

Patient safety climate in medical and surgical units

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ABSTRACT

Cross-sectional, analytical and quantitative study with the objective of evaluating the patient safety climate from the perspective of nursing staff professionals in medical and surgical units. Fifty-two professionals participated. Data were collected using the Safety Attitudes Questionnaire. The Student's t-test and Spearman's correlation coefficient ($\alpha = 0.05$) were used for analyses. The mean overall score for the instrument was 66.94 points. The factor with the best score was Perceptions of Management (84.60), and the ones with the lowest scores were Working Conditions (60.15) and Stress Recognition (55.59). There were statistically significant differences between genders and educational levels for the safety climate factor. There were no relationships for professional performance, employment bonds or professional categories. Weaknesses in staff's safety climate perception were observed, which point to the need to institute strategies to promote a safe climate.

Descriptors: Patient Safety; Safety Management; Nursing Care.

INTRODUCTION

Mistakes that occur in health care for patients have been increasing in importance, especially because most of these events can be avoided. The occurrence of adverse events has increased over the years, making them a public health issue⁽¹⁾.

In this scenario, in view of the significant increase in these events, the World Health Organization launched the program "World Alliance for Patient Safety" in 2004, establishing measures to improve patient safety⁽²⁾. It was from 2013 on, however, that the National Patient Safety

Program (NPSP) was instituted in Brazil by the Ministry of Health through Ordinance 523 of April 1, 2013; the program aims to contribute to improvements in health care in Brazilian hospitals.

The NPSP has as its main focus the implementation of strategies to promote safe attitudes on the part of professionals toward patients, families, workers in general, and also toward their own professional safety⁽³⁾.

Among health professionals, nursing staff - nurses, nursing aides and nursing technicians - spend the most time with patients, which makes them more susceptible to making mistakes. In contrast, some studies indicate that they are the ones most concerned with patient safety⁽³⁻⁴⁾.

Within the complexity of the hospital climate, many nursing professionals are concentrated in medical and surgical units, which also present high patient turnover. One study was carried out in the surgical unit of a large hospital belonging to the *Sentinel*a Hospital Network of the National Health Surveillance Agency in the Center-West region of Brazil. It estimated an 18.7% occurrence of adverse events⁽⁵⁾.

Tools have been developed to measure professionals' perceptions of patient safety, from their perspective on the safety climate⁽⁶⁾. The climate reflects the professionals' perceptions of safety issues at a certain time in the workplace⁽⁷⁾.

There is an association between positive perceptions of the safety climate and adoption of safe behavior, improvement of communication, conduction of training programs, and reduction of adverse events, all of which contribute to safe practices^(6,8).

Studies that measure the safety climate of institutions are not frequent in Brazil. It is important to emphasize the importance of knowing nursing professionals' perceptions of the safety climate, in order to support adoption by institutions of actions that contribute to the safety, and hence the quality, of care.

The objective of the present study was to evaluate the patient safety climate from the perspective of the nursing staff in medical and surgical units.

MATERIALS AND METHODS

A cross-sectional, exploratory, and analytical study was conducted in the medical and surgical units of a large public teaching hospital in the state of Minas Gerais, Brazil. The hospital is of high complexity, with 290 hospital beds, 45 in the medical unit and 65 in the surgical unit.

For sample size calculation, a positive Pearson's correlation coefficient of $r = 0.4$ was considered, between training time and total patient safety score, for a significance level of 0.05 and a 0.1 type II error, resulting in 90% priori power. A minimum sample size of 61 is reached using application PASS 2002. The maximum number of interview attempts to be considered would be 77 professionals, including a 20% loss.

Considering losses, the final sample consisted of 52 participants who met the following inclusion criteria: being a part of the unit's staff for at least one month and working at least 20 hours a week. Three professionals who were on leave were excluded, 18 did not respond to the questionnaire after three attempts, and four refused to participate.

Data were collected using two questionnaires: the Safety Attitudes Questionnaire (SAQ), validated for Brazilian Portuguese⁽⁹⁾, and a questionnaire containing sociodemographic and professional variables.

The SAQ, which was used with permission, is composed of 41 items, 36 of which correspond to six factors: 1) Teamwork Climate; 2) Safety Climate; 3) Job Satisfaction; 4) Stress Recognition; 5) Perception of Management; and 6) Working Conditions.

Item responses are on a five-point Likert scale: A = "disagree strongly," B = "disagree slightly," C = "neutral," D = "agree slightly," D = "agree strongly," and X = "not applicable." The final score ranges from zero to 100, zero being the worst safety climate perception, and 100 the best. Values are considered positive when the total score is greater than or equal to 75⁽⁷⁾. The score value suggested by the creators of the instrument was used as the criteria for interpreting the study data, for levelling.

The data were entered into an Excel[®] for Windows[®] spreadsheet, validated by double entry, and exported to Statistical Package for the Social Sciences (SPSS) software, version 19.0 for Windows[®], for processing and analysis.

Qualitative variables were analyzed using descriptive statistics with the absolute frequency distribution and percentage, whereas for quantitative variables descriptive measures of centrality (mean) and dispersion (standard deviation, minimum and maximum values) were used.

The SAQ descriptive analysis was performed by averaging the item responses after reversal of reverse items, and by calculating scores for the 41 items. This calculation was performed for each factor to obtain scores based on the formula $(m-1) \times 25$, in which m is the mean of the factor items in question, ranging within a [0-100] interval.

The Student's t-test (dichotomous categorical) and analysis of variance (ANOVA) were used for three or more categories, for bivariate analysis of the influence of categorical variables on the safety scores, and the Spearman's correlation test was used for the ordinal variables. Associations with $p \leq 0.05$ were considered statistically significant.

This study is part of a research project entitled "Patient safety culture in hospitals in the Minas Gerais region," approved by the Ethics Committee of the Federal University of Triângulo Mineiro (UFTM), under approval no. 2306 of April 25, 2012. The study also complied with the Ministry of Health's CNS 466/2012 on research involving human subjects.

RESULTS

Of the 52 nursing professionals, 14 (26.92%) were nurses, 36 (69.23%) nursing technicians, and 2 (3.85%) nursing aides. Thirty-five (67.31%) were women; 39 (75.00%) held only one job; 24 (46.15%) had 5 to 10 years of training; and 18 (34.62%) had been working in the institution for less than six months. Regarding education, 36 (69.23%) were undergraduates and 16 (30.77%) graduate students, *latu* or *stricto sensu* (Table 1).

Table 1: Profile of nursing professionals in medical and surgical units. Uberaba, MG, Brazil, 2015.

Variables		N	%
Gender	Men	17	32.69
	Women	35	67.31
Professional Category	Nurse	14	26.92
	Nursing aide	2	3.85
	Nursing technician	36	69.23
Years of Training	< 6 months	1	1.92
	6 to 11 months	2	3.85
	1 to 2 years	3	5.77
	3 to 4 years	12	23.08
	5 to 10 years	24	46.15
	11 to 20 years	8	15.38
Time in the Institution	> 21 years	2	3.85
	< 6 months	18	34.62
	6 to 11 months	15	28.85
	1 to 2 years	0	0.00
	3 to 4 years	5	9.62
	5 to 10 years	9	17.31
Postgraduate	11 to 20 years	4	7.69
	> 21 years	1	1.92
	Yes	16	30.77
Employment bond	No	36	69.23
	Brazilian Hospital Services Company (EBSERH)	26	50.00
	Federal University of Triângulo Mineiro	14	26.92
Other employment bond	Uberaba Research Foundation	12	23.08
	Yes	13	25.00
	No	39	75.00

Regarding the institutional link, 26 (50.00%) were CLT (Consolidation of Labour Laws) employees with the Brazilian Hospital Services Company; 14 (26.9%) were statutory at the Federal University of Triângulo Mineiro and 12 (23.1%) were CLT employees at the Uberaba Research Foundation.

Regarding the units, 28 (53.85%) were allocated to the surgical unit and 24 (46.15%) to the medical unit.

The mean overall score was 66.94 points ($S = 10.30$): a minimum of 42.07 and a maximum of 87.20. Factor 3 (F3), Job Satisfaction, showed the highest score, averaging 84.60 points ($S = 13.78$).

The lowest scores were on factor 6 (F6), which evaluates working conditions, with a mean of 55.59 ($S = 24.11$), and factor 5 (F5), related to perception of management of the unit and the hospital, with a mean of 60.15 ($S = 17.33$) (Table 2).

Table 2. Univariate analysis of relationship between general scores and factors. Uberaba, MG, Brazil, 2015.

Statistics	General	F1*	F2*	F3*	F4*	F5*	F6*
Mean	66.94	72.10	65.19	84.60	71.75	60.15	55.59
SD*	10.30	15.32	17.22	13.78	26.43	17.33	24.11
Minimum	42.07	41.67	1.50	45.00	6.25	27.27	0.00
Maximum	87.20	100.00	92.86	100.00	100.00	97.73	91.67

* F1: factor 1; F2: factor 2; F3: factor 3; F4: factor 4; F5: factor 5; F6: factor 6; SD: standard deviation.

There was no significant difference between men and women for overall score or the factors in the bivariate analysis (Table 3), except for factor 4, Stress Recognition ($p = 0.046$).

Table 3: Bivariate analysis of relationship between gender, title and second employment bond in relation to mean scores, general scores, and factors. Uberaba, MG, Brazil, in 2015.

Variable	General Score	F1*	F2*	F3*	F4*	F5*	F6*
Men	68.86	74.74	70.76	85.00	59.77	63.71	55.73
Mean (SD*)	(9.26)	(15.77)	(12.92)	(13.04)	(29.49)	(18.65)	(26.48)
Women	66.03	70.86	62.57	84.40	77.39	58.47	55.52
Mean (SD*)	(10.77)	(15.18)	(18.50)	(14.29)	(23.23)	(16.70)	(23.34)
Gender (p)	0.35	0.42	0.08	0.89	0.04	0.35	0.98
Postgrad	64.78	67.19	58.35	84.38	85.16	57.46	49.48
Mean (SD*)	(10.46)	(14.66)	(19.73)	(13.15)	(20.90)	(18.46)	(27.63)
Graduate	67.95	74.42	68.41	84.69	65.44	61.41	58.47
Mean (SD*)	(10.22)	(15.28)	(15.17)	(14.26)	(26.66)	(16.91)	(22.13)
Title (p)	0.32	0.12	0.08	0.94	0.01	0.48	0.27
Second bond	63.32	72.92	62.99	81.67	60.42	52.14	53.85
Mean (SD*)	(10.06)	(13.82)	(22.69)	(14.51)	(31.46)	(18.71)	(31.41)
One bond	68.08	71.85	65.88	85.52	75.33	62.67	56.14
Mean (SD*)	(10.24)	(15.93)	(15.42)	(13.61)	(24.01)	(16.33)	(21.81)
Other bond (p)	0.17	0.82	0.69	0.43	0.15	0.09	0.82

* F1: factor 1; F2: factor 2; F3: factor 3; F4: factor 4; F5: factor 5; F6: factor 6; SD: standard deviation.

When comparing professionals who were and were not post-graduates, a significant association was found with factor 4, Stress Recognition ($p = 0.01$).

There was no statistically significant difference between the groups that had or did not have another employment bond.

There was no correlation between the total score and the factors for specialty working time, years of training and time in the institution (Table 4).

Table 4: Bivariate correlation analysis of specialty time, years of training and time in the institution compared to overall scores and by factors. Uberaba, MG, Brazil, 2015.

Variable	General score	F1*	F2*	F3*	F4*	F5*	F6*
Specialty time	-0.09	-0.08	0.14	-0.04	-0.22	-0.08	0.08
r (p)*	(0.52)	(0.59)	(0.32)	(0.80)	(0.13)	(0.58)	(0.59)
Years of Training	0.01	-0.02	-0.06	0.02	0.18	-0.04	0.14
r (p)*	(0.98)	(0.88)	(0.68)	(0.91)	(0.22)	(0.79)	(0.34)
Time in Institution	-0.11	-0.25	-0.07	-0.08	-0.12	0.07	-0.05
r (p)*	(0.46)	(0.08)	(0.65)	(0.58)	(0.41)	(0.62)	(0.71)

* r = correlation coefficient; p = p value.

In the analysis of variance of professional activity (healthcare, administrative or both), employment bond, and professional category (nurse, nursing technician or nursing aide), there was no significant difference between the groups in relation to the overall score or the six factors, with $p > 0.05$.

DISCUSSION

Most of the nursing team professionals were nursing technicians. This may be related to the need for

more staff in this professional category compared to the number of nurses. A study in the medical and surgical units of a Ribeirão Preto teaching hospital found that 69% of the nursing staff were technicians and aides⁽¹⁰⁾.

Most professionals did not have another employment bond. This is directly related to patient safety. After all, more hours create excessive workloads, which can lead to physical and mental fatigue, and stress for professionals, and can trigger problems related to patient safety. Long working hours can trigger physical and mental exhaustion, minimize leisure and family time, and contribute to greater susceptibility to stress in general⁽¹¹⁾.

The overall mean score was below that indicated as the ideal score (75 points) for safety climate. A study in surgical inpatient units of a public hospital in Florianópolis showed overall mean scores below 75⁽¹²⁾. A high safety climate favors sharing good behavior, which benefits the patients under care. Thus, all professionals work for safe practices in patient care⁽¹³⁻¹⁴⁾.

Teamwork Climate had a mean of 72.1 points. A similar value (68.8 points) was found in a study conducted in Australia using the same instrument⁽¹⁵⁾. This factor evaluates relationship quality and collaboration among team members. Studies have shown that the better the teamwork, the better the safety of both patients and professionals⁽¹⁶⁻¹⁷⁾.

The Job Satisfaction factor had a score of 84.60, the highest score among the factors. A study carried out in the United States and Canada using the SAQ showed lower scores (74.5%)⁽¹⁸⁾. Job satisfaction is related to autonomy, higher salary, professional status, and interaction among professionals⁽¹⁹⁾. Satisfied professionals tend to provide quality care, because they are more motivated and dedicated^(10,19).

At the same time, a low score was found (mean 55.59) for factor 6, Working Conditions, which is related to the quality of the work climate. A study carried out in two surgical inpatient units of a public hospital in Florianópolis showed a low mean (40) for this factor⁽¹²⁾. Scarce material resources, poor management organization, and poor infrastructure affect the quality of care, increasing the likelihood of adverse events⁽²⁰⁾.

The Perceptions of Management factor had a mean of 60.15. Although this is below what is recommended as ideal, it was a higher value than in a study in surgical units of a university hospital in southern Brazil, which found a mean of 39 points⁽¹²⁾.

This factor is related to the approval of actions in the professionals' units by management and administration. Most professionals had been in the institution for less than six months (34.6%). Research conducted in six Brazilian hospitals for questionnaire validation indicated that there is an inverse relation between time in the institution and institutional evaluation, which means professionals tend to assess the institution positively when the work climate is recent for them, which can justify a positive management assessment⁽⁹⁾.

Management support for safety actions is essential to avoid situations in which the fear of reprisals for reporting to superiors might hinder actions to prevent possible adverse events⁽²⁰⁾.

As for the Safety Climate factor, a mean of 65.19 points was obtained. This factor refers to the professionals' perceptions of organizational commitment to patient safety. Studies using SAQ have found high scores for this factor, such as 83.5; 71.0; 74.5^(15,18,21).

The overall score found in the present study did not reach the score that is considered adequate. A lower safety climate assessment might be related to the fact there is still a punitive culture in health institutions regarding handling errors, which means that professionals do not speak out in the face of such events⁽¹⁰⁾. A study with intensive care unit nurses indicated that 27% of the professionals cited fear and shame as reasons for not reporting adverse events⁽²²⁾.

Factor 4, Stress Recognition, which refers to the recognition of how much stressors can influence work performance, had a score of 71.75. A study in clinical and surgical wards of six Brazilian institutions pointed out that high stress is related to negative stress perception on the questionnaire⁽⁹⁾. This finding contrasts with other studies, which found means of 28.56 and 55.1, respectively^(16,18).

Only factor 4, Stress Recognition, showed a difference between genders, and women scored higher on this factor. A multicenter study for questionnaire validation did not observe gender differences in SAQ scores⁽⁹⁾. A study conducted in the United States noted that there was no difference between gender on stress recognition⁽²³⁾. Stress is associated with fatigue, difficulty performing work, frustration, anxiety, helplessness, and lack of motivation, which can disrupt care and increase adverse events⁽²⁴⁾.

There was no relation between education and safety scores, except for factor 4, Stress Recognition. Having a higher educational level leads to greater responsibilities, which may result in higher stress levels.

There was no relation between perceptions of safety climate and specialty working time, time in the institution, and professional training time. This data shows that attitudes toward safety may not be related to professional experience. An integrative review study pointed out that non-occurrence of errors is related to adequate staffing, decreased workloads, good relationships in multidisciplinary teams, leadership and adequate nursing supervision⁽²⁵⁾.

CONCLUSION

The present study shows a warning sign for the units analyzed and indicates the need to adopt effective measures to change the institution's habits. The perceptions of the patient safety climate by the nursing team professionals from the medical and surgical units showed negative perceptions for five of the factors assessed. These results indicate the need for planning actions aimed at teamwork climate, safety climate, stress recognition, perception of management and working conditions. Professionals considered themselves satisfied with their work, although they had negative perceptions of other aspects involving patient safety.

Safety climate evaluation showed significant differences when comparing gender (men and women) and educational level (were or were not post-graduates) compared to stress perception.

The training of professionals involved in management and assistance should focus on the factors related to safety issues, especially those that are negatively evaluated. In this way, solutions to problems can

be planned and carried out.

Although simple random sampling was used to obtain the sample size, the cross-section to obtain the data may limit the analysis scope, representing a limitation of this study; however, the proposed objective was achieved. Longitudinal studies should be performed in the future.

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