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PATIENT SAFETY CULTURE IN THREE HOSPITAL INSTITUTIONS: NURSING TEAM PERSPECTIVE

CULTURA DE SEGURANÇA DO PACIENTE EM TRÊS INSTITUIÇÕES HOSPITALARES: PERSPECTIVA DA EQUIPE DE ENFERMAGEM

CULTURA DE SEGURIDAD DEL PACIENTE EN TRES INSTITUCIONES HOSPITALARIAS: PERSPECTIVA DEL EQUIPO DE ENFERMERÍA

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Objective: to evaluate the patient safety culture in three hospital institutions, from the perspective of the nursing team. Method: quantitative and cross-sectional analytical study conducted with 303 nursing professionals from three hospitals in Minas Gerais. The Hospital Survey on Patient Safety Culture questionnaire was applied. Descriptive and inferential bivariate statistical analyses were performed. Results: from the perspective of nursing, none of the three hospitals presented strong dimensions for the safety culture. The philanthropic hospital obtained better evaluations in four dimensions in relation to public hospitals. The dimension with greater fragility in all hospitals was "Return of information and communication about error". Conclusion: from the perspective of nursing teams, all dimensions of the patient safety culture revealed weaknesses in the hospitals under study.

Descriptors: Patient Safety. Nursing, Team. Quality of Health Care. Organizational Culture.

Objetivo: avaliar a cultura de segurança do paciente em três instituições hospitalares, sob a perspectiva da equipe de enfermagem. Método: estudo quantitativo e transversal analítico realizado com 303 profissionais de enfermagem

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de três hospitais mineiros. Aplicou-se o questionário Hospital Survey on Patient Safety Culture. Foram realizadas análises estatísticas descritivas e inferencial bivariada. Resultados: pela perspectiva da enfermagem, nenhum dos três hospitais apresentou dimensões fortes para a cultura de segurança. O hospital filantrópico obteve melhores avaliações em quatro dimensões em relação aos hospitais da rede pública. A dimensão com maior fragilidade em todos os hospitais foi "Retorno da informação e comunicação sobre erro". Conclusão: sob a perspectiva das equipes de enfermagem, todas as dimensões da cultura de segurança do paciente revelaram fragilidades nos hospitais em estudo.

Descritores: Segurança do Paciente. Equipe de Enfermagem. Qualidade da Assistência à Saúde. Cultura Organizacional.

Objetivo: evaluar la cultura de seguridad del paciente en tres instituciones hospitalarias, desde la perspectiva del equipo de enfermería. Método: estudio analítico cuantitativo y transversal realizado con 303 profesionales de enfermería de tres hospitales de Minas Gerais. Se aplicó el cuestionario Hospital Survey on Patient Safety Culture. Se realizaron análisis estadísticos bivariados descriptivos e inferenciales. Resultados: desde la perspectiva de la enfermería, ninguno de los tres hospitales presentó dimensiones fuertes para la cultura de seguridad. El hospital filantrópico obtuvo mejores evaluaciones en cuatro dimensiones en relación a los hospitales públicos. La dimensión con mayor fragilidad en todos los hospitales fue "Retorno de información y comunicación sobre error". Conclusión: desde la perspectiva de los equipos de enfermería, todas las dimensiones de la cultura de seguridad del paciente revelaron debilidades en los hospitales en estudio.

Descriptores: Seguridad del Paciente. Grupo de Enfermería. Calidad de la Atención de Salud. Cultura Organizacional.

Introduction

Patient safety is defined as a structure of properly organized activities, responsible for creating processes, behaviors and environments in the health area that reduce avoidable risks and damage, in addition to alleviate the impact of its occurrence[1]. Unsafe care negatively affects hospital organization and patient care, as it can increase hospitalization time, intensify the occurrence of adverse events and transient or permanent damage to the patient and, mainly, increase care costs[2].

Thus, it is essential to strengthen the culture of patient safety in health organizations as a way of continuous improvement in care delivery and effective strategy, which allows risk management with a focus on error mitigation. There are several factors to be developed to strengthen the safety culture in health organizations. Communication between the team and the patient is one of these relevant factors, since it allows establishing a bond of trust, which improves the perception of professionals regarding preventive measures in favor of more qualified and safe care[3].

The safety culture is an integrated pattern of individual and collective behavior, based on shared beliefs, perceptions, attitudes, values and behavior patterns[4]. It can determine the style, proficiency, commitment of administration and management of the health organization in relation to patient safety, replacing the punitive culture with error-based learning[4]. A strong safety culture encourages teamwork, notification of adverse events, freedom of expression, transparency and error-based learning, in addition to involving management, professionals and patients in improving care[5].

Nursing is considered an indispensable profession for identifying, reporting and measuring errors in health care[6], since it is responsible for most care actions in hospitals. Therefore, it is important to evaluate the perception of the nursing team regarding the culture of patient safety in hospital institutions, so that, by extracting information about them, a situational diagnosis is obtained that allows the establishment of strategies to improve and strengthen care[7].

In the mid-2000s, among the management strategies developed, it was evidenced the development of self-applicable instruments

and questionnaires, aimed at evaluating and understanding the safety culture in health organizations and its reflection on the quality of care provided to the patient. These are instruments based on the priority dimensions of patient safety, which have low-cost methodological advantages for institutions and also guarantee the reliability and confidentiality of information provided by the professionals interviewed[8].

The evaluation of safety culture in hospital organizations is a useful tool for health managers and leaders, including nursing leadership. This evaluation can be obtained through the perception of health professionals, in order to point out the areas that need improvement, directing interventions and delineation of strategies for mitigation and prevention of failures and care errors[6].

For this purpose, the Hospital Survey on Patient Safety Culture (HSOPSC)[4] stands out for presenting a dimensional approach in multi-item scales. It has been widely used to evaluate the culture of patient safety in hospital institutions in developed and developing countries, with a view to identifying areas that need to target preventive patient safety actions. It was developed by the Agency for Healthcare Research and Quality (AHRQ) in the United States of America. The HSOPSC has good psychometric properties[8], has been used in more than 60 countries, adapted and validated in more than 30 cultures[9]. This instrument[4] was culturally adapted in 2013[10] and validated in 2016 for the Brazilian context. It presented Cronbach's alpha coefficient of 0.91, which gives it good reliability[11].

In this sense, studies in the area are justified to improve the practice of nursing professionals and the management of hospital health organizations in the planning of actions directed to the culture of patient safety. Evaluating the safety culture in a service is a fundamental strategy for pointing out nonconformities and weaknesses in the care and administrative areas, which enables the direction of interventions for mitigation and prevention of errors in care.

From this perspective, the aim of this study was to evaluate the culture of patient safety in three hospital institutions, from the perspective of the nursing team.

Method

Quantitative study, with cross-sectional analytical approach, according to the guidelines for observational studies, Strengthening the Reporting of Observational Studies in Epidemiology (STROBE)[12]. The research was carried out in three hospital institutions in the state of Minas Gerais, which differ in terms of institutional care profile, philosophy and policy. In this study, hospitals were identified using alphabetic letters A, B and C.

Hospital A is philanthropic, contracted to the *Sistema Único de Saúde* (SUS) and other private insurances. It develops teaching activities, general, outpatient and high complexity assistance. It has 372 beds and has 540 nursing professionals, 158 assistants, 220 nursing technicians and 162 nurses. The *Núcleo de Segurança do Paciente* (NSP) was implemented in 2016. Hospital B is contracted to the SUS and accredited as a teaching hospital. It has state management and includes services of medium to high complexity, being a reference for complex respiratory diseases. It has 369 beds and has 754 nursing professionals, 136 nursing assistants, 476 nursing technicians and 142 nurses. The NSP was implemented in 2015. Hospital C is contracted to the SUS and is also accredited as a teaching hospital. It has state management, includes services of medium complexity with emphasis on infectious diseases and sanitary dermatology. It has 110 beds and has 246 nursing professionals: 22 nursing assistants, 178 nursing technicians and 46 nurses. The NSP was created in 2016.

The study population consisted of 1,540 nursing professionals (assistants, nursing technicians and nurses). To define the sample size, the significance level 5% and the margin of error of 5% alpha or type I[13-14] error were considered as parameters, which resulted in a sample of 303 participants. The proportional stratified sampling technique was used in order to maintain the representativeness of the

population, because it is three hospitals with different characteristics and three professional categories. For this, the method of estimating proportions for finite populations with proportional allocation by professional category (assistants, nursing technicians and nurses) and by hospital (A, B and C) was used. Therefore, the sample that inferred representativeness was composed of 106 nursing professionals in hospital A, 148 in hospital B and 49 in hospital C. Thus, in hospital A, 32 nursing assistants, 42 nursing technicians and 32 nurses participated; in hospital B, 27 nursing assistants, 92 nursing technicians and 29 nurses; in hospital C, 5 nursing assistants, 35 nursing technicians and 9 nurses.

The inclusion criteria were established according to the guidelines of the authors of the HSOPSC[4]: workload equal to or greater than 20 hours per week and minimum professional performance of 6 months in the hospital. Nursing professionals who were on vacation, sick leave or other form of leave during the data collection period were excluded.

For data collection, each hospital provided a list of nursing professionals with the function and work shift. The names in this list were inserted into a spreadsheet built into Microsoft Excel® software. Subsequently, the participants of each stratum were selected, through a free public domain site. Data were collected from January to September 2017.

The approach of nursing professionals by the researchers was performed in their workplace, in an individualized way. After agreeing to participate, they received an unidentified opaque envelope containing the collection instruments and the filling guidelines. The envelopes were collected 7 days after delivery, through an urn placed in the nursing station of the sector. During data collection, 9 nursing professionals refused to participate in the research (2 professionals from hospital A, 5 from hospital B and 2 from hospital C). After 4 attempts to collect the completed questionnaires, 12 professionals gave up participating (2 from hospital A and 10 from hospital B). According to the AHRQ[4] guidelines, 3 instruments were excluded (2 referring to hospital A and 1 to hospital B) because they were filled incompletely and sequentially, that is, coinciding all the answers of the instrument. Participants who quit or refused to participate in the research were replaced by other professionals in the same category, through a new draw by the elaborated spreadsheet.

The Brazilian version of the HSOPSC[10-11] questionnaire, available since 2004 by the AHRQ, was used after the authors' authorization. The HSOPSC is a self-administered questionnaire, consisting of 9 sections, 42 items organized in 12 dimensions: 1 – Teamwork within units (4 items); 2 – Supervisor/manager expectations and actions promoting patient safety (4 items); 3 – Organizational learning-continuous improvement (3 items); 4 – Hospital management support for patient safety (3 items); 5 – Overall perceived patient safety (4 items); 6 – Feedback and communication about error (3 items); 7 – Communication openness (3 items); 8 – Frequency of reported events (3 items); 9 – Teamwork between units (4 items); 10 – Staffing (4 items); 11 – Shift handoffs and transitions (4 items); and 12 – Nonpunitive response to error (3 items).

The HSOPSC consists of a five-point Likert scale related to agreement and occurrence: 1 – I totally disagree; 2 – I disagree; 3 – I do not agree or disagree; 4 – I agree; 5 – I strongly agree; and 1 – Never; 2 – Rarely; 3 – Sometimes; 4 – Almost always; and 5 – Always. To ensure consistent answers, 18 questions are reversed, that is, when the participant disagrees with the negatively formulated item and his/her opinion is expressed positively. In addition, it includes two questions that are evaluated separately: patient safety note (0-10) and number of adverse events reported in the last 12 months[4,10-11]. In addition, a questionnaire was applied to characterize the sociodemographic and professional profile of the participants with the following variables: gender, date of birth, marital status, professional category, level of education, date of admission, position/function, work shift, other employment relationships, length of work in the hospital and total workload at the hospital.

Statistical Package for the Social Sciences® (SPSS) software was used version 21.0. Descriptive analysis of the variables and the presentation of the data were performed through frequency distribution tables, measures of central tendency (mean) and variability (standard deviation). To evaluate the patient's safety culture, the sum of the results of the 12 dimensions is considered and multiplied by 100. For the analysis of each dimension of the HSOPSC instrument, the percentages of positive responses related to the scale dimensions were calculated by meaning the percentage of positive responses estimated for each hospital, using the formula[4]:

> % of positive responses of dimension X of HSOPSC = number of positive responses to items of dimension X ÷ total number of valid responses to items of dimension X × 100

Thus, the percentage of positive responses from each dimension of the HSOPSC is the result of the number of positive responses to items in dimension X divided by the total number of valid responses (positive, neutral and negative, excluding missing data) to items in dimension X multiplied by 100.

Positive responses are considered, the options: I strongly agree, I agree, always and often; the options for negative answers are: I totally disagree, disagree, never and rarely; for neutral answers, the options are: I do not agree or disagree[4]. According to the AHRQ[4,9], the areas considered strong for the safety culture have 75.0% of the positive responses, neutral areas <75.0% to >50.0% of positive responses, and fragile or critical areas, ≤50.0% of positive responses.

The Kolmogorov-Smirnov test was used to test the normality of numerical variables. For the comparison of three or more groups, the Kruskall-Wallis nonparametric test was used. For the comparison of the scores of the dimensions of the HSOPSC instrument by groups in pairs, the Mann-Whitney nonparametric test was used, with Bonferroni correction (significant *p*-value below 0.05 divided by the number of comparisons). The comparison of categorical data was performed based on Pearson's Chi-square and Fisher's exact tests. The level of significance adopted was 5%.

The participants signed the Informed Consent Form (ICF) in accordance with Resolution n. 466/2012 of the *Conselho Nacional de Saúde*. The study obtained approval from the Ethics Committee on Research (REC) of the *Universidade Federal São João del-Rei* and co-participating institutions under Opinion n. 1.785.549, *Certificado de Apresentação de Apreciação Ética* (CAAE) n. 60925516.6.0000.5545.

Results

The nursing team that participated in the study were mostly female, 252 (86.3%), 84 (80.0%) from hospital A, 130 (93.5%) from hospital B and 38 (79.2%) from hospital C. The mean age was 35.7 (±10.4), 43.7 (±10.0) and 40.8 (±7.4) respectively (Table 1).

Table 1 – Characterization of the nursing staff in the three hospital institutions. Divinópolis, Minas Gerais, Brazil – 2018. (N=303) (continued)

Characteristics of the nursing team	Hospital A	Hospital B	Hospital C	*p*-value (1)
Professional category (n=291)				
Nurse	31 (31.0%)	32 (22.5%)	9 (18.4%)	0.013 (2)
Nursing Technician	51 (51.0%)	95 (66.9%)	38 (77.6%)	
Nursing Assistant	18 (18.0%)	15 (10.6%)	2 (4.1%)	
Work shift (n=274)				
Day	56 (60.9%)	108 (80.6%)	35 (72.9%)	0.021 (2)
Night	31 (33.7%)	23 (17.2%)	12 (25.0%)	
Depends	5 (5.4%)	3 (2.2%)	1 (2.1%)	
Care for the patient				
No	8 (7.6%)	18 (12.1%)	8 (16.3%)	0.252
Yes	97 (92.4%)	131 (87.9%)	41 (83.7%)	

Table 1 – Characterization of the nursing staff in the three hospital institutions. Divinópolis, Minas Gerais, Brazil – 2018. (N=303) (conclusion)

Characteristics of the nursing team	Hospital A	Hospital B	Hospital C	*p*-value (1)
Does leadership in the institution (n=265)				
No	70 (77.8%)	104 (81.9%)	44 (91.7%)	0.125
Yes	20 (22.2%)	23 (18.1%)	4 (8.3%)	
Employed (n=273)				
No	68 (74.7%)	93 (69.4%)	33 (68.8%)	0.638
Yes	23 (25.3%)	41 (30.6%)	15 (31.3%)	
Time working in the hospital (n=302)				
1 - 5 years	44 (41.9%)	68 (45.9%)	25 (51.0%)	0.624
6 - 10 years	30 (28.6%)	34 (23.0%)	13 (26.5%)	
11 - 15 years	11 (10.5%)	13 (8.8%)	4 (8.2%)	
16 - 20 years	11 (10.5%)	12 (8.1%)	5 (10.2%)	
21 years or more	9 (8.6%)	21 (14.2%)	2 (4.1%)	

Source: Created by the authors.

(1) *Kruskall-Wallis* test.
(2) *p*-value significant <0.05.

From the perspective of nursing, none of the three hospitals presented dimensions classified as strong for the patient safety culture (positive responses above 75.0%). The nursing team of hospital A pointed out seven fragile dimensions for the patient safety culture (positive responses below 50%). The teams of hospitals B and C each identified nine fragile dimensions. Dimensions 4 – Management support for patient safety, 5 – Overall perceived patient safety, 9 – Teamwork between units, 10 – Staffing, 11 – Shift handoffs or transitions and 12 – Nonpunitive responses to error were classified as fragile areas by nursing of the three hospitals (Table 2).

When comparing the mean positive responses of the three hospitals, from the perspective of the nursing team, dimensions 4 – Management support for patient safety, 5 – Overall perceived patient safety, 6 – Feedback and communication about error, 7 – Communication openness and 11 – Shift handoffs or transitions had a statistically significant difference (p<0.05), as well as the overall average of all dimensions (p=0.013) (Table 2).

Table 2 – Comparison of positive responses from the dimensions of the Hospital Survey on Patient Safety Culture in the three hospitals from the perspective of the nursing team. Divinópolis, Minas Gerais, Brazil – 2018. (N=303) (continued)

Dimensions of *Hospital Survey on Patient Safety Culture*	Mean % of positive responses of *Hospital Survey on Patient Safety Culture* (Standard-deviation)			
	Hospital A	Hospital B	Hospital C	Valor *p* (1)
1 – Teamwork within units	59.0 (±32.1)	48.8 (±32.1)	53.2 (±34.4)	0.052
2 – Supervisor/manager expectations and actions promoting patient safety	57.4 (±33.4)	58.1 (±34.6)	54.8 (±34.4)	0.818
3 – Organizational learning—Continuous improvement	65.2 (±36.5)	58.3 (±34.6)	51.0 (±37.9)	0.059
4 – Hospital management support for patient safety	48.7 (±38.0)	28.7 (±37.1)	20.1 (±27.4)	<0.001 (2)
5 – Overall perceived patient safety	42.0 (±28.6)	31.5 (±25.9)	35.4 (±25.4)	0.012 (2)
6 – Feedback and communication about error	54.4 (±36.7)	43.3 (±35.4)	27.9 (±30.7)	<0.001 (2)
7 – Communication openness	45.7 (±35.3)	56.4 (±35.7)	46.3 (±35.2)	0.037 (2)
8 – Frequency of reported events	57.6 (±44.1)	44.8 (±43.7)	43.1 (±45.1)	0.053
9 – Teamwork across hospital units	37.2 (±32.9)	34.3 (±31.5)	34.9 (±25.9)	0.786

Table 2 – Comparison of positive responses from the dimensions of the Hospital Survey on Patient Safety Culture in the three hospitals from the perspective of the nursing team. Divinópolis, Minas Gerais, Brazil – 2018. (N=303) (conclusion)

Dimensions of *Hospital Survey on Patient Safety Culture*	**Mean % of positive responses of *Hospital Survey on Patient Safety Culture* (Standard-deviation)**			
	Hospital A	**Hospital B**	**Hospital C**	**Valor *p*** (1)
10 – Staffing	41.8 (±25.0)	42.3 (±22.4)	48.1 (±27.3)	0.404
11 – Hospital handoffs and transitions	45.2 (±33.9)	32.5 (±31.1)	30.1 (±26.2)	0.004 (2)
12 – Nonpunitive response to error	14.3 (±21.2)	22.0 (±29.5)	21.4 (±26.4)	0.145
Overall mean	47.4 (±19.8)	41.7 (±18.8)	38.4 (±16.9)	0.013 (2)

Source: Created by the authors.

(1) *Kruskall-Wallis* test.
(2) *p*-value significant <0.05.

Comparing the perception of the nursing teams of the three hospitals, by groups in pairs, regarding the overall mean, there was a statistically significant difference between hospital A and B (p=0.016) and between hospital A and C (p=0.008), inferring that the nursing team of hospital A had a better perceived patient safety culture. As for dimension 4, "Management support for patient safety", there was a significant difference between hospitals A and B, and hospital A and C, both with p<0.001 (Table 3). This indicates that the nursing professionals of hospital A reported better management support compared to other hospital institutions.

Regarding dimension 5, "Overall perceived patient safety", there was a significant difference only between the perception of the nursing teams of hospital A and hospital B (p=0.003). Hospital A had a significantly higher percentage of positive responses than hospital B (p=0.016). Therefore, nursing professionals from hospital A presented better perception of patient safety (Tables 2 and 3).

When analyzing dimension 6, "Feedback and communication about error", there was a statistically significant difference between the perception of the nursing team of all hospitals. Hospital C showed a significantly lower percentage of positive responses in this dimension compared to hospitals A (p<0.001) and B (p=0.007). Hospital B was significantly lower compared to hospital A (p=0.014). Thus, the nursing team from hospital C pointed out greater fragility in the communication of adverse events.

Regarding dimension 7, "Communication openness", there was a statistically significant difference only between the perception of the nursing team of hospital A and hospital B. Hospital B presented a higher percentage of positive responses in this dimension compared to that of hospital A (p=0.017) (Tables 2 and 3).

Finally, dimension 11, "Shift handoffs or transitions", presented a statistically significant difference, according to the perspective of the nursing team of hospital A compared to the nursing in hospitals B and C (Table 3). The data showed that hospital A presented lower frailty regarding shift or shift handoffs activity/care transitions compared to hospitals B (p=0.002) and C (p=0.010).

Table 3 – Multiple comparison of scores for dimensions 4, 5, 6, 7 and 11 and the global mean of the Hospital Survey on Patient Safety Culture instrument, considering the hospital groups in pairs. Divinópolis, Minas Gerais, Brazil – 2018. (N=303) (continued)

Dimensions of the Hospital Survey on Patient Safety Culture	**Valor-*p*** (1)		
	Hospital A x Hospital B	**Hospital A x Hospital C**	**Hospital B x Hospital C**
4 – Hospital management support for patient safety	<0.001 (2)	<0.001 (2)	0.250
5 – Overall perceived patient safety	0.003 (2)	0.150	0.375

Table 3 – Multiple comparison of scores for dimensions 4, 5, 6, 7 and 11 and the global mean of the Hospital Survey on Patient Safety Culture instrument, considering the hospital groups in pairs. Divinópolis, Minas Gerais, Brazil – 2018. (N=303) (conclusion)

Dimensions of the Hospital Survey on Patient Safety Culture	Valor-*p* (1)		
	Hospital A x Hospital B	Hospital A x Hospital C	Hospital B x Hospital C
6 – Feedback and communication about error	0.014 (2)	<0.001 (2)	0.007 (2)
7 – Communication openness	0.017 (2)	0.917	0.084
11 – Shift handoffs/ transitions	0.002 (2)	0.010 (2)	0.869
Overall Mean	0.016 (2)	0.008 (2)	0.409

Source: Created by the authors.

(1) *Kruskall-Wallis* test.
(2) Significant *p*-value considering Bonferroni correction (p <0.017).

A statistically significant difference (p=0.027) was identified in the assessment of patient safety in the area/unit of work in the hospital. In hospital B, most nursing professionals (55.6%) perceived patient safety as regular. Regarding the number of reports of adverse events recorded in the past 12 months, 65.3% of the nursing team of hospital A, 62.2% of hospital B and 79.6% of hospital C reported not having made any notification.

Discussion

The sociodemographic and professional characterizations of the participants of this study converge with similar findings from other Brazilian studies on the subject, which identified a predominance of females among nursing professionals, the majority belonged to the professional category of nursing technicians or auxiliaries, with complete high school education, high workload, more than 40 hours per week, time below five years of work in the institution and exclusive employment[7,15-16]. Human resources and its characteristics are considered factors that can influence safe care[7].

From the perspective of the nursing team, none of the three hospitals under study presented positive dimensions for the patient safety culture of the HSOPSC of the AHRQ[4]. Brazilian studies conducted with nursing teams also identified a fragile culture of patient safety (49.2%)[7] and (45%)[16]. International studies, one conducted in Hungary and the other in Malaysia, found a fragile culture of patient safety, 52.2%[17] and 50.1%[18], respectively. Therefore, the challenges related to the improvement of the patient safety culture in hospital institutions occur regionally, nationally and internationally.

When considering the dimensions of the HSOPSC that were fragile under the perception of the nursing team in the three hospitals studied, dimension 4 stands out, "Management support for patient safety". Organizational leadership plays a fundamental role in the construction and consolidation of a culture in which errors and failures are used as a form of knowledge and continuous learning[19]. Likewise, nursing leadership is a critical factor for the success of safe nursing care.

Brazilian studies developed with nursing teams also identified frailty in dimension 5, "Overall perceived patient safety"[7,16]. Similarity is observed in two other studies involving a multidisciplinary team, and one of the studies was conducted in hospitals with different managements[20-21]. This finding may be related to vulnerability in the performance of procedures and processes to mitigate risks and errors, which points to weaknesses in hospitalization units in the hospital area that can affect patient safety.

Dimension 9, "Teamwork across units", was also considered an area of fragility for the patient safety culture by the nursing teams of the three hospitals. This result refers to a difficulty of

cooperation and communication between the sectors, necessary for the good progress of the work. Developing a harmonious, respectful and cooperative work environment is important, because professionals feel valued and respected, collaborating in teamwork and providing quality care to patients[19].

Dimension 10, "Staffing", also pointed out as fragile by the nursing team, is influenced by the number of professionals in health institutions. Inadequate sizing of professionals negatively influences the assessment of patient safety. A study conducted in England showed that the quantitative reduction of the nursing team was associated with a higher risk of death during hospitalization. The risk of death was increased by 3% for each day in which the nursing team was dimensioned below the necessary[22].

Another important aspect for the patient safety culture is addressed in dimension 11, "Shift handoffs/transitions", which, in this study, was weakened in the perception of nursing professionals in the three hospitals. The shift handoff/transition can be compromised by several factors, such as increased workload, omission of patient data, interruptions and parallel conversations involving other people during the execution of a main activity[18]. Similar findings indicate that the shift handoff performed by nursing can ensure continuity of care and ensure patient safety, as it allows the transmission of clinical evolution for continuity of specific care. Therefore, it is necessary to standardize the transmission of information through protocols and tools[3,7,20].

Dimension 12, "Nonpunitive responses to error", was also pointed out as fragility in the safety culture by the nursing team of the three hospitals. This result corroborates investigations of other studies that evidenced the need to change the culture of culpability to a process based on learning with errors within organizations[5,15-18]. It is necessary, therefore, to stimulate the process of notification of adverse events in the institutions, in order to favor a more effective communication and, mainly, to provide the constant learning of the professionals involved[7,23].

Regarding the comparison of the 12 dimensions of the HSOPSC instrument, under the perception of the nursing teams of the three hospitals, the philanthropic hospital (hospital A) stands out, for having presented a better perception of the patient's safety culture in four dimensions. This institution also presented a better overall mean of patient safety culture compared to other institutions (B and C), which have public management. This difference may be related to the hospital work environment, such as inadequate physical conditions, a characteristic found mainly in public hospitals. On the other hand, private institutions, as well as those of a philanthropic nature, aim to achieve economic and financial goals and, consequently, invest in strategies that reduce costs arising from failures and errors related to the provision of health services[21]. Therefore, private hospitals tend to present a better assessment for the culture of patient safety in relation to state or federal management hospitals[21].

Most nursing professionals in this study showed a general perception of patient safety culture classified as regular. This result differs from the findings of a research developed with nurses in Turkey[19], which identified a general perception of positive patient safety culture (50.2%), considered very good or excellent. However, the perception of a negative safety culture found in the present study is similar to another Brazilian study that pointed out that 47.9% of the professionals rated it as regular, 10.3% bad and 12.0% very bad[21]. To change this scenario, strategies for improvements in the work processes of professionals are necessary, involving risk management, adequate dimensioning of the number of professionals, team training on patient safety, improvement in the notification system based on open communication and guarantee of continuous organizational learning[5,7].

The study revealed low notification of adverse events in the last 12 months by nursing professionals in the three hospitals, which also refers to dimension 6, "Feedback and communication about error", pointed out as fragile.

This demonstrates that open communication on the occurrence of adverse events related to health care has not yet been established. Therefore, there is underreporting of adverse events in hospitals, which can negatively affect the quality of care provided to the patient. The factors associated with underreporting are: work overload, lack of knowledge of the notification system, fear due to the punitive culture to error, organizational and cultural differences and lack of policies that encourage the communication of error[7,17,19-20].

A limitation of the study is the evaluation of the patient safety culture only from the perspective of the nursing team, since the safety culture covers the entire multidisciplinary team working in the hospital setting. Furthermore, the conclusions should not be generalized, since the study was conducted in three regional reference hospitals with different characteristics. The uniqueness of a professional category and the different institutional realities can directly impact the perception of the patient's safety culture. Thus, other studies with multiprofessional evaluations are needed, in which the different institutional contexts are considered.

On the other hand, the findings of this study will contribute to the direction of specific interventions for the areas considered fragile by the nursing team in each institution scenario of the study. Strengthening the perceived patient safety culture among the members of the nursing team, which is the largest group of professionals from hospital institutions, may impact on the improvement of the patient's safety culture in general.

Conclusion

The nursing teams of the three hospitals, the scenario of this study, revealed weaknesses in all dimensions of the HSOPSC instrument on the culture of patient safety. It is necessary that managers and nursing leadership develop strategies to strengthen the safety culture in hospitals with a focus on continuous improvement of care.

Most of the nursing professionals in the hospitals analyzed classified patient safety as regular, but the patient safety culture was more strengthened in hospital A, philanthropic. This suggests a possible influence of philosophy and service management on the perception of the safety culture.

The dimension about error communication was fragile in the three hospitals, reinforced by the fact that, in the last 12 months, few nursing professionals have made reports of an adverse event, which highlights the need to break the paradigm of a punitive culture, still prevailing, for a culture based on learning based on errors.

The findings of the study bring important contributions to hospital managers and nursing science, as it points to weaknesses in hospitals and can be an instrument for improvements in strengthening the safety culture. It is recommended the reproducibility of similar research in different health services and the inclusion of other professional categories in the evaluation, to inspire hospital leadership on this theme.

Collaborations:

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