

EVALUATION OF PATIENT SAFETY CULTURE: PERCEPTION OF NURSING WORKERS AND ASSOCIATED FACTORS

AVALIAÇÃO DA CULTURA DE SEGURANÇA DO PACIENTE: PERCEPÇÃO DE TRABALHADORES DE ENFERMAGEM E FATORES ASSOCIADOS

EVALUACIÓN DE LA CULTURA DE SEGURIDAD DEL PACIENTE: PERCEPCIÓN DE LOS TRABAJADORES DE ENFERMERÍA Y FACTORES ASOCIADOS

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Objectives: to evaluate the patient safety culture in the perception of nursing workers and to identify the association of this culture with sociodemographic and professional variables of workers. **Method:** cross-sectional study with a quantitative approach, developed in a general public hospital in Salvador, Bahia, Brazil, with 180 nursing workers. The Hospital Survey on Patient Safety Culture questionnaire was used and descriptive statistics, association and correlation tests were used to analyze the data. **Results:** no dimension of the culture was considered strengthened, the safety grade was classified as acceptable by 58.0% of the workers and 63.9% revealed no notification in the last year. Culture was associated with gender, professional category, type and amount of employment, workplace, age and professional and service experience. **Conclusion:** the culture proved to be fragile pointing to the need for interventions, especially regarding the associated factors.

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

Objetivos: avaliar a cultura de segurança do paciente na percepção de trabalhadores de enfermagem e identificar a associação dessa cultura com variáveis sociodemográficas e profissionais dos trabalhadores. *Método:* estudo transversal, com abordagem quantitativa, desenvolvido em hospital público geral de Salvador, Bahia, Brasil, com

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180 trabalhadores de enfermagem. Foi empregado o questionário Hospital Survey on Patient Safety Culture e utilizou-se estatística descritiva, testes de associação e de correlação para análise dos dados. Resultados: nenhuma dimensão da cultura foi considerada fortalecida, a nota de segurança foi classificada como regular por 58,0% dos trabalhadores e 63,9% revelaram não efetuar notificação no último ano. A cultura esteve associada ao sexo, à categoria profissional, ao tipo e à quantidade de vínculo trabalhista, ao local de trabalho, à idade e à experiência profissional e no serviço. Conclusão: a cultura revelou-se fragilizada apontando para necessidade de intervenções, especialmente no que tange aos fatores associados.

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

Objetivos: evaluar la cultura de seguridad del paciente en la percepción de trabajadores de enfermería e identificar la asociación de esa cultura con variables sociodemográficas y profesionales de los trabajadores. *Método:* estudio transversal, con abordaje cuantitativo, desarrollado en hospital público general de Salvador, Bahía, Brasil, con 180 trabajadores de enfermería. Se empleó el cuestionario Hospital Survey on Patient Safety Culture y se utilizó estadística descriptiva, pruebas de asociación y de correlación para el análisis de los datos. *Resultados:* ninguna dimensión de la cultura fue considerada fortalecida, la nota de seguridad fue clasificada como regular por 58,0% de los trabajadores y 63,9% revelaron no efectuar notificación en el último año. La cultura estuvo asociada al sexo, a la categoría profesional, al tipo y a la cantidad de vínculo laboral, al lugar de trabajo, a la edad y a la experiencia profesional y en el servicio. *En conclusión:* la cultura se ha mostrado debilitada señalando la necesidad de intervenciones, especialmente en lo que respecta a los factores asociados.

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

Introduction

Incidents related to patient safety are a serious public health problem, because despite advances in recent decades, the damage caused by avoidable events due to failures in health services remain frequent. Thus, it is necessary to have a systemic view of the risks of health care, recognizing the causes that allow the occurrence of adverse events (AE), creating learning opportunities and thus enabling safer processes⁽¹⁾.

In this understanding, national and international organizations have been publishing recommendations and fostering the importance of safe practices, such as the Global Patient Safety Action Plan, of the World Health Organization, which aims to provide guidance to eliminate preventable harm in health care. This Plan highlights the strengthening of the Patient Safety Culture (PSC) advocating that a positive PSC should reflect the attitudes, beliefs, values, skills and practices of health professionals, as well as managers and leaders, guided by the commitment of leadership, transparency, open and respectful communication, learning from

mistakes, implementing best practices and carefully balancing a policy of non-blame and accountability⁽¹⁾.

In the Brazilian context, the National Patient Safety Program (NPSP) also emphasizes the importance of PSC, configuring itself in five characteristics operationalized by safety management: the involvement of all workers in responsibility for their own safety, for the safety of their colleagues, patients and family members; the prioritization of safety above financial and operational targets; the encouragement and reward in identifying, reporting and resolving safety-related problems; the promotion of organizational learning in the occurrence of incidents; and the provision of resources, structure and accountability for the effective maintenance of safety⁽²⁾.

Given its importance for health services, especially for the hospital sector, the evaluation of PSC has been widely implemented both worldwide and nationally⁽³⁻⁶⁾. In addition, studies that address PSC have enabled the analysis of critical aspects and the proposition

of more assertive intervention plans in health organizations. In this context, the evaluation of PSC in the perception of nursing workers, as well as the verification of the factors that may be associated with this perception, becomes imperative to enable reflection on the conditions and the work environment, in addition to detecting points that require improvements to mitigate avoidable damage⁽⁷⁻⁸⁾.

Thus, this study aimed to evaluate the culture of patient safety in the perception of nursing workers and identify the association of this culture with the sociodemographic and professional variables of workers.

Method

This is an exploratory, analytical, cross-sectional study with a quantitative approach, based on the guidelines for observational studies, Strengthening the Reporting of Observational Studies in Epidemiology (STROBE)⁽⁹⁾. The research was developed in a general public hospital in Salvador, Bahia, which is under direct administration of the State Health Department, composed of approximately 600 operational beds with high complexity profile.

The study population were nurses, nursing technicians and assistants of the units of Medical Clinic, Surgical Clinic, Adult and Neonatal Intensive Care and Obstetrics. The exclusion criteria were: workers with less than 6 months in the institution; who were on vacation and/or leave from the service; and who exercised exclusively administrative activities. After applying these criteria, 420 workers were eligible. With regard to sample sizing, this article derives from a broader research that aimed to correlate PSC to the Quality of Professional Life, and thus, the sample calculation was based on a correlation coefficient ≥ 0.25 , a significance level of 5% and a test power of 90%. Based on these parameters, the sample collected was 180 nursing workers. The type of sampling was non-probabilistic, by convenience.

Data collection occurred from January to March 2020, using a sociodemographic and

professional questionnaire to characterize the sample and the translated and validated version for Brazil of the Hospital Survey on Patient Safety Culture (HSOPSC)⁽¹⁰⁾.

The HSOPSC presents 42 statements distributed in 12 dimensions, namely: D1: Teamwork within the units; D2: Overall perceptions of patient safety; D3: Non-punitive responses to errors; D4: Staffing; D5: Organizational learning - continuous improvement; D6: Supervisor/manager expectations & actions promoting patient safety; D7: Communication openness; D8: Feedback & communication about error; D9: Frequency of events reported; D10: Handoffs & transitions; D11: Management support for patient safety; D12: Teamwork across units. In addition, it evaluates the patient safety grade and the number of events reported by workers in the last 12 months. This questionnaire has incorporated in its composition a sociopsychological scale with five levels of psychometric measures, in which, for analysis purposes, measure 1 is considered the worst evaluation and 5, the best evaluation.

After collection, the data were organized and stored in Microsoft Excel spreadsheets. Regarding the descriptive analyses of the PSC, the percentage of positive responses for each dimension was calculated. The parameter adopted was that the dimensions that reached the percentage of 75% or more of positive responses would be considered as strengthened areas, while dimensions with 50.0% or less of positive responses, as fragile areas, as suggested by the authors of the original questionnaire⁽¹¹⁾. The patient safety grade and the number of reported events were analyzed using relative and absolute frequencies. Means and standard deviations were calculated, as well as maximum and minimum values; median; quartiles for all dimensions of PSC; patient safety grade; number of reported events; and total patient safety (TPS), calculated using the 12 dimensions of PSC.

For the analysis of factors associated with PSC, the variables were organized into independent: sex; marital status (classified as with partner: married and stable union and without partner: single, widowed and divorced); professional

category; level of education; workplace; work shifts; type and number of work relationships; age; professional experience and experience in the service; and in dependent variables: PSC dimensions; number of reported events; and total patient safety. Next, bivariate association tests were implemented, the Student's t-test, the Wilcoxon-Mann-Whitney and the Brunner-Munzel test for the dichotomous categorical independent variables and the Kruskal Wallis test and ANOVA model for the categorical variables with three or more levels. In the case of numerical independent variables, the Spearman Correlation Test was used to assess the association with dependent variables.

Residual normality was assessed by the Shapiro-Wilk test, and homoscedasticity by the Levene test; significance level was 5% (95% confidence level) for all tests implemented. The statistical program R was used for the analysis.

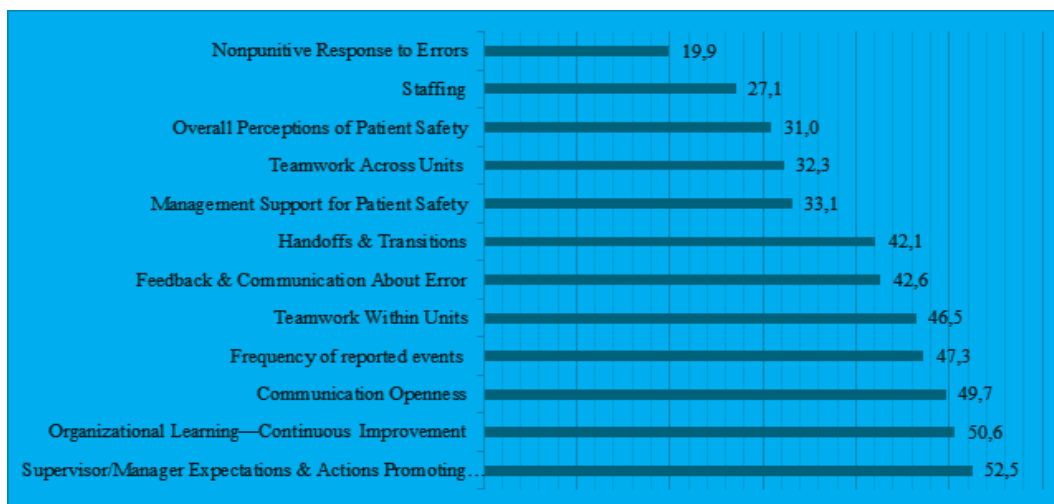
This research complied with the ethical principles that involve research with human beings, being approved by the Research Ethics Committee (REC) of the Nursing School of the University of São Paulo (Opinion n. 3.285.766, Certificate of Presentation of Ethical Appreciation (CAAE): 08695319.4.0000.5392) and the hospital scenario of the study (Opinion n. 3.731.330, CAAE: 08695319.4.3002.5028).

Results

The sample consisted of 180 nursing workers, mostly female (87.8%), aged 29 to 48 years (75.4%) and with partner (Married/Stable Union) (49.8%). In the professional category, the highest number was nursing technicians (52.8%) and nurses (40.6%). The most prevalent education levels were high school (35.8%) and graduation (27.4%). Most of the workers worked in the units of Surgical Clinics (34.4%), Medical Clinics (20.6%) and Adult Intensive Care Unit (20.0%). Regarding professional experience, the periods from 6 months to 4 years (22.8%) and from 5 years to 9 years (22.2%) predominated; 50.0% had from 6 months to 4 years. The type of link most evident was outsourced contract (60.1%). The rotation shift was the most prevalent (54.8%) and the majority of workers answered to have two labor contracts (49.4%).

Graph 1 shows the percentage of positive responses to the PSC dimensions, showing that no dimension reached 75%. The dimension *Supervisor/Manager Expectations & Actions Promoting Patient Safety* presented the best evaluation with 52.5%. Ten dimensions presented scores below 50.0%, being considered fragile. Among these, *Non-Punitive Responses to Errors* stood out with 19.9%.

Graph 1 – Percentage of positive responses by Patient Safety Culture dimensions

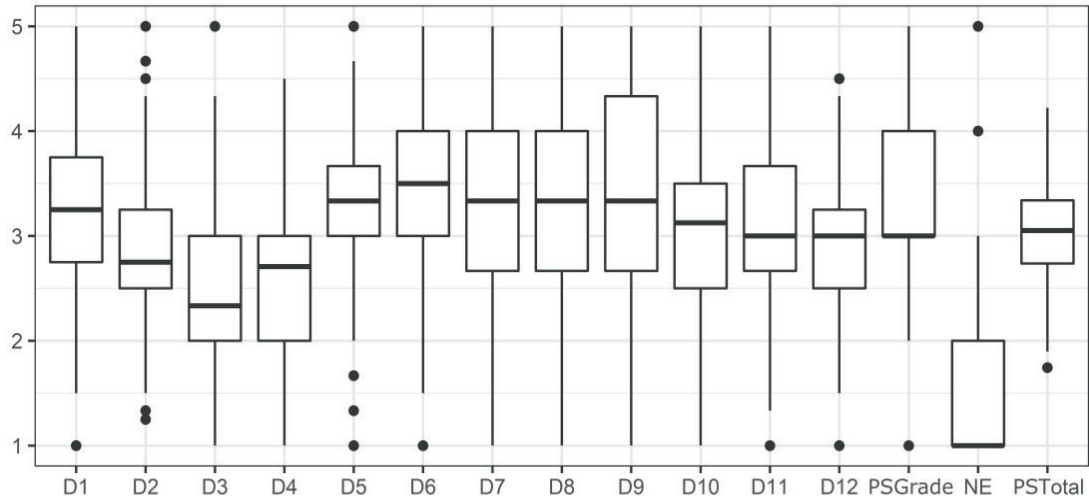


Source: created by the authors.

Graph 2 presents the results of the PSC regarding its distribution, and it is possible to observe that the dimension D6 presented the

highest median, and the dimension D3, the lowest. It is also observed that half of the dimensions presented discrepant values, especially D5.

Graph 2 – Distribution of scores across the 12 dimensions of Patient Safety Culture, Patient Safety Grade, Number of Events Reported and Total Patient Safety



Source: created by the authors.

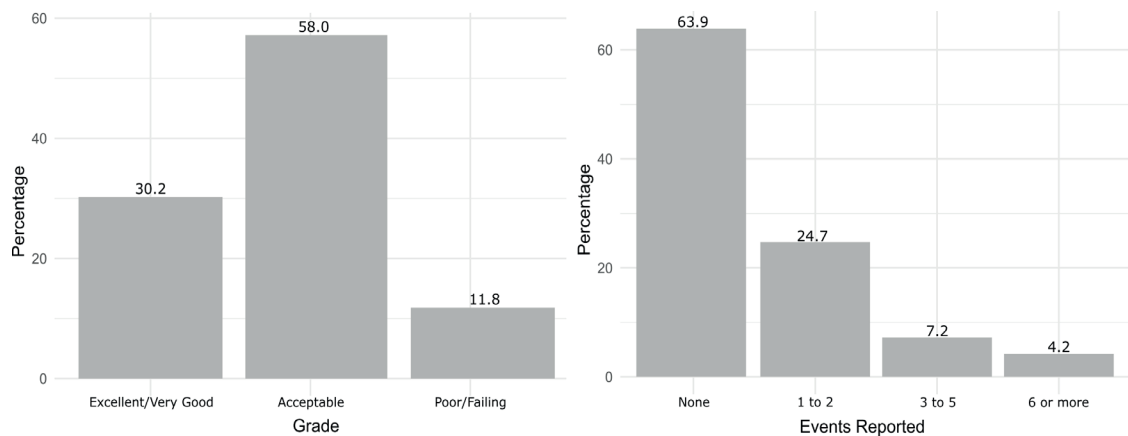
PS Grade: Patient safety grade; NE: Number of events reported; PSTotal: Total Patient Safety.

D1: Teamwork within the units; D2: Overall perceptions of patient safety; D3: Non-punitive responses to errors; D4: Staffing; D5: Organizational learning- continuous improvement; D6: Supervisor/manager expectations & actions promoting patient safety; D7: Communication openness; D8: Feedback & communication about error; D9: Frequency of events reported; D10: Handoffs & transitions; D11: Management support for patientsafety; D12: Teamwork across units.

Regarding the patient safety grade, most workers (58.0%) judged as Acceptable. In the case of the number of notified events, 63.9% of

the participants did not make notification in the last year (Graphic 3).

Graph 3 – Distribution of the percentage of responses to the Patient Safety Grade and the number of events reported in the last 12 months



Source: created by the authors.

As for the factors associated with PSC, demonstrated in Tables 1a, 1b, 1c and 1d, it can be shown that sex was associated with TPS and teamwork among the units; the professional category with non-punitive responses to errors, the Staffing and the number of notifications; the type of employment to the TPS, to the three dimensions and the number of events

notified; the shift to the handover/transfers; the number employments to the notification; and the workplace to the TPS, to six dimensions and notification of events. The variables marital status and schooling did not show association with PSC, thus, they were not explained in these tables.

Table 1a – Analysis of the association of Total Patient Safety and the dimensions of Patient Safety Culture with the sociodemographic and professional variables of nursing workers. Salvador, Bahia, Brazil – 2021. (N=180)

Variable	n *	TPS	D1		D2		D3		
		Mean (Standard deviation)	p	Mean (Standard deviation)	p	Mean (Standard deviation)	p	Mean (Standard deviation)	p
Sex									
Female	158	3.09 (0.46)	0.009 ⁽¹⁾	3.23(0.78)	0.18 ⁽²⁾	2.85(0.72)	0.36 ⁽²⁾	2.60(0.80)	0.61 ⁽²⁾
Male	22	2.81 (0.50)		2.99(0.77)		2.68(0.66)		2.44(0.75)	
Category									
Nursing	106	3.19 (0.92)	0.37 ⁽¹⁾	3.18(0.81)	0.67 ⁽¹⁾	2.82(0.77)	0.84 ⁽²⁾	2.49(0.83)	0.03 ⁽²⁾
Assistant/ Technician									
Nurse	73	3.23 (0.66)		3.23(0.73)		2.85(0.62)		2.72(0.74)	
Type of employment									
Contract	104	3.12 (0.46)	0.03 ⁽¹⁾	3.23(0.81)	0.49 ⁽¹⁾	2.95(0.71)	0.004 ⁽¹⁾	2.67(0.82)	0.11 ⁽²⁾
Statutory	69	2.96 (0.49)		3.15(0.73)		2.64(0.70)		2.46(0.78)	
Shift									
Fixed	80	3.09 (0.50)	0.52 ⁽¹⁾	3.28(0.71)	0.27 ⁽¹⁾	2.85(0.74)	0.82 ⁽²⁾	2.59(0.73)	0.73 ⁽²⁾
Rotative	97	3.04 (0.46)		3.1 (0.82)		2.82(0.70)		2.58(0.86)	
Number employments									
One	87	3.03 (0.47)	0.47 ⁽¹⁾	3.22(0.84)	0.78 ⁽²⁾	2.80(0.72)	0.58 ⁽¹⁾	2.57(0.78)	0.80 ⁽²⁾
Two or more	93	3.08 (0.48)		3.18(0.72)		2.86(0.71)		2.60(0.82)	
Place									
Surgical clinics	62	3.11 (0.44)		3.28(0.74)		2.93(0.72)		2.47(0.68)	
Medical clinics	37	3.01 (0.48)		3.24(0.84)		2.75(0.83)		2.49(0.81)	
Obstetrics	18	3.29 (0.49)	0.001 ⁽³⁾	3.32(0.73)	0.58 ⁽⁴⁾	2.88(0.56)	0.55 ⁽³⁾	3.00(0.90)	0.08 ⁽⁴⁾
Adult Intensive Care Unit	36	2.81 (0.52)		3.09(0.79)		2.83(0.71)		2.50(0.89)	
Neonatal Intensive Care Unit	27	3.19 (0.32)		3.03(0.80)		2.68(0.60)		2.79(0.74)	

Source: created by the authors.

⁽¹⁾Student's t-test; ⁽²⁾Wilcoxon-Mann-Whitney Test; ⁽³⁾ANOVA Model; ⁽⁴⁾Kruskal-Wallis Test.

TPS: Total Patient Safety; D1: Teamwork within the units; D2: Overall perceptions of patient safety; D3: Non-punitive responses to errors.

* Due to the possibility of participants not responding to all of the sociodemographic and professional variables, it should be noted that some variables did not reach the total N of 180.

Table 1b – Analysis of the association of the dimensions of Patient Safety Culture and the Number of reported events with the sociodemographic and professional variables of nursing workers. Salvador, Bahia, Brazil – 2021. (N=180)

Variable	n [*]	D4		D5		D6		D7	
		Mean (Standard deviation)	p	Mean (Standard deviation)	p	Mean (Standard deviation)	p	Mean (Standard deviation)	p
Sex									
Female	158	2.64(0.68)	0.37 ⁽¹⁾	3.37(0.75)	0.11 ⁽²⁾	3.43(0.82)	0.07 ⁽²⁾	3.42(0.83)	0.17 ⁽²⁾
Male	22	2.50(0.79)		3.08(0.79)		3.03(0.96)		3.03(1.08)	
Category									
Nursing	106	2.53(0.66)	0.04 ⁽²⁾	3.31(0.80)	0.70 ⁽²⁾	3.31(0.95)	0.25 ⁽⁵⁾	3.40(0.93)	0.66 ⁽²⁾
Ass/Tec									
Nurse	73	2.75(0.72)		3.38(0.70)		3.49(0.75)		3.34(0.78)	
Type of employment									
Contract	104	2.71(0.65)	0.03 ⁽²⁾	3.42(0.78)	0.20 ⁽²⁾	3.45(0.85)	0.26 ⁽²⁾	3.31(0.85)	0.37 ⁽¹⁾
Statutory	69	2.46 (0.74)		3.22(0.73)		3.29(0.92)		3.43(0.92)	
Shift									
Fixed	80	2.63(0.67)	0.84 ⁽¹⁾	3.37(0.69)	0.64 ⁽²⁾	3.36(0.86)	0.43 ⁽²⁾	3.27(0.94)	0.12 ⁽¹⁾
Rotative	97	2.61(0.72)		3.31(0.82)		3.43(0.88)		3.47(0.81)	
Number employments									
One	87	2.53(0.68)	0.08 ⁽¹⁾	3.24(0.70)	0.06 ⁽²⁾	3.39(0.89)	0.83 ⁽²⁾	3.33(0.85)	0.58 ⁽²⁾
Two or more	93	2.71(0.69)		3.43(0.81)		3.38(0.87)		3.42(0.89)	
Place									
Surgical clinics	62	2.84(0.56)		3.34(0.66)		3.46(0.82)		3.20(0.87)	
Medical clinics	37	2.47(0.73)		3.42(0.75)		3.43(0.93)		3.34(0.84)	
Obstetrics	18	2.65(0.70)		3.70(0.68)		3.63(0.91)		3.85(0.78)	
Adult Intensive Care Unit	36	2.35(0.74)	0.01 ⁽⁵⁾	2.94(0.88)	0.01 ⁽⁴⁾	2.90(0.92)	0.01 ⁽⁴⁾	3.16(0.93)	0.01 ⁽⁵⁾
Neonatal Intensive Care Unit	27	2.66(0.71)		3.51(0.71)		3.63(0.58)		3.79(0.65)	

Source: created by the author.

⁽¹⁾ Student's t Test; ⁽²⁾ Wilcoxon-Mann-Whitney Test; ⁽³⁾ ANOVA Model; ⁽⁴⁾ Kruskal-Wallis Test; ⁽⁵⁾ Brunner-Munzel Test.

D4: Staffing; D5: Organizational learning - continuous improvement; D6: Supervisor/manager expectations & actions promoting patient safety; D7: Opening communication.

* Due to the possibility of participants not responding to all of the sociodemographic and professional variables, it should be noted that some variables did not reach the total N of 180.

Table 1c – Analysis of the association of the dimensions of Patient Safety Culture and the Number of reported events with the sociodemographic and professional variables of nursing workers. Salvador, Bahia, Brazil – 2021. (N=180)

Variable	D8			D9			D10		
	n*	Mean (Standard deviation)	p	n*	Mean (Standard deviation)	p	n*	Mean (Standard deviation)	p
Sex									
Female	158	3,34(0,99)	0,07 ⁽²⁾	156	3,36(1,14)	0,87 ⁽²⁾	158	3,13(0,75)	0.29 ⁽¹⁾
Male	22	2,88(1,07)		22	3,42(1,16)		22	2,95(0,80)	
Category									
Nursing Assistant/ Technician	106	3,30(1,07)	0,98 ⁽²⁾	105	3,40(1,16)	0,86 ⁽²⁾	106	3,14(0,80)	0.47 ⁽¹⁾
Nurse	73	3,28(0,91)		72	3,35(1,11)		73	3,06(0,70)	
Type of employment									
Contract	104	3,32(1,03)	0,75 ⁽²⁾	102	3,43(1,11)	0,71 ⁽²⁾	104	3,14(0,73)	0.45 ⁽¹⁾
Statutory	69	3,26(0,98)		69	3,35(1,18)		69	3,05(0,80)	
Shift									
Fixed	80	3,35(1,05)	0,39 ⁽²⁾	80	3,39(1,15)	0,76 ⁽²⁾	80	3,26(0,79)	0.02 ⁽¹⁾
Rotative	97	3,24 (0,98)		95	3,38(1,14)		97	2,99(0,72)	
Number employments									
One	87	3,22(0,99)	0,48 ⁽²⁾	87	3,40(1,15)	0,82 ⁽²⁾	87	3,15(0,79)	0.46 ⁽¹⁾
Two or more	93	3,34(1,02)		91	3,34(1,13)		93	3,07(0,73)	
Place									
Surgical clinics	62	3,30(0,91)	0,01 ⁽³⁾	62	3,38(1,19)	0,66 ⁽⁴⁾	62	3,14(0,70)	<0.001 ⁽³⁾
Medical clinics	37	2,95(0,94)		35	3,52(1,17)		37	3,02(0,77)	
Obstetrics	18	3,94(0,88)		18	3,52(0,83)		18	3,29(0,49)	
Adult Intensive Care Unit	36	3,03(1,06)		36	3,17(1,21)		36	2,74(0,81)	
Neonatal Intensive Care Unit	27	3,61(1,05)		27	3,32(1,08)		27	3,55(0,72)	

Source: created by the authors.

⁽¹⁾ Student's t Test; ⁽²⁾ Wilcoxon-Mann-Whitney Test; ⁽³⁾ ANOVA Model; ⁽⁴⁾ Kruskal-Wallis Test;

D8: Feedback & communication about error; D9: Frequency of events reported; D10: Handoffs & transitions.

* Due to the possibility of participants not responding to all of the sociodemographic and professional variables, it should be noted that some variables did not reach the total N of 180.

Table 1d – Analysis of the association of the dimensions of Patient Safety Culture and the Number of reported events with the sociodemographic and professional variables of nursing workers. Salvador, Bahia, Brazil – 2021. (N=180) (continued)

Variable	D11			D12			NE		
	n*	Mean (Standard deviation)	p	n*	Mean (Standard deviation)	p	n*	Mean (Standard deviation)	p
Sex									
Female	158	3.05(0.81)	0.15 ⁽⁵⁾	158	3.00(0.65)	0.01 ⁽²⁾	146	1.53(0.87)	0.97 ⁽²⁾
Male	22	2.73(1.02)		22	2.69(0.61)		20	1.60(1.05)	

Table 1d – Analysis of the association of the dimensions of Patient Safety Culture and the Number of reported events with the sociodemographic and professional variables of nursing workers. Salvador, Bahia, Brazil – 2021. (N=180) (conclusion)

Variable	D11			D12			NE		
	n*	Mean (Standard deviation)	p	n*	Mean (Standard deviation)	p	n*	Mean (Standard deviation)	p
Category									
Nursing Ass/ Tec	106	2.93(0.93)	0.17 ⁽⁵⁾	106	2.98(0.72)	0.62 ⁽¹⁾	94	1.33(0.61)	0.001 ⁽⁵⁾
Nurse	73	3.12(0.68)		73	2.93(0.55)		71	1.83(1.11)	
Type of employment									
Contract	104	3.05(0.81)	0.57 ⁽²⁾	104	3.08(0.65)	0.002 ⁽¹⁾	95	1.68(1.02)	0.04 ⁽⁵⁾
Statutory	69	2.94(0.91)		69	2.77(0.64)		65	1.37(0.65)	
Shift									
Fixed	80	3.09(0.76)	0.25 ⁽²⁾	80	2.95(0.66)	0.95 ⁽²⁾	76	1.49(0.84)	0.58 ⁽²⁾
Rotative	97	2.94(0.90)		97	2.96(0.66)		88	1.58(0.93)	
Number employments									
One	87	2.94(0.91)	0.26 ⁽²⁾	87	2.99(0.66)	0.57 ⁽¹⁾	87	1.44(0.95)	0.01 ⁽²⁾
Two or more	93	3.07(0.77)		93	2.93(0.65)		93	1.64(0.83)	
Place									
Surgical clinics	62	3.12(0.80)	0.14 ⁽³⁾	62	3.02(0.65)	0.26 ⁽³⁾	54	1.69(1.11)	0.01 ⁽⁴⁾
Medical clinics	37	2.97(0.84)		37	3.00(0.62)		34	1.59(0.99)	
Obstetrics	18	3.13(0.98)		18	3.10(0.57)		18	1.72(0.83)	
Adult Intensive Care Unit	36	2.7(0.97)		36	2.75(0.74)		33	1.12(0.33)	
Neonatal Intensive Care Unit	27	3.14(0.53)		27	2.94(0.64)		27	1.59(0.64)	

Source: created by the authors.

⁽¹⁾ Student's t Test; ⁽²⁾ Wilcoxon-Mann-Whitney Test; ⁽³⁾ ANOVA Model; ⁽⁴⁾ Kruskal-Wallis Test; ⁽⁵⁾ Brunner-Munzel Test;

D11: Management support for patient safety; D12: Teamwork across units; NE: Number of safety events reported in the last 12 months.

*Due to the possibility of participants not responding to all of the sociodemographic and professional variables, it should be noted that some variables did not reach the total N of 180.

Age was negatively associated with the overall perception of patient safety, non-punitive responses to errors, and reporting of events. Professional experience was negatively associated with total patient safety and overall perception of patient safety, non-punitive responses to

errors, shift handover/transfer, and teamwork between units. In contrast, greater professional experience was associated with better assessment of the Staffing, while experience in the service was positively associated with non-punitive responses to errors and Staffing (Table 2).

Table 2 – Analysis of correlations between Age, Professional Experience, Experience in the service and the 12 dimensions of Patient Safety Culture and the Number of Notified Events. Salvador, Bahia, Brazil – 2021. (N=180) (continued)

Variable	Age	Professional Experience	Experience in the service
D1 Teamwork within units	0.09	0.04	-0.02
D2 Overall perceptions of patient safety	-0.17(1)	-0.28(3)	-0.21

Table 2 – Analysis of correlations between Age, Professional Experience, Experience in the service and the 12 dimensions of Patient Safety Culture and the Number of Notified Events. Salvador, Bahia, Brazil – 2021. (N=180) (conclusion)

Variable	Age	Professional Experience	Experience in the service
D3 Non-punitive responses to errors	-0.20(2)	-0.23(2)	0.20(2)
D4 Staffing	0.09	0.21(2)	0.16(1)
D5 Organizational learning - continuous improvement	-0.04	-0.08	-0.04
D6 Supervisor/manager expectations & actions promoting patient safety	-0.04	-0.13	-0.11
D7 Communication Openness	0.01	-0.03	-0.01
D8 Feedback & communication about error	0.00	-0.03	-0.04
D9 Frequency of events reported	0.11	0.00	-0.03
D10 Handoffs & transitions	0.00	-0.19(1)	-0.17(1)
D11 Management support for patient safety	-0.01	-0.11	-0.06
D12 Teamwork across units	-0.11	-0.18(1)	-0.14
Number of safety events reported in the last 12 months	-0.16(1)	-0.11	-0.21(2)
Total Patient Safety	-0.06	-0.20(2)	-0.17(1)

Source: created by the authors.

Spearman Correlation Test: (1) p-value <0.05; (2) p-value <0.01; (3) p-value <0.001.

Discussion

The results observed in this study pointed to the need for improvements in all areas studied. In this sense, a scope review aimed to describe the characteristics of PSC in Brazilian hospitals analyzed 36 studies and showed that, in 27, there were also no strengthened PSC dimensions⁽⁵⁾. A similar result was also found in a study with three hospitals in Minas Gerais, in which no dimension was identified as a strong area of PSC⁽⁶⁾. These findings indicate that, even though patient safety is an essential aspect for the quality of health services, and existing, in Brazil, since 2013, the PNSP, the challenge for its effectiveness through PSC is enormous. It is noteworthy that large-scale programs, such as the PNSP, find, at the local level, several obstacles for their implementation concerning especially difficulties related to human, material and financial resources⁽¹²⁾.

In this way, it is essential that strategies are structured that can improve PSC, highlighting the need to implement specific training programs, the promotion of open communication in the work environment, the incentive to report incidents and the non-punitive culture of errors⁽¹³⁾.

Regarding the specific analysis of the dimensions of PSC, the Supervisor/Manager Expectations & Actions Promoting Patient Safety was the one that achieved the best evaluation, a result corroborated in other studies^(4,7,14-16). Positive results in this area demonstrate that leading nurses foster PSC and encourage the team for its implementation. In this sense, a research pointed out that the nurse usually leads the process of patient safety in the health organization, being a multiplier and demonstrating engagement for the cause, which was perceived through documentary aspects, as in the preparation of protocols and standards and in the implementation of the Patient Safety Center (PSCe)⁽¹⁷⁾.

In contrast, when it comes to hospital management, the evaluation did not show a positive perception. This dimension has also not been well evaluated in other studies^(7,14), demonstrating that it is a fragile area for PSC in some health services. Accordingly, a study addressed the perception of nursing workers about PSC in hospital management and concluded that the work climate provided was not a promoter of patient safety and that the management body took measures only after

the occurrence of an AE, referring to the need for closer and more linear relationships with the nursing team, through shared management, advancing from the punitive culture to a participatory culture⁽⁸⁾.

Another aspect investigated concerns teamwork in the units, configuring itself as a fragile area and contrasting with the results found in review studies that evaluated PSC in several countries^(3-5,13). When analyzed in the hospital setting, teamwork between the units was even more fragile, corroborating other studies^(7,16).

A research in 13 hospitals in Germany addressed the relationship of teamwork with the degree of patient safety and showed a positive correlation between these aspects, concluding that the more the professional perceives the team as cohesive and collaborative, the better he/she assesses the degree of patient safety of his/her unit⁽¹⁸⁾.

In addition, teamwork between the units was negatively associated with professional experience, showing that the most experienced workers perceived the work performed by the teams as more problematic. This fact may be related to professional maturity, which can lead to more criticality to the performance of teams, as well as to previous experiences, in which these workers may have experienced more integrated teams at other times.

The variable sex was associated with total patient safety and teamwork among the units, with male professionals presenting lower mean. On the other hand, another study that evaluated the patient safety climate from the perspective of health professionals identified that women achieved lower averages than men in some domains⁽¹⁹⁾. Given these findings, there is a need to deepen this association in terms of understanding social, cultural, organizational and behavioral aspects.

In this research, it was possible to evaluate the communicational aspect in the face of the openness given to workers to express themselves, the return of information about the

changes implemented and in relation to the shift/transfers, verifying low percentage of positive response.

Regarding communication, it was possible to perceive that the hierarchical dynamics established among professionals was considered as an essential factor for the implementation of patient safety measures, whereas more horizontal relationships were considered as a key point for the success of these measures. In this perspective, the rigid hierarchy, added to the deficit teamwork, constitute significant obstacles to the implementation of safety policies, since high authority gradients negatively impact the team's willingness to express their concerns about patient safety-sensitive issues⁽¹²⁾.

The handoffs/transitions was associated with the shift, professional experience and experience in the service. Some inferences can be made about these results, such as the fact that fixed shift professionals can follow more continuously the care of patients and the demands of the unit. The fact that they are closer to the team members because they are always on the same days and times at work can favor the monitoring of clinical aspects of patients and organizational units. When it comes to the experience, it can be reflected that those with more experience perceive the failures more critically or have had the opportunity to experience more problematic situations in shift exchanges and patient transfers.

Organizational learning and continuous improvement was one of the best evaluated dimensions, corroborating other studies^(3,5,15-16,20). Positive results in this dimension meet the PNSP that advocates the promotion of organizational learning in the occurrence of incidents⁽²⁾.

The dimensions of *Staffing and non-punitive responses to errors* were the most fragile, and the perception of punitive culture is even more critical, corroborating other studies^(3,5,15).

Staff deficit, work overload and inadequate staff allocation are among the main causes of AE, drawing attention to the dimensioning of human resources⁽²¹⁾.

The nursing assistants and technicians presented lower averages in relation to the dimension of Staffing, in line with a study that evaluated the PSC in the perception of nursing technicians, in which this dimension reached 75.5% of negative responses, presenting as the most critical⁽¹⁶⁾. Therefore, adjustments in the Staffing should be implemented, with special attention to the overload to which these workers are exposed.

The service and professional experience were positively associated with staff sizing, suggesting that, over time, workers can become more resilient in relation to the workload and even adopt strategies to organize the team in order to optimize activities more efficiently. In this reflection, a study on the resilience of nursing workers inserted in the hospital environment showed that working time in the profession and in the service were positively correlated with the level of resilience, demonstrating that more experience can be a factor that promotes adaptive mechanisms at work in the face of adverse situations⁽²²⁾.

Nursing assistants and technicians perceived PSC more punitively than nurses. In this sense, a study that analyzed the mistakes made by nursing workers who have become the target of ethical-disciplinary processes concluded that the technical-level workers are the most reported to the Class Council and, therefore, those who suffer most from the implications and sanctions related to errors⁽²³⁾.

Working in the service for longer was associated with a less punitive perception. This may direct to the understanding that workers with more experience may be perceiving a transition from punitive culture to just culture. Moreover, generally, greater experience in the service leads to greater proximity to colleagues and leadership, which can influence the greater reception of these workers in the occurrence of incidents. In the case of professional experience and age, the opposite occurred, which can be attributed to experiences related to errors or greater criticality to approaches at the time of incidents.

It was observed that the culture of notification is not yet fully implemented in the scenario of this study. Given its relevance, knowing the reasons for non-notification becomes imperative. A literature review pointed out that the fear in notifying was the most prevalent, followed by work overload, forgetfulness, the fact that the event did not cause serious or immediate consequences, lack of knowledge about AE or how to make notifications and the ranking of the notification process⁽²⁴⁾.

This professional hierarchy related to notification may be one of the justifications for the association of the professional category with this practice, as occurred in the present study, in which nursing assistants and technicians obtained a lower average in the notification. This association was also identified in another study⁽²⁰⁾, which may be linked to the technical division of labor, in which notification can be seen as managerial work and, in view of this, more related to nurses; another factor may be the increased awareness of this category to the notification process. The other two aspects associated with the professional category in this study may also be related to the lower notification by the technical team: the perception of a poor staff sizing, which can lead to greater overload of these workers and less willingness to notify; and greater perception of the punitive culture, which can exacerbate the fear of notifying.

The amount of employment contract was associated with notification, and workers with two or more contracts had a higher average. This result can be analyzed under two aspects: the first refers to the fact that these workers are more aware of the notification, the possibility of experiencing a safety culture in other institutions that reinforce the importance of this practice, and the second, through the prism of possible occurrences of more events among these workers, considering the work overload by the accumulation of employments.

In this direction, a study showed that professionals who worked more than 40 hours a week had an increased probability of experiencing AE, particularly related to

medication errors. The researchers concluded that the strong relationship between nurses who reported medication errors could represent a decrease in fatigue-associated surveillance⁽²⁵⁾.

The notification was negatively associated with the age factor and experience in the service, suggesting that older workers with more experience in the unit tended to report less. It is inferred that these workers may experience fewer events or that, given their experience and maturity, there may be more demotivation in notifying, due to the negative repercussions they may have experienced. Moreover, in general, taking as an analysis the total patient safety, professional experience and experience in the service were negatively associated with the PSC scores, showing that the most experienced workers showed a tendency to evaluate PSC as more fragile.

Outsourced workers presented better evaluation of PSC, a result also found in a study with health professionals from a hospital in Rio de Janeiro⁽¹⁹⁾. In this research, two analyses can be performed: one is related to the lower experience of the contractors, because these workers are the most recently employed in the outsourced service and the second refers to the fact that workers who have a permanent link feel safer to respond critically about organizational aspects.

The workplace was the variable that most influenced the perception of workers about PSC. Thus, it is possible to infer that within the same hospital context there are patient safety microcultures. These differences can be multicausal and can be explained by the work process developed in each scenario and its specificities. As a result, general proposals aimed at improving quality can be prepared, however, they need to be adapted to each work context. In addition, successful experiences and aspects of PSC that are better structured in some units can be shared in an intersectoral way, in order to contribute to the units that have more weaknesses⁽⁷⁾.

A limitation of this study concerns the fact that it was developed in a restricted sample of nurses, nursing technicians and assistants of a hospital in the state of Bahia, being able to portray a specific scenario, thus the generalization of the results should be done with caution. Nevertheless, this research presents important results for the understanding of the PSC, especially what refers to the factors associated with the dimensions of the PSC and the notification of AE, contributing to more assertive decision-making.

Conclusion

The PSC proved to be fragile in all its dimensions, with the classification of the safety grade, mostly as acceptable, and a low number of notifications by workers. Moreover, the evaluation of the factors associated with PSC showed how the proposals for interventions can be more assertive. It is evident the need for improvements directed to the punitive culture, especially with regard to nursing assistants and technicians, workers more experienced in the profession and older, and measures to reduce the workload that can notably be implemented for workers at the technical level.

These findings refer to the need to implement actions and strategies for patient safety, requiring the involvement of the manager, worker and user trinomial. Furthermore, it is believed that the precepts of the non-punitive culture should be the guiding axis of health institutions, in order to contribute to the consolidation of PSC.

Collaborations:

1 – conception and planning of the project: Edenise Maria Santos da Silva Batalha and Marta Maria Melleiro;

2 – analysis and interpretation of data: Edenise Maria Santos da Silva Batalha and Marta Maria Melleiro;

3 – writing and/or critical review: Edenise Maria Santos da Silva Batalha, Lethycia Couto Seara Salles, Nelda Barbosa Santos, Euricia

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4 – approval of the final version: Edenise Maria Santos da Silva Batalha, Lethycia Couto Seara Salles, Nelda Barbosa Santos, Euricia Almeida Brito, Ana Claudia Alcântara Garzin and Marta Maria Melleiro

Competing interests

There are no competing interests.

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