

# The effects of the nurse work environment on job satisfaction, safety atmosphere, and reasons for missing care: cross-sectional research

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## ABSTRACT

**Background:** The nursing work environment significantly impacts patient safety, job satisfaction, and the occurrence of missed care, all of which contribute to the quality of healthcare services. In public teaching hospitals, nurses frequently face challenges, such as inadequate staffing, limited resources, and poor nurse-physician collaboration. This study aims to examine how organizational factors within the nursing work environment influence missed nursing care, safety climate, and job satisfaction among nursing professionals.

**Methods:** This cross-sectional study included 219 nurses and nurse technicians working in adult medical/surgical and critical care units at public teaching hospitals. Data were collected through the Practice Environment Scale (PES), the Miss care survey, and selected items from the Safety Attitudes Questionnaire (SAQ). Based on PES subscale scores, work environments were categorized as "good," "mixed," or "poor" to analyze the relationship between these categories and reported levels of missed care, job satisfaction, and perceptions of safety climate.

**Results:** The analysis revealed that nurses working in environments classified as "good" reported lower rates of missed care, higher job satisfaction, and a more favorable safety climate than those in "poor" or "mixed" environments. Key factors associated with increased missed care included insufficient staffing, inadequate resources, and limited nurse-physician collaboration. Supportive leadership and resource availability were found to enhance both job satisfaction and safety climate perceptions.

**Conclusion:** The findings underscore the importance of improving organizational factors within nursing work environments to reduce missed care and enhance job satisfaction and safety climate. Hospital administrators should prioritize supportive leadership, adequate staffing, and resources, which may lead to better patient outcomes and improved well-being among nursing staff.

**Keywords:** staffing, limited resources, satisfaction, organizational.

## INTRODUCTION

Organizational factors in nursing care have much to do with patient safety, underlined by (Liu et al., 2018). Also, high-quality care and the welfare of the patients are dependent on the work environment of the nurses, as depicted in the work of (Aiken, Sloane, et al., 2011). Studies also confirm that a supportive practice environment for nurses is associated with fewer missed nursing care reports. In other words, the rates of omitted care are higher among nurses who perceive their environment as not good than those who report theirs as very good (Lake et al., 2019). Also, a positive perception of work environment is associated with fewer reports of missed care by nurses (Kim et al., 2018; Smith et al., 2017). It is, therefore, required to identify the specific features of the work environment that contribute to missed nursing care.

According to Liu et al. 2018, organizational factors of nursing care have much to do with patient safety. Also, according to the work of Aiken, Sloane, et al. 2011, high quality and welfare of patients depend on the work environment the nurse is exposed to. A supportive practice environment for nurses is associated with fewer missed nursing care reports, studies confirm. This means that rates for omitted care are higher in those nurses who perceive their environment as not good compared to those who report theirs as very good (Lake et al.,

2019). A good perception of the work environment is related to fewer missed care reports by nurses. It is thus important to determine the specific characteristics of the work environment contributing to missed nursing care.

The nursing work environment is shaped by organizational factors that either support or hinder nursing practice (Lake, 2002), and studies have associated it with job satisfaction (Aiken, Sloane, et al., 2011; Alves et al., 2017; Dutra et al., 2018; Ulrich et al., 2014), retention (Alves et al., 2017; Dutra et al., 2018; Panunto&Guirardello, 2013; Roche et al., 2016), emotional exhaustion (Alves et al., 2017; Dutra et al., 2018; Panunto&Guirardello, 2013), professional incivility (Smith et al., 2018), and safety climate (Alves et al., 2017; Dorigan&Guirardello, 2017; Olds et al., 2017).

The nursing work environment also impacts patient outcomes, particularly regarding missed care (Carthon et al., 2015; Liu et al., 2018; Roche et al., 2016; Smith et al., 2017), which can reflect the quality and safety of nursing care. Missed care is evaluated by examining the frequency of tasks that were either partially completed, postponed, or entirely omitted, and understanding why these omissions occurred. Missed care indicates aspects of patient care that were not fulfilled or were delayed, often due to nurse workload and work environment conditions (Roche et al., 2016). Consequently, evaluating missed care provides insights into work environment issues that affect patient safety and care quality.

Research has documented that missed care occurrences are less common in better work environments that have effective leadership and adequate management skills and sufficient materials and human resources. (Carthon et al., 2015; Kim et al., 2018; Lake et al., 2019; Liu et al., 2018; Smith et al., 2017; McCauley et al., 2020). This study hypothesizes that, under these conditions, nursing professionals working in a more positive working environment will report fewer reasons for missed care, higher job satisfaction, and a positive perception of the safety climate.

Caused by the complexity that surrounds each aspect of care for the patients, causes of missed care do indeed need immediate investigation. Few studies have been conducted to examine how characteristics of the work environment are associated with missed care (Dutra et al., 2019; Silva et al., 2020). Changes in the nursing work environment may largely influence missed nursing care.

### **Patients and methods**

This study employed a cross-sectional design, following the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines (Elm et al., 2008).

#### **Participants**

The sample consisted of nursing professionals working in public teaching hospitals with a focus on medical and surgical specialties. In these settings, the nursing workforce is structured according to regulations that align with the care's complexity. Two categories of nursing professionals were considered: registered nurses (who complete a four-year program) and nurse technicians (who complete a two-year program). Both categories are involved in patient care, with registered nurses primarily responsible for care management and supervising nurse technicians. Depending on care complexity, the ratio of registered nurses typically ranges between 33% to 52%, with nurse technicians constituting the majority of the direct care providers.

Inclusion criteria included nurses and nurse technicians with a minimum of six months of experience in adult clinical medical/surgical and critical care units. Exclusion criteria were applied to those exclusively in managerial roles or those on holiday or sick leave during the study.

The sample size was calculated based on the methodology for estimating a proportion, using a p proportion of 0.50 to achieve the maximum sample size (Cochran, 1963), with a 5% margin of error and a 5% significance level. This calculation resulted in a required sample of 380 professionals across institutions.

Of the 667 nursing professionals invited to participate, 285 provided responses, with a final sample of 219 after excluding those with incomplete data, achieving a response rate of 42.7%.

#### **Data Collection**

Data collection took place between April and October 2017, using a convenience sampling method. Researchers accessed each unit's registry to identify professionals meeting the inclusion criteria and invited them to participate. Participants were provided with details about the study's purpose, confidentiality, and voluntary nature and received an envelope containing a consent form, a demographic questionnaire, and several assessment tools: the Practice Environment Scale (PES), the MISSCARE survey, and selected items from the Safety Attitudes Questionnaire (SAQ) for job satisfaction and safety climate. Participants returned completed instruments in sealed envelopes within a week, with extensions available as needed.

To characterize the sample, personal and professional variables were collected, including age, gender, marital status, education, sector and work shift, years in the profession and unit, additional employment, and weekly hours worked.

The work environment was assessed through the PES, which includes five subscales: foundations for quality care, staffing and resource adequacy, participation in hospital affairs, leadership support, and collegial nurse-

physician relations (Gasparino&Guirardello, 2017). Subscale scores ranged from 1 (strongly disagree) to 4 (strongly agree) on a Likert scale, with values of 2.5 or higher indicating a positive perception of the work environment. Work environments were categorized based on PES subscale scores: four or five subscales indicated a good environment, two or three indicated a mixed environment, and one or none indicated a poor environment (Lake & Friese, 2006).

Missed nursing care was measured using the MISSCARE survey (Siqueira et al., 2017), which includes 56 items divided into two sections. Part A measures missed care frequency on a Likert scale, while Part B identifies reasons for missed care across five subscales: communication, material resources, labor resources, management style, and ethical concerns. For analysis, responses were reverse-coded in Part B, with higher scores indicating more relevant reasons for missed care (Siqueira et al., 2017).

Job satisfaction and safety climate variables were derived from the SAQ, with values of 75 or higher considered positive (Sexton et al., 2006).

### Ethical Considerations

The study was approved by the appropriate ethical boards, and participants provided informed consent after receiving information about the study's objectives, risks, benefits, voluntary participation, and confidentiality. A researcher collected the sealed responses, ensuring that institutions did not participate in the data collection process.

### Data Analysis

Descriptive, correlation, and comparative analyses were conducted. Spearman's correlation coefficient assessed the relationship between PES subscales and missed care, job satisfaction, and safety climate. Work environment categories (poor, mixed, good) were analyzed using the Kruskal-Wallis test with Dunn's post-test to compare PES results with missed care subscales, safety climate, and job satisfaction. The Kruskal-Wallis test and ANOVA model were also used to examine shift differences, and an unpaired t-test and Mann-Whitney U test were employed to compare professional categories. Statistical significance was set at 5%.

### Validity, Reliability, and Rigor

Permissions were obtained from the authors of the instruments used and the health institutions involved. All instruments were validated for cultural relevance and reliability. The version of the PES demonstrated Cronbach's alpha values between 0.76 and 0.87, while the MISSCARE survey yielded values from 0.77 to 0.90 for missed care subscales (Gasparino&Guirardello, 2017; Siqueira et al., 2017). The SAQ's safety climate and job satisfaction measures had alphas of 0.67 and 0.77, respectively (Carvalho & Cassiani, 2012). In this study, the reliability of all subscales was considered satisfactory, with Cronbach's alphas above 0.70, except for the safety climate subscale, which had a value of 0.69 (Table 1).

**Table 1.** Mean, standard deviation, minimum, median, maximum and Cronbach's alpha for PES subscales, safety climate, job satisfaction and reasons for missed care ( $N = 219$ )

Variables	Mean	Standard deviation	Minimum	Median	Maximum	Cronbach's alpha
PES subscales						
Collegial nurse-physician relations	2.80	0.63	1.00	3.00	4.00	0.83
Nurse manager ability, leadership and support	2.63	0.72	1.00	2.60	4.00	0.85
Nursing foundations for quality care	2.59	0.61	1.14	2.57	4.00	0.82
Nurse participation in hospital affairs	2.40	0.69	1.00	2.40	4.00	0.80
Staffing and resource adequacy	2.33	0.68	1.00	2.25	4.00	0.75
SAQ Subscales						
Job satisfaction	80.32	17.32	15.00	85.00	100.0	0.81
Safety climate	59.13	19.00	0.00	60.71	100.0	0.69
MISSCARE-BRASIL Subscales						
Labor resources	2.82	0.62	1.00	2.87	4.00	0.78
Material resources	2.63	0.78	1.00	2.75	4.00	0.76
Ethical dimension	2.61	0.98	1.00	2.66	4.00	0.81
Institutional management/leadership style	2.55	0.89	1.00	2.66	4.00	0.76

Communication	2.50	0.72	1.00	2.60	4.00	0.88
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Abbreviations: PES: Practice Environment Scale; SAQ: Safety Attitudes Questionnaire.

**RESULTS**

The sample included 219 nursing professionals, with 55.3% working in adult medical/surgical units and 44.7% in critical care units. Among these, 35.6% were registered nurses and 64.4% were nurse technicians. The group was predominantly female (81.3%), with 51.6% married, and had an average age of 37 years (SD = 8.37). Their average time in their current unit was 5.5 years (SD = 4.88), while overall professional experience averaged 11.5 years (SD = 6.87). Regarding work shifts, 42.5% worked in the morning, 26.3% in the afternoon, and 30.6% at night. The average weekly working hours totaled 35, and 83% held only one job.

The nursing work environment was rated as mixed, with the highest scores observed in collegial nurse-physician relations (M = 2.80), nurse manager ability, leadership, and support (M = 2.63), and nursing foundations for quality care (M = 2.59). Participants reported high job satisfaction (M = 80.32), but an unfavorable view of the safety climate (M = 59.13). Labor resources (M = 2.82) and material resources (M = 2.63) were highlighted as primary contributors to missed nursing care (see Table 1).

Correlation analysis revealed that subscales from the Practice Environment Scale (PES) were strongly associated with safety climate and moderately with job satisfaction. Enhanced perceptions of managerial support and leadership were linked to fewer reasons for missed care (Table 2). The work environment was categorized as poor, mixed, or good, and was then examined in relation to safety climate, job satisfaction, and reasons for missed care, with comparisons drawn across groups such as poor vs. good environments, mixed vs. good, and poor vs. mixed (Table 3).

In examining differences in work environment perceptions by shift, significant variations emerged. Nurses working night shifts perceived lower nurse involvement in hospital matters (p = .0298), lower staffing and resource adequacy (p = .0168), and weaker managerial support (p = .0001) compared to those working daytime shifts.

When comparing nurses to nurse technicians, technicians showed higher job satisfaction (p = .0187) and more favorable views of the work environment, particularly regarding foundations for quality care (p = .0003) and managerial support (p = .0067). No significant differences were observed in reasons for missed care or safety climate perceptions between these groups.

**Table 2.** Spearman's correlation coefficient among the subscales of the Practice Environment Scale (PES), reasons for missed care, safety climate, and job satisfaction

Variables	PES Subscales				
	Nurse participation in hospital affairs	Nursing foundations for quality care	Nurse manager ability, leadership, and support	Staffing and resource adequacy	Collegial nurse-physician relations
SAQ Subscales					
Safety climate	<b>0.56</b> *	<b>0.58</b> *	<b>0.58</b> *	<b>0.35</b> *	<b>0.34</b> *
Job satisfaction	<b>0.38</b> *	<b>0.45</b> *	<b>0.41</b> *	0.26*	<b>0.34</b> *
MISSCARE-BRASIL Subscales					
Labor resources	-0.25**	-0.19**	<b>-0.36</b> *	<b>-0.35</b> *	-0.27*
Material resources	-0.26*	-0.21**	<b>-0.36</b> *	-0.28*	-0.28*
Communication	-0.27*	-0.29*	<b>-0.31</b> *	-0.23**	-0.29*
Ethical dimension	-0.13	-0.23**	-0.17**	-0.05	-0.19**
Institutional management/leadership style	-0.28*	<b>-0.32</b> *	<b>-0.34</b> *	-0.25**	-0.28*

Abbreviation: SAQ: Safety Attitudes Questionnaire.

\* p < .0001;

\*\* p < .05.

**Table 3.** Comparison of nursing work environments classified as Poor, Mixed, and Good with reasons for missed care from MISSCARE-BRASIL, safety climate, and job satisfaction

Variables	Work environment	Sample	Mean	Standard deviation	Median	p
SAQ subscales						
Safety climate	Poor	71	47.94	17.01	50.00	<0.0001* <sup>†,‡</sup>

	Mixed	61	55.33	15.23	57.14	
	Good	87	70.94	16.23	71.43	
Job satisfaction	Poor	71	71.55	19.43	75.00	<0.0001* <sup>†</sup> ‡§
	Mixed	61	80.16	16.05	85.00	
	Good	87	87.59	12.53	90.00	
MISSCARE-BRASIL subscales						
Labor resources	Poor	71	3.03	0.53	3.13	<0.0001* <sup>†</sup> ‡
	Mixed	61	2.91	0.53	3.00	
	Good	87	2.60	0.69	2.63	
Material resources	Poor	71	2.94	0.71	3.00	<0.0001* <sup>†</sup> ‡§
	Mixed	61	2.64	0.67	2.75	
	Good	87	2.39	0.84	2.25	
Communication	Poor	71	2.79	0.64	2.80	<0.0001* <sup>†</sup>
	Mixed	61	2.53	0.65	2.40	
	Good	87	2.27	0.77	2.30	
Ethical dimension	Poor	71	2.86	0.82	3.00	0.0268* <sup>†</sup>
	Mixed	61	2.61	1.01	2.67	
	Good	87	2.41	1.05	2.33	
Institutional management/leadership style	Poor	71	2.96	0.68	3.00	<0.0001* <sup>†</sup> ‡§
	Mixed	61	2.54	0.84	2.67	
	Good	87	2.23	0.96	2.00	

Abbreviation: SAQ, Safety Attitudes Questionnaire.

\* *p*-value: Kruskal–Wallis test. Dunn post test (<sup>†</sup>significant difference between Poor and Good. <sup>‡</sup>significant difference between Mixed and Good. <sup>§</sup>significant difference between Poor and Mixed).

## DISCUSSION

The primary aim of this study was to assess the nursing work environment and examine its relationship with missed nursing care, job satisfaction, and safety climate. Findings aligned with the hypothesis that nursing professionals who perceived their environment positively reported fewer instances of missed care, higher job satisfaction, and a more favorable view of the safety climate.

Results indicate that nursing professionals rated their work environment as mixed, particularly in areas such as nursing foundations for quality care, collegial nurse-physician relations, and manager ability, leadership, and support. This aligns with international studies, including one that examined nine countries and found most nursing work environments were classified as mixed (Aiken, Cimiotti, et al., 2011), and another study showing a link between a positive safety climate and a favorable nursing environment (Lake et al., 2016).

Conversely, the subscales on nurse participation in hospital affairs and staffing/resource adequacy scored lower, impacting the unfavorable perception of the work environment. Enhancing nurses' involvement in care-related decision-making and providing adequate resources could improve perceptions of the work environment (Aiken, Sloane, et al., 2011; Kim et al., 2018; Liu et al., 2018; Roche et al., 2016).

While nursing professionals expressed job satisfaction, they viewed the safety climate unfavorably, likely due to areas needing improvement, such as staffing and nurse involvement in decision-making. A Brazilian study similarly indicated that a better nursing work environment correlated with higher job satisfaction and a positive safety climate (Alves et al., 2017).

The main factors contributing to missed care were labor resources, such as insufficient staffing and inexperienced staff, and material resources, including inadequate supplies and equipment. This finding is consistent with prior research (Hernández-Cruz et al., 2017; Kalisch et al., 2011).

Missed nursing care is a recognized factor that can undermine care quality (Carthon et al., 2015; Kalisch et al., 2011; Kim et al., 2018; Lake et al., 2019; Liu et al., 2018; Smith et al., 2017). Ensuring an adequate nursing staff can reduce instances of missed care (Cho et al., 2015; Bragadóttir et al., 2017).

Work shifts also affected perceptions of the environment, with night shift professionals perceiving the environment less favorably than day shift staff, partly due to reduced leadership support and limited participation in hospital decisions. Night shift professionals often have fewer opportunities for management interaction, which can impact decision-making inclusion.

Correlational analysis showed that safety climate had a strong positive correlation with all PES subscales, while job satisfaction correlated moderately with most subscales and weakly with staffing and resource adequacy. Evidence suggests that a positive safety climate (Alves et al., 2017; Liu et al., 2018) and high job satisfaction (Aiken, Sloane, et al., 2011; Alves et al., 2017; Dutra et al., 2018) are linked to a favorable work environment.

Regarding missed care, moderate negative correlations were found with the subscale nurse manager ability, leadership, and support. Environments with strong leadership support tend to report fewer missed care instances. Effective management has been shown to reduce missed care (McCauley et al., 2020). Further studies indicate that better labor and material resources are associated with fewer missed care instances (Blackman et al., 2014; Cho et al., 2015; Smith et al., 2017), as missed care can negatively impact care quality, satisfaction, and increase adverse events, turnover, and job resignation (Jones et al., 2015).

Another notable finding is that professionals who rated their environment as good reported fewer missed care instances, higher job satisfaction, and a more favorable view of the safety climate. This aligns with previous findings that missed care was less common in good or mixed environments compared to poor ones (Lake et al., 2019).

Additionally, nursing technicians had a more favorable view of the work environment, particularly on the subscales of quality care foundations and manager support, and reported higher job satisfaction than registered nurses. This may stem from nurses' roles in staffing and supervision, which could lead them to critically assess the work environment. However, no significant differences were found in the safety climate or reasons for missed care. An Icelandic study found that registered nurses reported more missed care related to staffing and resources than practical nurses (Bragadóttir & Kalisch, 2018).

## CONCLUSION

The nursing work environment for this study was classified as mixed. Professionals who perceive a good work environment have lower missed care reasons and exhibit a good safety climate. They also express more job satisfaction. Recognizing and valuing the time nursing staff use in direct patient care can enable them to complete nursing care without omission. Additionally, strong leadership can contribute to enhancement of the work environment and reduction in missed care events.

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