one of the essential components to improve quality of care and patient safety,[23] in addition to allowing for optimization of the care transition across teams and units. Although the increasing perception related to staffing at the institution under study is acknowledged, it was observed that the percentage of positive answers of this dimension remained among the worse evaluated for period II (39.2%; n=62). A study conducted in the Brazilian Northeast region obtained a lower rate (36%; n=46)[24] as well as in Asian hospitals located in Saudi Arabia (33.8%;n=876).[22] Conversely, the percentage of positive answers of this dimension was lower than those found in a hospital in southern India, with 59.7% of positive answers.[2] Therefore, this finding should be interpreted with caution when considering it as a predictor of basic safety actions.

Despite the significant improvement referring to the "Handoffs and transitions" dimension, it is worth noting that the results were not immediate. This progressive action can be justified by the implementation of tools to execute these activities by the professionals over the last years, such as pre- post-operative safety checklists implemented since 2014, as well as standardized handoff

forms.[25] The results favoring the use of these technologies are evident in a systematic review that signaled improvements in the transfer of information by using surgical checklists.[26] This analysis did not exclude the relevance of the commission for the systematization of nursing care, consolidated in the surgical units assessed. Although being multifaceted, these factors promote better safety culture scores, especially those related to communication, frequency of incidents notified, and continuous improvement of care, with a direct repercussion on indicators of the care quality. However, these factors need to be interpreted with caution since, according to the quality evaluation constructs of the Donabedian Model, the units have different structures and specific processes and, therefore, results which are also differentiated.[27] Thus, despite similarities in administrative guidelines and in physical areas/structures among the study units, the results may be different, especially those of the surgical center compared with the other surgical inpatient units.

The opposite occurred in the "Teamwork within units" dimension, which presented a reduction in the number of positive answers ($p<0.001$) in relation to the negative/neutral answers. The positive answers varied from 63% to 56% between the periods, a result consistent with the mean observed in another university hospital in northern Brazil (58%)[28] and divergent from that of a study conducted in a tertiary public hospital in southern India, which noted that the professionals work in teams, represented by 80.1% of positive answers in 386 questionnaires answered.[2] The various factors that affected teamwork identified in the present research may explain the low cooperation in the execution of the activities observed among the participants. The diverse coexisting labor regimes, the conflicts of power, and the hierarchical management model can partially explain the less favorable results, and also point to the need of improving teamwork.

The literature shows that poorly managed conflicts have repercussions on organizational goals and objectives, which can hamper the communicational process across the teams.[29] In addition, organizational values and practices that permeate hierarchy, such as work control and rigidity, individualism, and competition among individuals, hinder teamwork, the development of interdisciplinary actions, and the quality of the care provided.[30] When broadening the analysis of this item, it is worth noting that, despite this less favorable result for teamwork within the units, there was no negative influence on the "Teamwork across units" dimension. This characteristic favors surgical care, reiterating the efficient use of standardized tools to coordinate care among the professionals of the surgical units and of the surgical center. In this way, it contributes to the development of the safety culture, since it was one of the dimensions identified with the greatest number of negative answers in the first management period analyzed. Thus, it is observed that there was an improvement in teamwork across the different teams when comparing the periods. In this context, it is noted that the health organization leaders must improve inter-professional cooperation in order to promote a positive work environment so as to offer better care practices.[23]

Despite they lack significance, the results showed that the hospital management transition interfered negatively on the frequency of positive answers in seven dimensions of the organizational safety culture compared to the assessment performed in the previous management period. In a previous study to assess the changes in the patient safety culture between 2011 and 2016 after the implementation of a patient safety initiative in Palestinian public hospitals, significant improvements were identified in the patient safety culture, with positive answers for 10 dimensions.[31] This finding reinforces the fact evidenced in this research that the transition of management models have an impact on predictors of the organizational safety culture. These circumstances indicate that structural arrangements, geopolitical differences, and individual values establish microcultures across departments, determine the degree of institutional culture, and promote the need to share successful experiences with immediate leaders and managers to develop a strengthened culture in the organization, with direct repercussions on the clinical outcomes of the hospitalized patients.

The 12 dimensions of the safety culture remain as limiting factors (neutral or weak) for safe care in both study periods, considering the desired overall rate of ≥75% of positive answers. It is noted that safety culture scores lower than the established ones were also identified in studies conducted with professionals working in Brazilian hospitals located in the North,[28] Northeast,[32] and South regions.[18] Similar results were observed in surveys conducted in Germany[33] and in Peru.[34] A systematic review with a thorough analysis of 33 articles, including studies from 21 countries, identified that the hospital organizational culture is predominantly underdeveloped or weak in relation to patient safety and covers dimensions that require strengthening.[35]

In dimensions two and four, referring to management and leadership, there was no statistical difference between the periods (p=0.057 and p=0.257, respectively). Dimension two (Supervisor/ Manager expectations and actions that promote patient safety) stood out as the best dimension in period I (64.5%) and presented a decrease in period II. However, these values are positive when compared to those of African countries, such as Ethiopia (46%)[36] and Tunisia (35%),[37] and to those of South America (49%)[34] and, before the administrative transition, presented a score higher than the positive percentage values identified in developed countries, such as Saudi Arabia (60.8%).[22]

Of the seven questions that cover managerial themes, four showed a reduction in their relative frequencies. According to the participants' perception, the one with the greatest negative impact was related to lack of attention from the supervisor/manager in relation to patient safety problems, which decreased from 81.9% (n=59) to 66.2% (n=104) of positive answers. However, it remained as the item with the best positive score in dimension two and is consistent with the results of a German study (61.7%; n=615),[33] but is below the results from 19 hospitals in China, in a study that identified 77% (n = 1,062) of professionals who disagreed with this statement.[38] It is noted that the team and the immediate leaders are attentive to failures that may lead to potential harms to the patients and, whether in an incipient manner or not, are concerned with risk management in the units. That is, the results of this research show that the supervisors do not neglect the safety problems and much less stimulate "taking shortcuts" in the provision of care, an item that remained with a stable percentage of positive answers between the two periods, contrary to an Arabian study[22] and to a study conducted in Tunisian public and private surgical units,[37] which found positive values of 40.4% (n=1,047) and 41.6% (n=153), respectively.

With regard to hospital management, data from the present research show a concerning element referring to the question "Hospital management seems interested in patient safety only after an adverse event happens", represented by the lowest rate of positive answers in both periods analyzed (22.2% and 26.9%). These findings coincide with those of other studies developed in Brazil, specifically in the states of Paraná[39] and São Paulo,[27] which identified weaknesses in the safety culture. Low scores of positives answers in this item were also observed in public and private Peruvian hospitals (39%).[34] In this aspect, the professionals reported frequent dissatisfaction with the effective participation of the top management in patient safety actions, reinforced by the statement "The actions of hospital management show that patient safety is a top priority", where a percentage of positive answers below 35% was observed in both management periods. Hospital environments with traditional administrative models can represent a negative factor for the improvement of quality and safety,[39] highlighting the need for the institution to promote advances within this perspective.

Specific studies in Brazilian surgical centers and units, which used a similar instrument entitled Safety Attitudes Questionnaire to measure the safety climate, reported weaknesses in the management perception.[40–42] Thus, it is inferred that organizational rigidity, power concentration, and even managerial authoritarianism can hamper the implementation of actions to improve patient safety. The results show that, in both periods, more than half of the professionals reported not having notified any adverse event in the last 12 months before the survey. In this sense, a study conducted

in Tunisia signaled a frequency of 90.2% (n=332),[37] similarly to what happened in a hospital in the state of Ceará, Brazil, indicating that 59% (n=62) of the workers did not report them.[24] Although the notifications in the research institution are confidential and computerized, the results can indicate the *status* of the culture of fear and guilt about the occurrence of adverse events. Additionally, these findings may be a consequence of the perceived punitive culture persisting in the institution, in view of the high rate of negative answers in dimension 12 ("Nonpunitive response to error") and of the fear expressed that their errors be used against the professionals.

These findings are consistent with national[18,24,27,32] and international[34,37] studies and indicate the need for actions to promote the notification of adverse events and to reduce the perception of consequent punishment, by means of concrete and continuous actions. They also show the importance of advancing in the promotion of a fair culture, with the support of institutional leaderships, including those of the associations that represent professional classes. According to the research participants, the low number of adverse events notified can be associated to the lack of feedback from the managers in relation to the actions taken to prevent their recurrence. This fact can discourage future notifications and does not favor the development of the safety culture.

The participants' perception about the punitive policy on errors can be a predictor for the low frequency of notifications. As a consequence, there are fewer opportunities to identify systemic failures and to promote continuous learning, hindering the elaboration of strategic plans aimed at mitigating errors. Since 2011, the hospital under study offers a system for these notifications, with provision of training sessions for the teams. However, the managerial change also led to the hiring of new professionals and, regardless of their working time, underreporting can be related with the difficulty in understanding that an incident or event is indeed notifiable.[16]

The participants assessed surgical patient safety as excellent/good, corroborating with professionals working in surgical departments of 19 Chinese hospitals (54.4%, n=425).[38] However, it is worth noting the several items of the safety culture signaled as negative by the professionals, showing the existence of safety problems. It is imperative to disseminate among the workers the different factors that have an influence on patient safety and on the resulting occurrence of incidents and adverse events (latent conditions and active failures), which may result in differentiated values referring to safety levels. This requires that the health team understands the important elements for the progressive development of the safety culture, such as adherence to the institutional protocols that, if not managed, put the safety of surgical patients at risk, predisposing to serious adverse events.

In the overall analysis of the study results for the two management periods, it is supposed that the study hospital has a "calculated" maturity level regarding the safety culture, due to the existence of systematic measures to manage quality and patient safety, such as: patient safety program; active patient safety center; system for the notification and investigation of incidents whose data feed health indicators; protocols to prevent incidents, especially those proposed in the six international patient safety goals; internal audits; and decentralization of the safety actions by means of internal groups of quality assessment.[16] However, in large hospitals, such as the one assessed in this study, maturity levels can vary among the units, that is to say, one sector can be reactive or pathological while another can be more evolved, and the predominant safety culture can be that of proactivity, for example.[13] This partially explains differentiated practices across professionals and sectors, which can result in different clinical outcomes when considering the existing relationship between positive culture and patient safety scores.[43]

One of the limitations of this study is the low internal consistency in the dimensions of the instrument, especially dimension 12 ("Nonpunitive response to error"), which obtained the lowest reliability index, with a Cronbach's alpha of 0.10 (period II). The researchers state that the punitive culture can induce the respondents to give inconsistent answers in all three items of this dimension,[44]

which can be a factor to consider. Furthermore, the instrument used in data collection also presented low consistency in some dimensions in its version translated and validated to the Brazilian context.[20] Other studies also found low indexes of internal consistency across the HSOPSC dimensions,[27,36] remaining as a limiting factor inherent to the instrument.

Another possible limitation can be the length of the instrument, which may have contributed to refusals to participate, especially among professionals of the medical category, and the non-participation of the top managers and of the same participants in both management periods. A minimum time of experience in the unit was not established as an inclusion criterion, as advised by the AHRQ instructional guide; however, it is worth noting that this variable can have an influence on the professional's perception about the safety culture, with the possibility of being reviewed in future research studies. Finally, the fact that the hospital's administrative transition took less than two years may have interfered with the analysis, considering that changes in the safety culture require a longer period of time, which points to the continuity of this research.

CONCLUSION

The administrative transition had a positive influence on two dimensions of the organizational safety culture ("Staffing" and "Handoffs and transitions") and a negative influence on the dimension related to teamwork within the units.

It was observed that the effective participation of the top hospital management in safety actions was incipient, according to the participants' perception; in addition, the organizational structure is still permeated by a punitive culture with regard to the occurrence of errors and surgical failures, remaining as limiting and challenging factors for the current administration in the progressive development of the culture predictors. The results may contribute to the formulation of patient safety actions, considering the managerial model adopted by the institution, because it seems to have repercussions on the behavior, values and beliefs of the health professionals.

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NOTES

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CONFLICT OF INTEREST

There is no conflict of interest.

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