

# Nursing work environment, patient safety and quality of care in pediatric hospital



*Ambiente de trabalho da enfermagem, segurança do paciente e qualidade do cuidado em hospital pediátrico*

*Entorno de trabajo de enfermería, la seguridad y la calidad de la atención en el hospital de pacientes pediátricos*

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## ABSTRACT

**Objectives:** To describe the characteristics of the nursing work environment, safety attitudes, quality of care, measured by the nursing staff of the pediatric units, as well as to analyze the evolution of quality of care and hospital indicators.

**Methods:** Descriptive study with 136 nursing professionals at a paediatric hospital, conducted through personal and professional characterization form, Nursing Work Index – Revised, Safety Attitudes Questionnaire – Short Form 2006 and quality indicators.

**Results:** The professionals perceive the environment as favourable to professional practice, and consider good quality care that is also observed by reducing the incidence of adverse events and decreased length of stay. The domain job satisfaction was considered favourable to patient safety.

**Conclusions:** The work environment is favourable to nursing practice, the professionals nursing approve the quality of care and the indicators tended reducing adverse events and length of stay.

**Keywords:** Health facility environment. Patient safety. Quality of health care. Job satisfaction. Patient outcome assessment.

## RESUMO

**Objetivos:** Descrever as características do ambiente de trabalho, as atitudes de segurança, a qualidade do cuidado mensuradas pela equipe de enfermagem das unidades pediátricas e analisar a evolução dos indicadores assistenciais e de desempenho hospitalar.

**Método:** Estudo descritivo com 136 profissionais de enfermagem de um hospital pediátrico, com aplicação da ficha de caracterização pessoal e profissional, *Nursing Work Index – Revised*, *Safety Attitudes Questionnaire – Short form 2006* e dos indicadores de qualidade.

**Resultados:** Os profissionais percebem o ambiente como favorável à prática profissional, avaliaram como boa a qualidade do cuidado e a redução de eventos adversos e da permanência hospitalar. O domínio satisfação no trabalho foi favorável à segurança do paciente.

**Conclusões:** O ambiente de trabalho é favorável à prática de enfermagem, os profissionais aprovam a qualidade do cuidado e os indicadores apontam redução dos eventos adversos e da permanência hospitalar.

**Palavras-chave:** Ambiente de instituições de saúde. Segurança do paciente. Qualidade da assistência à saúde. Satisfação no emprego. Avaliação de resultados da assistência ao paciente.

## RESUMEN

**Objetivos:** Describir las características del ambiente de trabajo, las actitudes hacia la seguridad, el cuidado de la calidad medida por el personal de enfermería de las unidades de pediatría, así como analizar la evolución de los indicadores de bienestar y desempeño de los hospitales.

**Métodos:** Estudio descriptivo con 136 profesionales en un asilo de ancianos hospital pediátrico, realizado a través de la forma de caracterización personal y profesional, *Enfermería Índice de Trabajo – Revisado*, *Actitudes Seguridad Cuestionario – Short Form 2006* y los indicadores de calidad.

**Resultados:** Los profesionales perciben el ambiente tan favorable a la práctica profesional y de la buena calidad de la atención, una reducción de los eventos adversos y la estancia hospitalaria. Satisfacción en el trabajo se consideró favorable para la seguridad del paciente.

**Conclusiones:** El ambiente de trabajo es propicio para la práctica de los profesionales de enfermería que aprueban la calidad de la atención y la reducción de puntos de indicadores de los eventos adversos y la estancia hospitalaria

**Palabras clave:** Ambiente de instituciones de salud. Seguridad del paciente. Calidad de la atención de salud. Satisfacción en el trabajo. Evaluación del resultado de la atención al paciente.

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## ■ INTRODUCTION

The professional practice environment in health institutions influences the quality and safety of the care provided to patients. In 2009, the World Health Organization (WHO) issued a report that established as priority research area the study of organizational environments, in an attempt to identify failures or gaps that might compromise patient safety in several countries<sup>(1)</sup>.

Despite the priority given to the issue, discussions on organizational factors that interfere with patient safety issues are recent. The national and international literature has made consistent recommendations, especially to hospital institutions, regarding the work environment, and emphasize that nurses and effective care contribute to the process of patient recovery<sup>(2-3)</sup>. Other studies stress that in environments favorable to the professional practice, patient safety and quality of care are improved<sup>(4-5)</sup>, which contributes to promote an safety climate<sup>(6)</sup>, reducing the occurrence of adverse events<sup>(7)</sup>.

In this context, the environment of health organizations is a determining factor in the quality and safety of health care, and the nursing team provides a significant contribution to the creation of a safety environment for health. The major role played by the nursing team in this regard can also be explained by the fact that this team adds knowledge on the health environment due to the proximity of nurses to patients<sup>(8)</sup>.

The creation and implementation of a safety culture in health institutions poses a challenge to managers and researchers. Some studies recommend the assessment of the safety climate as an indirect measure of the culture, which can be measured by attitudes that favor patient safety<sup>(8-9)</sup>. Job satisfaction, the way in which the institution deals with errors, and perception of the types of management by health workers are considered essential indicators of the presence of attitudes that favor a safety climate in health institutions<sup>(9-10)</sup>. The current recommendations emphasizes the need for studies that address the individual's behavior within the organization and the indicators of care and quality of care together<sup>(11)</sup>.

The complexity of health care can be even greater when it involves pediatric care units. In the pediatric setting, additional factors of health workers may interfere in the safety of the care provided to children, such as the various stages of development and the patient's degree of dependence on the nursing team. However, most studies on this issue do not contemplate units exclusively dedicated to child care.

The motivation for the present study is the fact that no studies on the work environment and patient safety

in pediatric units were found in Brazil. The guiding question of this research involved investigating whether the environment of a pediatric hospital, with international accreditation, is perceived as favorable to nursing practice and whether health workers could identify the factors that contribute to patient safety and quality of care. Also, the study attempted to identify whether the process of accreditation impacted the indicators of quality of care. Therefore, this study originated from a doctoral thesis<sup>(12)</sup> and is aimed to describe the characteristics of nursing work, safety attitudes, quality of care and evolution of care indicators and hospital performance in an internationally accredited pediatric hospital.

## ■ METHOD

Quantitative study of cross-sectional and descriptive type conducted in a medium sized private pediatric hospital that delivers high complexity care located in the city of São Paulo, SP, Brazil. The institution was selected because it is accredited by the Joint Commission International (JCI) and assists children and adolescents aged 0 to 18 years. It counts on 108 beds distributed in 11 inpatient units and 28 beds for pediatric intensive care in two units assisted by a team of 195 nursing workers.

The study participants were nurses, nursing technicians and assistants performing their duties in inpatient units and intensive care units, providing direct care to patients. The criterion for the selection of the inpatient and intensive care units was patient stay in the unit for 24 hours for continuing care. Health workers who were on leave, vacation or away from work for any other reason were not contacted for participating in the sample. All the workers who met the inclusion criteria (166 nursing professionals) were approached in their workplaces and invited to participate in the study. Convenience sampling was used.

The professional profile was described according to the training, years working in the current profession, in the institution and in the unit, existence of more than one employment contract, weekly workload, number of patients under his/her responsibility and (exclusively for nurses), number of workers under their supervision.

The work environment of nurses, nursing technicians and assistants was measured through the Nursing Work Index – Revised (NWI-R), which contemplates features such as autonomy, control over the work environment, nursing team-physicians relationships and organizational support. These four characteristics are assessed by a 15-item Likert-type scales where (1) strongly agree and (4) strongly disagree. The scores range from 1 to 4, and the lower the

score, the better the work environment<sup>(13-14)</sup>. The NWI-R was translated into Portuguese and validated to the Brazilian culture. The instrument has satisfactory validity and reliability indexes ( $\alpha = 0.65$  to  $0.91$ )<sup>(13-14)</sup>.

The presence of safety attitudes in the work environment was assessed using the Safety Attitudes Questionnaire – Short form 2006 (SAQ), validated to the Brazilian culture<sup>(15)</sup>. The SAQ contains 41 items and eight domains: teamwork climate, job satisfaction, safety climate, perceptions of management (unit and hospital), working conditions, stress recognition and safe behavior. To indicate their perception regarding safety attitudes, the participants were told to mark their response in a five-point Likert-type scale where (A) disagree strongly, (B) disagree slightly, (C) neutral, (D) agree slightly and (E) agree strongly. All items can also be responded through alternative (X): not applicable. The scores of each subscale are obtained by the arithmetic mean obtained for the answers, where A=0, B=25, C=50, D=75 and E=100. Items 2, 11 and 36, which have a negative connotation, were reverse-coded. The scores can range from zero to 100 points, and means above 75 indicate the presence of attitudes favorable to patient safety. The reliability of the instrument has been satisfactory in previous studies ( $\alpha = 0.65$  to  $0.79$ )<sup>(15)</sup>.

The quality of the care provided in pediatric units was assessed by the following question posed to nursing professionals – “How do you assess the quality of nursing care provided to patients in your unit?”, measured through a Likert scale where (1) very poor, (2) poor, (3) good and (4) very good. This question was elaborated by the researchers based on a previous study<sup>(13-14)</sup>, and was allocated on the card for personal and professional characterization. Quality of care indicators – incidence of phlebitis and pressure ulcers (PU) and indicator of hospital performance – average stay- were also considered. The institution selected for data collection had a consolidated system for collection and management of care and hospital performance indicators. The cases of phlebitis and PU were reported by the nurse who provides direct care to patients, using a computerized system, and the management of indicators is performed by the quality sector. Regarding stay in the unit, the averages were computed by the information technology sector of the hospital. The definitions of the indicators used in this study and the respective calculation equations follow.

- *Incidence of phlebitis*: number of cases of phlebitis per 100 patients-day with peripheral venous access, multiplied by 100. The nurses of each unit are responsible for the assessment of venous access, according to a scale of assessment of phlebitis<sup>(16)</sup>.

- *Incidence of PU*: number of new cases of PU in one month divided by the number of patients at risk of developing pressure ulcer, multiplied by 100. The assessment of risk for developing PU is done with the use of a previously validated scale<sup>(16)</sup>.
- *Average stay*: sum of the days of hospitalization of each patient in one month divided by the number of hospitalized patients in this period.

A five-year period (2009 to 2013) was considered in the assessment of the evolution of indicators before and after accreditation by the JCI. Since the entire process for obtaining accreditation may last from 18 to 24 months<sup>(17)</sup>, the pre-accreditation period was deemed to have occurred from January/2009 and July/2011 and the post-accreditation period from August/2011 to December/2013. The visit for assessment and accreditation of the hospital occurred in July 2013.

The instruments were applied by one of the researchers and by a previously trained nursing graduate student during the month of December 2013. The monthly work schedules of the professional were obtained, and those who did not meet the inclusion criteria were excluded. The potential subjects (166 professionals) were contacted to participate in the study in their respective units, and those who agreed to participate signed the Free Informed Consent Form and received envelopes containing the questionnaires. After completion, the envelopes were collected up to 7 days later. The response rate was 81.4%.

The quality manager of the institution was asked to provide the results for care and hospital performance indicators, and these were submitted to the researcher through a report with monthly information related to January/2009 – December/ 2013.

Software SAS 9.3 (*Statistical Analysis System, SAS Institute Inc., Cary, NC, USA*) was used for data analysis. Descriptive statistics was used to describe the profile of nursing professionals, hospital characteristics, quality of care and intention to leave the job and the profession. Regarding the variables work environment and safety attitudes, mean and standard deviation values were presented. Means lower than 2.5 for NWI-R domains indicated environments favorable to the professional practice, while scores above 75 for SAQ domains indicated the presence of positive characteristics for patient safety. Regarding care indicators, line charts were constructed to indicate the evolution of indicators during a five-year period (2009- 2013), considering the month of July/2011 as the landmark of the pre and post accreditation process.

The study was approved by the Research Ethics Committee of Fundação Hospital Infantil Sabará (under no

347.759). All participants were informed on the objectives of the study, risks, benefits, secrecy and anonymity and signed the Free Informed Consent form.

## RESULTS

The participants were 136 nursing professionals: 37.5% nurses (n=51), 59.6% nursing technicians (n=81) and 2.9% nursing assistants (n=4); most were women (95.6%, n=130), married (55.9%, n=76) and with secondary education (62.5%, n=85).

Of the professionals with higher education (37.5%, n=51), 84% (n=43) had also concluded *lato sensu* postgraduation courses. The average number of patients under the responsibility of a nurse was 12.4 patients ( $\pm 4.7$ ) and there were 4.2 ( $\pm 1.5$ ) patients per nursing assistant or technician. The nurses reported having in average, 4.1 ( $\pm 2.2$ ) nursing assistants or technicians under their supervision. For the total sample, the average weekly workload was 47.1 hours ( $\pm 15.5$ ); the participants had in average 8.08 years (SD $\pm 5.4$ ) of professional experience, 2.9 years ( $\pm 3.8$ ) in the institution and 2.4 years ( $\pm 3.0$ ) in the unit. Most professionals had no other employment contract (69.1%, n=94).

In the assessment of work environment, the scores for each domain were lower than 2.5. Regarding safety, only the domain job satisfaction reached scores higher than 75. The perception of professionals of the work environment and safety attitudes are shown in Table 1.

Most professionals assessed quality of care as good or very good (97.8%). Regarding the indicators analyzed, they tended to decrease between 2009 and 2013, according to Charts 1, 2 and 3.

## DISCUSSION

The present study shows the commitment of the health institution to pursue high-quality care: most variables analyzed here had positive results for the environment of the practice of health workers, contributing to the quality and safety of the care provided<sup>(18-19)</sup>. The participants perceive the following characteristics in their work environment: good professional relationships, autonomy to perform their functions, support from the organization and control over their practice. These characteristics are frequently related to job satisfaction of these workers and a low intent to leave the job<sup>(20)</sup>. Respondents are satisfied with their work and most of them do not intend to seek another job. However, intention to leave the job in the next 12 months was higher than the one observed in similar studies conducted in other countries, where health

**Table 1** – Mean and standard deviation of scores of domains of the *Nursing Work Index – Revised* and the *Safety Attitudes Questionnaire – Short form 2006*. São Paulo, SP, 2013

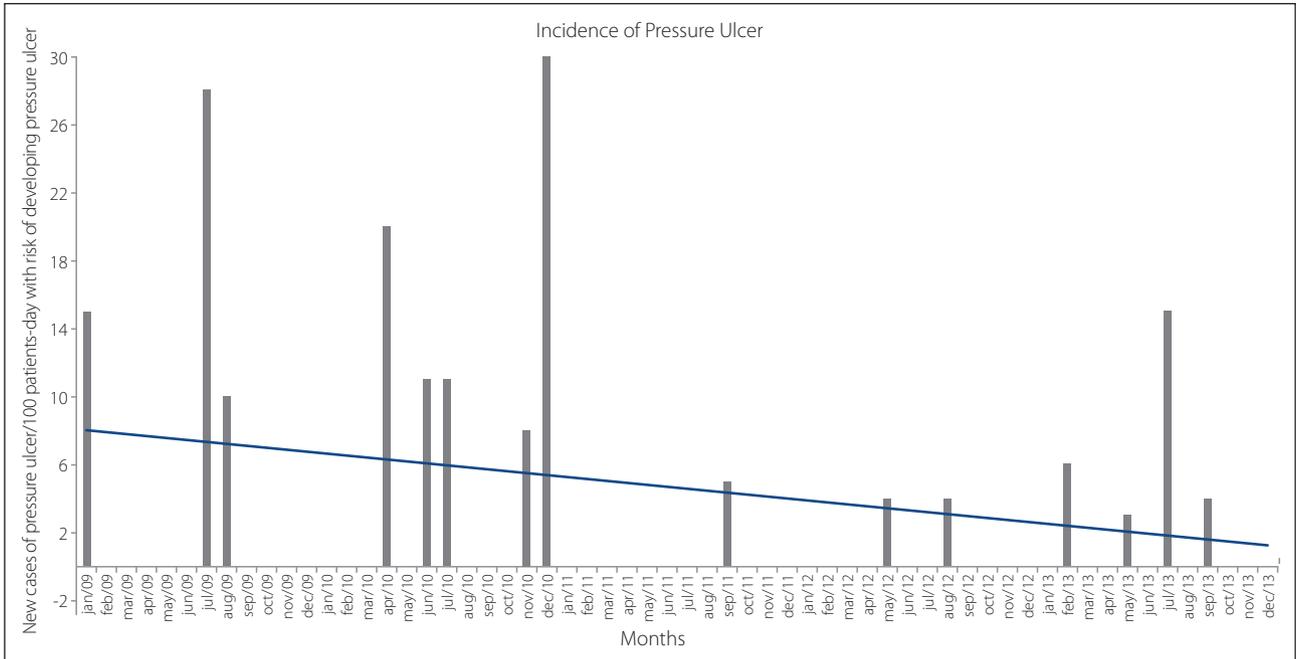
Domains	Mean	Standard deviation
<b>Nursing Work Index – Revised</b>		
Nurses/nursing team-physicians relationships	1.93	0.65
Autonomy	1.99	0.59
Organizational support	2.13	0.50
Control over the work environment	2.27	0.58
<b>Safety Attitudes Questionnaire – Short form 2006</b>		
Job satisfaction	76.62	19.27
Safe behavior	69.36	23.34
Teamwork climate	67.87	15.37
Safety climate	65.63	15.31
Stress recognition	62.93	27.41
Working conditions	62.23	24.26
Perception of hospital management	57.24	18.71
Perception of unit management	56.86	19.33

Source: Research data, 2013.

workers also perceived their environment as favorable to professional practice<sup>(3,20)</sup>.

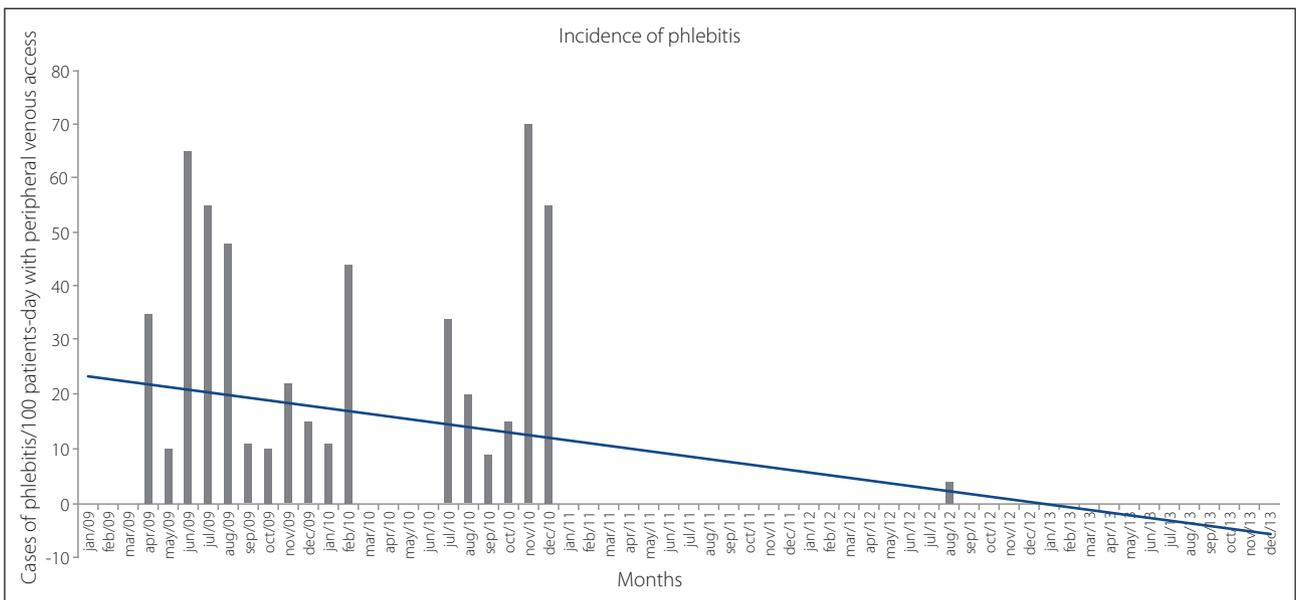
The health professionals who participated in this study have a positive perception of the safety climate only for the domain job satisfaction; for the other domains, the responses indicated low involvement of the institution with patient safety. This assessment is not very positive because the creation of a safety culture takes time and requires long-term investments of the institution.

Therefore, the impact of the factors that favor patient safety is expected to be felt in the future, and the findings of this study may contribute to change the focus of the institution to the search for a safety culture<sup>(8)</sup>. The low scores of the domain perception of hospital and unit management suggest that the institution should focus on leadership skills training. The role of the leaders of the organization and of the nursing team has been reported as a crucial factor in the development of environments favorable to professional practice and patient safety. Characteristics such as accessibility, visibility, participation of the health



**Chart 1** – Incidence of pressure ulcer – number of cases of pressure ulcer per number of patients at risk for pressure ulcer, during a five-year period (2009 to 2013). São Paulo, 2013

Source: Research data, 2013.

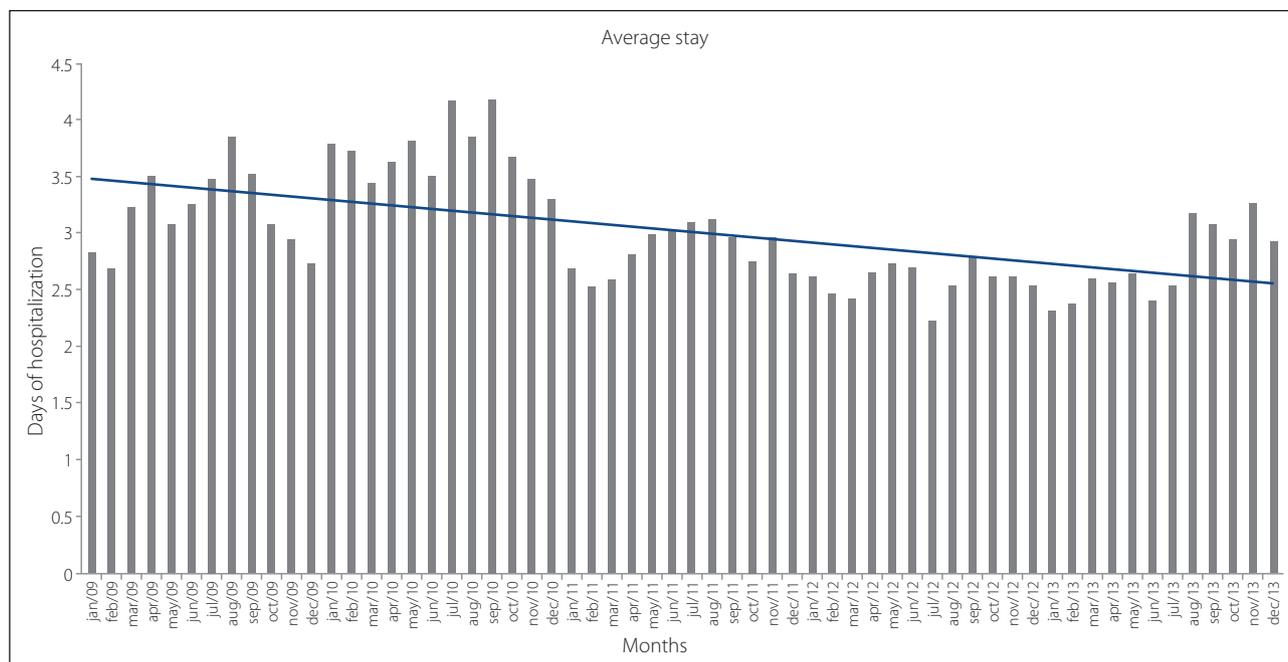


**Chart 2** – Incidence of phlebitis – number of cases of phlebitis per 100 patients-day with peripheral venous access, during a five-year period (2009 a 2013). São Paulo, 2013

Source: Research data, 2013.

team in decisions related to the unit, as well as supportive and flexible managers are associated to increased job satisfaction, increased retention of qualified professionals and lower intention to leave the job<sup>(19)</sup>.

The quality of health care was assessed by health workers as good or very good, and these evaluations can support the results of the search for safe and high-quality care. Analysis of the evolution of care indicators showed significant improve-



**Chart 3** – Average stay in days for hospitalized children during a five-year period (2009 to 2013). São Paulo, 2013

Source: Research data, 2013.

ment: all indicators tend to decrease. The institution was accredited by JCI in 2013. Thus, the periods pre (before July 2011) and post (after July 2011) accreditation were investigated. Since this is an essentially descriptive study, it cannot be said that accreditation has led to the improvement of health care indicators. However, the study highlights some possible relationships between the process of accreditation, the characteristics of the work environment of nursing professional and the results of the assessment of quality of care.

The findings of this study have implications for the nursing practice and stress factors that deserve the attention of nursing managers in health institutions. Issues such as autonomy, professional relationships and control over professional practice may have a significant effect on patient safety. Despite the lack of scientific evidence, they may encourage further intervention studies.

It should also be considered that the accreditation process implies high financial and human investments, such as long working hours devoted to planning, review and adjustment of work processes, spending on the incorporation of new technologies, and so far there is no systematic way to measure the return of these investments.

### Limitations

Since it is a descriptive study, there are no inferential analyzes on the relationships between the nursing work

environment and the described variables, which is a limitation of the study. Studies that investigate such relationships in work environments that provide care to children are essential to shed light on the factors that interfere with the quality and safety of nursing care.

Two health care indicators and one indicator on hospital performance were assessed in this study. Considering the incidence of phlebitis and PU, it can be said that these events can be reduced through the use of protocols implemented during the accreditation process. Concerning average stay, more comprehensive strategies are needed to reduce the rates of these indicators. Also, the accreditation process requires standardization of care, adherence to good practice guidelines, as well as changes in organizational leadership, which may reduce the occurrence of adverse events and improve nurse satisfaction with their work<sup>(19)</sup>. However, health care indicators should be analyzed with caution, since the underreporting of adverse events is frequent in Brazilian health institutions <sup>(21)</sup>.

### CONCLUSIONS

The environment of care in the hospital where this study was conducted was considered favorable to nursing practice. Nurses, nursing technicians and assistants assessed the quality of the care provided in their units as good. However, the presence of attitudes that favor patient

safety was mentioned only regarding the satisfaction of health professional with their work. The indicators showed a tendency of decrease in pressure ulcer and phlebitis rates, as well as in hospital stay.

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