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ANALYSIS OF THE PATIENT SAFETY CULTURE IN A PUBLIC HOSPITAL IN BRAZIL

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ABSTRACT

This study to intend analyze the patient safety culture from the working professional's perception in a public hospital in the state. This is a cross-sectional study performed with 204 employees. The instrument (Hospital Survey on Patient Safety Culture) was applied for the data collection. Throughout this study the perception of the patient's safety degree as adequate and inadequate was considered as the main outcome. To analyze the variables, we performed a prevalence calculation with Confidence Intervals of 95% (95% CI). Were considered the prevalence of positive and negative responses of each variable that composes the dimentions of the instrument. Poisson regression was used in the gross and adjusted analysis. For all analyzes was adopted the significance level of 5%.The internal consistency of the instrument showed good reliability (0.81). All 12 dimensions of the study presented prevalence's below 75%. The safety patient degree was considered adequate by 56.6% of the interviewees. The adjusted analysis showed influence of the dimensions: Teamwork within the units (RP: 0.92, 95% CI: 0.87-0.97); on-call and internal transfers (RP: 0.90, 95% CI: 0.84-0.96) in the patient safety perception degree. The patient safety culture is considered fragile in this institution.

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INTRODUCTION

Safe care has been a challenge for health organizations because their activities are considered complex processes permeated by a high potential for harm (Martins and Mendes, 2016). In addition to technological apparatus and professional performance, the social dynamics that permeate relationships have a strong influence on the care production. All of this dynamics aims at the quality of care, and, the reduction of adverse events (Andrade *et al.,* 2018). In order to develop strategies to promote the reduction of adverse events in Brazilian health services, in 2013 the National Patient Safety Program was established, focused on managers, professionals and users (Capucho and Cassiani, 2018). The main strategy of this program is the obligation of each health service to create a Patient Safety Center, which should be instituted to promote and support actions centered on patient safety. The action must take place through the multi professional integration actions of risk management, using the implementation of basic safety protocols and monitoring of its indicators, with definition of actions and strategies within the institutional plan of patient

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safety (Colares and Severino, 2016). In order for the institutional movement to take place in effective processes, with positive results for professionals, users and families, it is fundamental that it surpasses the normative question and consolidates itself as a culture in the organization. With this, developing a patient safety culture in the institution is a key tool in the engagement of health and safety management, replacing guilt and punitive actions with the opportunity to learn from failures and improved health care (Andrade *et al.,* 2018). The health institution, therefore, should promote a culture considered strengthened from the individual and collective commitment of all its members, regardless of its hierarchical position (Martínez *el al.,* 2010). The implementation, incorporation and consolidation of practices aimed at patient safety imply profound changes in structure, organizational processes and social dynamics. Therefore, it is considered relevant to determine the priority and interdependent elements that make up each health service. In this perspective, this study aims to analyze the patient safety culture from the perception of health professionals that work in a public hospital.

MATERIALS AND METHODS

Cross-sectional study performed with the servers from a public hospital in the state of Espirito Santo. The hospital is located in the municipality of São Mateus, which has an estimated population of 128,449 inhabitants. It has a Municipal Human Development Index of 0.735, and the average monthly salary of formal workers is 2.6 minimum salaries (IBGE, 2018). The hospital is a reference in emergency care and provide health assistance for 14 surrounding municipalities. It has an installed capacity of 192 beds and another 121 beds in the qualification phase, distributed in first aid units for adults and children; medical, surgical and orthopedic clinics; pediatrics; vascular unit, adult intensive care unit, surgical center, day hospital and home hospitalization. It also has diagnostic, administrative and auxiliary services. The hospital has a multi professional team with 220 doctors, 57 nurses, nutritionist, speech therapist, physiotherapist, dentistry, social work, psychology and other 800 own and outsourced employees (SESA, 2018). The study sample consisted of hospital professionals, comprising nursing staff (nurses, technicians and auxiliaries), pharmacy (pharmacists and technicians); physicians, physiotherapists, nutritionists, as well as receptionists, clerk and clinic clerks. The criterion of eligibility of this study directed to the professionals was to act in the institution for at least three months; not being absent from the institution during the period of data collection, due to vacations, leave at work; and did not participate in the pre-test collection of the instrument. In order to calculate the sample size, the prevalence of 20% for the patient's safety level, 5% confidence limit and 0.8 design effect was considered, totalizing 161 subjects. To verify the association between the patient safety degree of, and the dimensions of the study, a confidence level of 95%, power of 80%, ratio of exposed / unexposed of 1.5, percentage of non-exposed positive of 5 %, positive percentage of 20%, adding 10% for losses and refusals, resulted in 194 subjects. In total, 204 servers integrated the sample. Data collection was performed by previously trained researchers from September to December 2016. All interviewees received an individual questionnaire called the Hospital Survey on Patient Safety Culture (HSOPSC) on patient safety in hospitals of the Agency for Health Research and Quality (AHRQ), translated and validated (Reis *et al.,* 2012). The instrument is composed of 51 questions, distributed in information regarding safety culture dimensions, medical error and adverse events, in the hospital environment and information about the subjects' work activity. For this study, the 42 variables that make up the 12 Dimensions (D) of the patient safety culture were analyzed: D1: Teamwork within the units (4 variables); D2: Expectations and actions to promote the safety of supervisors and managers (4 variables); D3: Organizational learning and continuous improvement (3 variables); D4: Hospital management support for patient safety (3 variables); D5: Return of information and communication about error (4 variables); D6: Communication opening (3 variables); D7: Teamwork between units (3 variables); D8: Personnel (3 variables); D9: On-call and internal transfers (4 variables); D10: Non-punitive responses to errors (4 variables); D11: General perception of patient safety (4 variables) and D12: Frequency of reported events (3 variables). Most questions were based on a Likert scale with five choices of answers (strongly disagree, disagree, neither agree, strongly agree, or never, rarely, sometimes, almost always, always). The main outcome of the study was constructed from the question about the perception of patient safety degree distributed in excellent, very good, acceptable, weak and flawed. During this study was considered adequate degree of the patient safety the sum of the values of excellent, very good, acceptable and inadequate degree of patient safety the sum of weak and faulty responses. Descriptive statistics were performed with univariate analyzes by calculations of prevalence of all the variables that make up the instrument, in addition to Confidence Interval of 95% (95% CI). The Cronbach's Alpha multivariate analysis was used to evaluate the internal consistency of the instrument. In order to analyze the safety dimensions of the patient, was considered the prevalence of positive and negative responses of each variable that composes each of the 12 dimensions of the study, considering the reversibility of negative items. Dimensions with a prevalence of 50% or less of positive responses are fragile; between 51% and 74% are neutral or adequate; and those with 75% or more of positive responses are considered to be strengthened (Reis *et al.,* 2012). The Poisson regression was used in the gross and adjusted analysis of the main outcome with the 12 dimensions of the study, using robust adjustment of the variance for the prevalence ratios (PR) and for the 95% CI estimated using the Wald test for heterogeneity. For adjusted analysis a backward selection model was considered and the input of the variables occurred considering a $p < 0.20$ value identified in the gross analysis. The variables were adjusted to each other among those with a p value <0.05. For all analyzes, a significance level of 5% was adopted. All data analysis was carried out in the Stata 13.0 statistical package. The project was previously approved by the Ethics Committee of the Federal University of Espirito Santo, Campus São Mateus, under the number of the registry of 1,945,425. All the participants of the research signed up the free informed term of consent (FITC).

RESULTS

In total, 204 hospital employees participated in the study. Most of them work in the non-surgical clinic (20.6%) and in intensive care (19.6%); they have between 1 and 5 years of work in the hospital (43.1%) and in the sector (43.2%), have a workload of 40 to 60 hours per week (66.2%) and are nursing technicians (43.6%). The professionals interact with the patient (94.6%) and have between 1 and 5 years of work in the profession (32.3%) (Table 1).

Table 1. Health professional's description according to labor variables. São Mateus - ES, 2017

Variables	n	%
Work unit in the hospital[1]		
Anesthesia	3	1.5
Surgery	24	11.7
Non-surgicalClinic	42	20.6
Severalareas	7	3.4
Emergency	20	9.8
Drugstore	3	1.5
Pediatrics	24	11.7
Intensivetherapy	40	19.6
Others	37	18.2
Working time in the hospital (years)		
< 1	41	20.1
1 a 5	88	43.1
6 a 10	34	16.7
11 a 15	12	5.9
16 a 20	13	6.4
≥20	16	7.8
Working time in the sector		
< 1	56	27..5
1 a 5	88	43.2
6 a 10	37	18.1
11 a 15	6	2.9
16 a 20	8	3.9
≥20	9	4.4
Workload (years/week)		
< 20	6	29
20 a 39	61	2.9
40 a 59	135	66.2
≥60	2	1.0
Job position		
Nurse	40	19.6
NursingTechnician	89	43.6
Nursingassistant	4	1.9
ClinicalPhysician	34	16.7
Residentdoctor	3	1.5
Pharmaceutical	2	1.0
Nutritionist	4	1.9
Clerk / ClerkSecretary	2	1.0
Physiotherapist / Speech-Language Pathologist	5	2.5
Technical (ECG, RX, Laboratory)	3	1.5
Administrator / Managerial activity	2	1.0
Others	16	7.8
Contact or interaction with the patient		
Yes	193	94.6
Não	11	5.4
translation: Working time in the profession (years).		
< 1	14	6.9
1 a 5	66	32.3
6 a 10	49	24.0
11 a 15	35	17.2
16 a 20	14	6.9
≥20	26	12.7
TOTAL	204	100,0

[1]The work units Obstetrics, Psychiatry, Rehabilitation, Laboratory and Radiology obtained prevalences lower than 1%.

The instrument reliability assessment showed a total of 0.81, ranging from 0.24 to 0.82 and (Table 2). Analysis of the patient's safety culture revealed that none of the dimensions is strengthened in the institution. The prevalence of positive responses was less than 75% in all 12 dimensions analyzed, among the ones that obtained the best results: Dimension 3 (60.9%, 95% CI: 53.7-67.5) and Dimension 1 (60.3%, 95% CI: 53.2-67.0), and the less favorable results were found in four of the 12 dimensions, with prevalence's lower than 40%: Dimension 7 (33.4 (95% CI: 26.9-40.2), Dimension 6 (34.8%, CI 95%: 28.2-41.7), Dimension 8 (37.6%, 95% CI: 31.0 -44.7) and Dimension 11 (38.6%, 95% CI: 32.0-45.7) (Figure 1). The perceived level of patient safety was considered adequate by slightly more than half of the employees (56.6%) (Figure 2). On the other hand, the adjusted analysis showed a protective effect of D1-Teamwork within the units (RP: 0.92, 95% CI: 0.87-0.97) and D9-on-shift and internal transfers (RP: 0.90, 95% CI: 0.84-0.96) with a direct influence on the perception of the patient safety degree (Table 3).

Table 2. Distribution of dimensions, definitions, and results found in the Cronbach's Alpha test. São Mateus - ES, 2017

Evaluative Dimensions	Definition	Cronbach's Alpha
D1: Teamwork within the units	Employees support each other, treat each other with respect, and work together as a team.	0.64
D2: Expectations and actions to promote the safety of supervisors and managers	Supervisors / managers consider employee suggestions for improving patient safety; recognizes employee participation to improve procedures for patient safety.	0.62
D3: Organizational learning and continuous improvement	Existence of learning from the mistake that leads to positive changes and evaluates the effectiveness of the changes that have occurred.	0.38
D4: Hospital management support for patient safety	Administration and management of the hospital provides a work climate that promotes patient safety and demonstrates that patient safety is a priority.	0.59
D5: Information returns and communication on error	Workers are informed about the errors that occur, feedback is given on the changes implemented, and ways to prevent errors with the team are discussed.	0.30
D6: Communication opening	Hospital staff talk freely about the mistakes that can affect the patient and if they feel free to question their managers.	0.64
D7: Teamworkbetweens ectors	The hospital units cooperate and coordinate with each other to provide high-quality care to the patients.	0.34
D8: Humanresources	There is sufficient amount of workers for the effective execution of the work and the amount of worked hours is appropriate to offer the best care to the patient.	0.82
D9: On-call and internal transfers	Important information about patient care is transmitted through the hospital units and during shift.	0.24
D10: Non-punitive responses to errors	How employees feel about their mistakes, and if they think mistakes made by them can be used against them and kept on their functional tokens.	0.35
D11: General Perception of Patient Safety	Existing systems and procedures in the health organization to avoid the occurrence of errors and the absence of patient safety problems in hospitals.	0.64
D12: Frequency of reported events	Reporting of potential patient safety issues and identified events or perceived and solved errors before they affect the patient.	0.39
TOTAL		0.81

DISCUSSION

The study pointed to weaknesses in the perception of the patient safety culture in the institution, with direct influence of the dimensions that involve teamwork within the units and shifting passages and internal transfers. The patient safety was considered adequate by just over half of the interviewees, who demonstrate to the institution the need to advance in the

discussion and the implementation of strategies aimed at the full patient safety care.

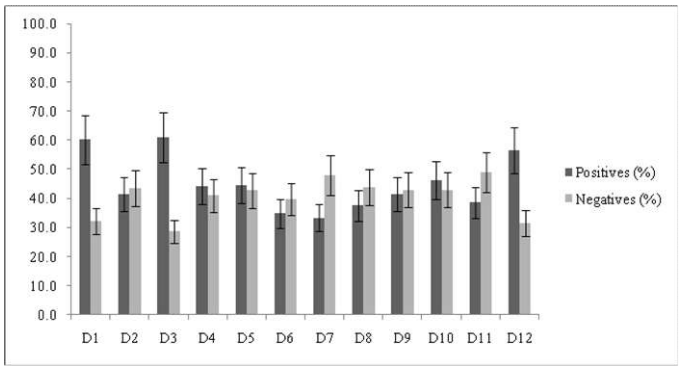

Figure 1. Prevalence of 12 quality dimensions of health care, according to positive and negative responses, plus CI 95%. São Mateus - ES, 2017

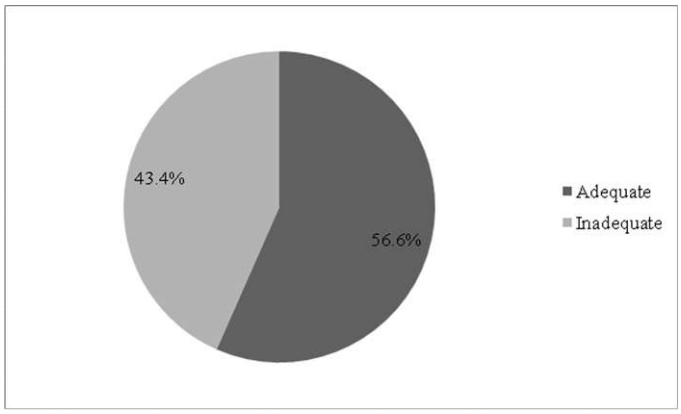

Figure 2. Perception of the Patient Safety Degree. São Mateus - ES, 2017

Table 3. Gross and adjusted analysis of factors associated with patient safety, according to study dimensions. São Mateus - ES, Brazil. 2017

Dimensions	Gross Analyses		Adjusted analysis	
	RP* (IC95%)	p-value	RP* (IC95%)	p-value
D1	0.89 (0.84-0.93)	0.000	0.92 (0.87-0.97)	0.005
D2	0.95 (0.87-1.02)	0.215		
D3	0.87 (0.83-0.92)	0.000	0.95 (0.89-1.02)	0.205
D4	0.86 (0.79-0.93)	0.001	0.93 (0.85-1.02)	0.133
D5	0.96 (0.89-1.05)	0.480		
D6	0.90 (0.86-0.94)	0.000	0.95 (0.90-1.01)	0.152
D7	0.94 (0.89-0.99)	0.038	0.98 (0.92-1.04)	0.589
D8	0.92 (0.89-0.96)	0.000	0.98 (0.94-1.03)	0.676
D9	0.86 (0.80-0.93)	0.000	0.90 (0.84-0.96)	0.002
D10	1.03 (0.95-1.12)	0.398		
D11	1.02 (0.97-1.08)	0.346		
D12	1.03 (0.96-1.09)	0.344		

*Poisson regression.

The short institutional working time, evidenced in the study group, may have contributed to this finding, conditioning them to a professional profile in adaptation to the organizational culture, empowerment of the work processes and sectorial setting. However, other studies that observed similar (Andrade *et al.,* 2018) and lower pre valences (Sorra *el al.,* 2012), (Melo and Barbosa, 2017) indicate that managerial issues, the position and the work unit can directly influence the composition of the patient's perception of safety. The results of the application of the questionnaire reveal that none of the analyzed dimensions is strengthened in the institution. This fact is worrying considering the good reliability of the instrument in this sample, demonstrated by the Cronbach's alpha test. Among the 12 dimensions studied we observed a variation of the test from 0.24 to 0.82, a similar result was found in other studies using the same instrument, with the Alpha value ranging from 0.32 to 0.88 (Silva and Melleiro, 2016) and 0,47 to 0.81 (Drehmer *et al.,* 2018). It is noteworthy that the hospital under study has a newly implanted safety patient nucleus, which is still in the process of structuring and organization. In this aspect, the results pointed out here should serve as a guide to the construction of a security culture at a local level, incorporated in the organizational environment. The performance of the patient's safety nucleus permeates the various sectors, professional categories and hierarchical spheres, aligning the planning and development of actions that promote patient safety. Thus, the evaluation of the safety culture subsidizes the safety nucleus of the patient in the elaboration of the safety program, from which simple but effective measures can be established more assertively.

In this study, the degree of patient safety was associated with two of the 12 dimensions analyzed: D1- Teamwork within the units and D9- On-call and shift transfers and internal transfers. A study carried out in Brazil in a general public hospital has identified similar results, highlighting the dimensions of: Teamwork in the unit, Expectations about its supervisor/boss and actions that promote patient safety, Organizational learning - continuous improvement, and Internal transfers and tickets on duty (DeAzevêdoand Silva, 2016). Other studies, also Brazilian, identified as critical area the non-punitive response to error (Drehmer *et al.,* 2018) and hospital management support for patient safety (Mello and Barbosa, 2017), (Tomazoni *et al.,* 2015). In Spain nursing professionals pointed to the profession, organization and infrastructure, indicators, communication and safety climate, and safety training as the main weaknesses and threats to build the safety culture (Martínez *et al.,* 2010). The relationship between teamwork and safety culture would be related to an insufficient amount of human resources to guarantee the full assistance, the joint work given to the care demands, the respect between the team, the culture of punishment in the face of the occurrence errors and work overload.

Therewithal, the inclusion of new technologies and care demands were considered in this analysis. When considering the technical, technological and organizational complexity involved in health care, it is essential understanding that its results are tools of collective efforts, since work processes are transversal, requiring cooperation between members of the same team and between units (Martínez *et al.,* 2010). Health work should be constituted by elements such as communication, trust, bonding, recognition of the work of the other, and collaboration among professionals, since the absence of these conditions contributes significantly to the generation of conflicts. The collaborative practice favors the understanding of the relevance of each area of knowledge and of each stage of the work process to guarantee integrality, quality and safety of care (Souza *et al.,* 2016). Regarding the support of the hospital management to patient safety, there is a direct association with the recognition of the managers whether supervisor or immediate boss, the successful actions performed by their team work, listening to the group's suggestions for implementation improvements in care delivery, collection of care demands and the difficulty in considering patient safety problems (Baptista *et al.,* 2015). For the management to promote the safety culture at the institutional level it is necessary to recognize the existence of

problems, and to set up the first step in mobilizing for change. After assuming the risk existence, it is possible to analyze their causes and consequences, and especially ways to solve them (Martínez *el al.,* 2010). Among the actions to favor this approach stands out the Walka Round with feedback, which leaders conduct visits to the units and interact with the front line professionals, recognizing their difficulties and encouraging them to identify and solve patient security problems presented. This tool has been associated with improvements in evaluations of the patient's safety culture, greater engagement of the workforce, and lesser fatigue among professionals (Sexton *et al.,* 2018). The feedback of the information related to patient safety and error reporting encompasses the perception that reported errors are used against the practitioners and it can demonstrate a punitive culture, lack of effectiveness of the incident reporting system and reduced freedom to talk about mistakes. It is recognized that in order to consolidate a security culture, analysis of problems (Faustino *et al.,* 2018) cannot occur in isolation, but rather to integrate a structured and systematic system of incident analysis and treatment based on a just culture, becoming an opportunity for institutional learning and favoring the reorganization of care practices. In this way, it is important to add value to the local incident reporting system, which is open to discussions about security issues.

Regarding the passage of duty, previous studies (Martínez *et al.,* 2010), (Thomas *et al.,* 2013) also point directly to patient safety, detecting that fundamental care could not be performed due to omission of information, such as pending tasks or critical information about the patient's health condition, and that misguided care was taken by incorrect transfer of information. Therefore, it is important that the health service establishes standardized tools to ensure that the essential components of health care for the patient are not lost at the time of provision of care, the industry transfer in the shift change or at discharge, which would lead to a break in the continuity of follow-up. The manager's understanding that health systems and services are subject to failures and that these failures can spread in different ways, reaching patients, becomes fundamental (Tomazoni *et al.,* 2015). This understanding enables the hospital organization to review its processes, study and reinforce its defense barriers and latent failures that are present in the workplace and that make the system fragile and susceptible to errors (Silva, 2010). This systemic approach to error would allow the organization to understand its systems and processes and to deepen its understanding of the factors that led to that outcome, building a strong patient safety culture(Reis *et al.,* 2012). It is important to emphasize that the study has as a limitation the non-inclusion of professionals related to the levels of strategic, tactical and operational management of the institution in the evaluation process of the patient safety culture. Although the professionals interviewed have already pointed to it as an influencer in the construction of the perception of patient safety.

Conclusion

The present study pointed to two dimensions whose culture needs improvement and identified that the patient safety degree is fragile in the institution. These results can support the patient safety nucleus in search of actions aimed at strengthening the security culture at institutional level, in a continuous and gradual manner in order to produce the necessary effects and consolidate as a culture.

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