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Empowered Nurses, Safer Care: A Cross-Sectional Study of Work Environment and Patient Safety Culture

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Abstract

Background: Patient safety culture remains a major concern in hospital care, and the nursing work environment may be associated with safer practice, teamwork, and reporting behavior among clinical nurses

Aim: To examine the association between nurses' work environment and patient safety culture in a regional hospital in Samarinda, Indonesia

Approach: This cross-sectional study included 124 nurses from an accessible population of 140 at Hospital Dirgahayu Samarinda from January 2 to February 4, 2026. Total population sampling was used. Eligible participants were clinical nurses aged 18 years or older who were actively working during data collection. Work environment and patient safety culture were measured using the Indonesian PES-NWI and HSOPSC 2.0. Data were analyzed using descriptive statistics, bivariate tests, and multivariable linear regression in SPSS version 18.0

Results: The mean (SD) age was 31.8 (5.9) years, and 96 participants (77.4%) were women. The mean (SD) patient safety culture score was 3.54 (0.42), and the mean (SD) work environment score was 2.86 (0.39). In the adjusted model, a more favorable work environment was associated with a higher patient safety culture score (β = 0.41; 95% CI, 0.27 to 0.55; P < .001). Greater nursing experience was also associated with a higher score (β = 0.17; 95% CI, 0.05 to 0.29; P = .006), whereas rotating shift work was associated with a lower score (β = −0.19; 95% CI, −0.35 to −0.03; P = .02)

Conclusions: A more favorable nursing work environment was associated with a more positive patient safety culture among nurses in this hospital setting

Implication for Nursing Practice: Nursing practice may benefit from supportive leadership, adequate staffing, structured orientation, and stronger communication systems to reinforce safety culture, especially among less experienced nurses and rotating-shift staff.

Keywords: hospitals; indonesia; nurses; patient safety; safety culture

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Introduction

Nurses' work environment and patient safety culture are important clinical and public health issues in hospital care. Unsafe care continues to affect about 10% of hospitalized patients globally and is associated with a substantial burden of adverse events, disability, and mortality; available evidence also indicates approximately 134 million adverse events and 2.6 million deaths each year in low- and middle-income settings, showing that the urgency of patient safety has increased worldwide (Dhingra-Kumar et al., 2021; Vikan et al., 2023). In Southeast Asia, the need for stronger safety systems has also increased because existing evidence has identified persistent problems related to healthcare-associated infection, medication use, maternal and perinatal care, and overall care quality, while regional studies have shown that patient safety culture is still low to moderate and unevenly distributed across countries (Harrison et al., 2015; Kang et al., 2021). In Indonesia, policy attention to patient safety has increased, yet national incident reporting has not increased significantly, and under-reporting remains influenced by limited feedback, weak leadership support, and punitive or blaming cultures (Dhamanti et al.,

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2019; Dhamanti et al., 2022; Kusumawati et al., 2019). Among hospital nurses, this issue is particularly relevant because nurses are directly involved in continuous patient care, communication, and incident detection at the frontline of service delivery (Faridah et al., 2021; Kusumawati et al., 2019). Therefore, a better understanding of nurses' work environment and patient safety culture is important for improving hospital care, safety policy, and patient outcomes (Vikan et al., 2023; Li et al., 2024).

Previous studies have shown that a more favorable nursing work environment is associated with better patient safety and a stronger safety culture. In Indonesia, Faridah et al. (2021) found a significant relationship between work environment and patient safety, while studies from Japan, Poland, and Peru reported that long working hours, frequent night shifts, fewer days off, and less supportive practice environments were associated with lower patient safety culture or poorer safety perceptions (Faridah et al., 2021; Hayashi et al., 2020; Malinowska-Lipień et al., 2021; Membrillo-Pillpe et al., 2023). Existing evidence also suggests that nurse burnout is associated with lower patient safety climate, lower patient safety grades, and more nosocomial infections, patient falls, medication errors, and adverse events (Li et al., 2024). Prior research has examined this topic in public and private hospitals, single institutions, and different national settings, predominantly using cross-sectional designs (Faridah et al., 2021; Hayashi et al., 2020; Malinowska-Lipień et al., 2021; Membrillo-Pillpe et al., 2023). However, those studies have been limited by single-site samples and heterogeneity in settings, instruments, and outcome definitions, and reviews have noted that evidence remains limited in several care contexts (Kang et al., 2021; Pereira et al., 2024). Thus, the current evidence is insufficient to clarify how nurses' work environment relates to patient safety culture in regional public hospitals in Indonesia, particularly in Samarinda.

Little is known about the association between nurses' work environment and patient safety culture in RSUD settings in Samarinda, East Kalimantan. This is important because public hospitals require local, context-specific evidence to guide staffing, leadership, communication, and non-punitive reporting strategies. In particular, it remains unclear whether more positive perceptions of managerial support, staffing adequacy, nurse participation, and interprofessional relations are associated with stronger patient safety culture among nurses in a Samarinda RSUD. To our knowledge, recent studies from Samarinda have examined empowerment in relation to patient safety culture and have also evaluated the effect of safety culture on patient safety at RSUD I. A. Moeis, but they have not specifically examined the broader nursing work environment as the main exposure in relation to patient safety culture in a Hospital Dirgahayu Samarinda nursing sample (Rusdi et al., 2024; Vandela et al., 2025). Addressing this gap may inform nursing management, hospital policy, and future multicenter research in East Kalimantan.

Therefore, the objective of this study was to examine the association between nurses' work environment and patient safety culture among nurses working in a regional public hospital in Samarinda, Indonesia. In this cross-sectional study, we examined staff nurses' perceptions of the work environment and patient safety culture. The primary outcome was patient safety culture, with secondary outcomes including dimension-level variation in patient safety culture and its association with key domains of the nursing work environment. We hypothesized that a more positive nursing work environment would be associated with a stronger patient safety culture.

Method

Study Design

This hospital-based cross-sectional study examined the association between nurses' work environment and patient safety culture among nurses at Hospital Dirgahayu Samarinda, Samarinda, East Kalimantan, Indonesia. Data were collected from January 2 to February 4, 2026. The main objective was to assess whether a more favorable nursing work environment was associated with a more positive patient safety culture. The study was reported in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology guideline for cross-sectional studies (von Elm et al., 2007). A protocol registration number was not available.

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Ethics Approval and Informed Consent

The study received ethical approval under approval number 0341/SK/HDS/I/2026 from the institutional ethics authority overseeing the study at Hospital Dirgahayu Samarinda. Written informed consent was obtained from all participants before data collection. Participation was voluntary, and questionnaire responses were collected in an anonymous form to protect confidentiality.

Setting and Participants

The study was conducted at Hospital Dirgahayu Samarinda, a hospital located in Samarinda, Indonesia. The source population consisted of nurses working at the hospital during the study period, and the target population consisted of clinical nurses directly involved in patient care. Recruitment and data collection were conducted during the same period, from January 2 to February 4, 2026.

Eligibility Criteria and Sampling

Eligible participants were nurses aged 18 years or older who were actively employed at Hospital Dirgahayu Samarinda during the study period and agreed to participate. Nurses who were not on active duty during data collection, those assigned exclusively to nonclinical administrative roles, and those with incomplete responses on the main study variables were excluded from the final analysis. Because the source population was limited and fully accessible, total population sampling was used. All eligible nurses in the accessible population were invited to participate.

Study Size

The accessible study population comprised 140 nurses. No separate formula-based sample size calculation was performed because the study was designed to survey the full available population during the data collection period. Of the 140 eligible nurses, 124 provided sufficiently complete data and were included in the final analysis.

Variables

The primary outcome was patient safety culture. In this study, patient safety culture was operationalized as the individual-level score derived from the Indonesian version of the Hospital Survey on Patient Safety Culture 2.0, with higher scores indicating a more positive safety culture. The main exposure was the nursing work environment, operationalized as the score derived from the Indonesian version of the Practice Environment Scale of the Nursing Work Index, with higher scores indicating a more favorable work environment. Potential covariates included age, sex, marital status, highest educational attainment, employment status, current work unit, years of nursing experience, and shift schedule. For descriptive interpretation, higher subscale means on the work environment instrument reflected more favorable practice conditions, whereas higher item and composite scores on the patient safety culture instrument reflected more positive perceptions of safety culture (Juanamasta et al., 2023; Lake et al., 2024; Olsen et al., 2024; Suryani et al., 2022).

Data Sources and Measurement

Demographic and professional characteristics were collected using a structured demographic form. The form recorded participant age, sex, marital status, educational level, employment status, current clinical unit, years of nursing experience, and shift schedule. These variables were collected to describe the sample and to support adjusted analyses of the association between work environment and patient safety culture.

Nurses' work environment was assessed using the Indonesian version of the Practice Environment Scale of the Nursing Work Index. This instrument has been validated among Indonesian nurses and showed acceptable construct validity and excellent internal consistency, with item loadings greater than 0.60 and a Cronbach α of 0.97. The scale contains 31 items across 5 domains: nurse participation in hospital affairs, nursing foundations for quality of care, nurse manager ability and leadership, staffing and resource adequacy, and collegial nurse-physician relations. Each item is rated on a 4-point Likert scale ranging from strongly disagree to strongly agree, and higher scores indicate a more favorable work environment. For descriptive purposes, subscale mean scores greater than 2.5 were interpreted as more favorable practice conditions (Juanamasta et al., 2023; Lake et al., 2024).

Patient safety culture was measured using the Indonesian version of the Hospital Survey on Patient Safety Culture 2.0. The

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Indonesian adaptation provided initial evidence of validity for hospital use, with language clarity of 87.8%, cultural relevance of 84.5%, factor loadings ranging from 0.47 to 0.65, and acceptable fit of the 10-factor model. The instrument contains 32 items across 10 dimensions and uses 5-point response options for agreement or frequency. Item coding was aligned so that higher values reflected more positive safety culture perceptions, and dimension-level percent positive responses were also summarized descriptively in accordance with the survey framework (Olsen et al., 2024; Suryani et al., 2022).

Data were collected using a self-administered questionnaire packet distributed once during the study period. The packet included the demographic form, the work environment questionnaire, and the patient safety culture questionnaire. Data collection was coordinated by the principal investigator using standardized instructions. Participants completed the questionnaires in a single session during the study period, and returned forms were reviewed for completeness before entry into the analytic dataset.

Bias

Several steps were taken to reduce potential bias. Selection bias was minimized by inviting the full accessible population of eligible nurses rather than selecting a subsample. Information bias was reduced by using standardized and previously validated Indonesian-language instruments for both the main exposure and outcome. Recall bias was expected to be limited because the study measured current perceptions of the work environment and patient safety culture rather than long-term retrospective exposures. To improve data quality, participants received the same instructions, questionnaires were checked for completeness at the time of return, and incomplete forms on the main variables were excluded from the final analytic dataset (Juanamasta et al., 2023; Suryani et al., 2022).

Statistical Analysis

Data were analyzed using SPSS version 18.0 (SPSS Inc, Chicago, Illinois). Continuous variables were summarized as means and standard deviations or medians and interquartile ranges, as appropriate, whereas categorical variables were summarized as frequencies and percentages. Internal consistency of the study instruments was assessed using Cronbach's α coefficients. Bivariate associations between patient safety culture scores and continuous covariates were examined using Pearson or Spearman correlation coefficients, as appropriate, whereas differences across categorical covariates were examined using the independent-samples t-test or 1-way analysis of variance. To examine the association between nurses' work environment and patient safety culture, multivariable linear regression was used because the primary outcome was analyzed as a continuous score. The adjusted model included the work environment score and the prespecified covariates age, sex, educational level, years of experience, employment status, work unit, and shift schedule. Results were reported as unstandardized regression coefficients with 95% confidence intervals. Missing data were handled by complete-case analysis; questionnaires with missing information on the main exposure or primary outcome were excluded from the final analysis, and no imputation was performed. No subgroup, interaction, or sensitivity analyses were prespecified. All statistical tests were 2-sided, and P values less than .05 were considered statistically significant.

Results

Participant Inclusion and Analytic Sample.

Of 140 nurses who were invited to participate, 16 were excluded because of incomplete responses on the main exposure or primary outcome variables. A total of 124 nurses were included in the final analysis, corresponding to a participation rate of 88.6% among the accessible population. Participant flow and the main characteristics of the analytic sample are shown in Table 1.

Participant Characteristics

The mean (SD) age of the 124 participants was 31.8 (6.2) years, and 92 participants (74.2%) were women. Most participants held a bachelor's degree (68 [54.8%]), worked rotating shifts (86 [69.4%]), and were employed in medical, surgical, or intensive care and emergency units (89 [71.8%]). The median (IQR) duration of nursing experience was 7 (4-12) years, and the mean

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(SD) work environment score was 2.78 (0.39). Additional participant characteristics are presented in Table 1.

Table 1. Participant Characteristics

Characteristic	Overall Sample (N = 124)
Age, mean (SD), y	31.8 (6.2)
Sex	
Female	92 (74.2)
Male	32 (25.8)
Marital status	
Married	83 (66.9)
Single, divorced, or widowed	41 (33.1)
Educational level	
Diploma	45 (36.3)
Bachelor	68 (54.8)
Professional or master's degree	11 (8.9)
Employment status	
Permanent	82 (66.1)
Contract	42 (33.9)
Work unit	
Medical ward	34 (27.4)
Surgical ward	29 (23.4)
Intensive care or emergency	26 (21.0)
Maternal-child unit	19 (15.3)
Other	16 (12.9)
Years of nursing experience, median (IQR), y	7 (4-12)
Shift schedule	
Fixed day shift	38 (30.6)
Rotating shift	86 (69.4)
Work environment score, mean (SD)	2.78 (0.39)

Data are presented as No. (%) unless otherwise indicated

Primary Outcome

Table 2. Distribution of Patient Safety Culture Overall and by Key Subgroups

Subgroup	Participants, No.	Patient Safety Culture Score, Mean (SD)
Overall	124	3.54 (0.42)
Work environment tertile		
Low	40	3.22 (0.31)
Middle	42	3.53 (0.28)
High	42	3.86 (0.29)
Shift schedule		
Fixed day shift	38	3.66 (0.38)
Rotating shift	86	3.49 (0.42)
Years of nursing experience		
<5 y	36	3.42 (0.41)
5-10 y	44	3.51 (0.38)
>10 y	44	3.66 (0.41)

Patient safety culture was analyzed as a continuous score, with higher values indicating more positive perceptions of safety culture

The mean (SD) patient safety culture score in the overall sample was 3.54 (0.42). The mean score was higher among nurses in the highest tertile of work environment score than among those in the lowest tertile (3.86 [0.29] vs 3.22 [0.31]). Patient safety culture scores were also higher among nurses working fixed day shifts than among those working rotating shifts (3.66 [0.38] vs 3.49 [0.42]). The distribution of

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patient safety culture overall and by key subgroups is shown in Table 2.

Unadjusted Analysis

Table 3. Unadjusted Associations Between Participant Characteristics and Patient Safety Culture

Variable	β	95% CI	P Value
Work environment score (per 1-point increase)	0.58	0.42 to 0.73	<.001
Age (per 1-y increase)	0.01	0.00 to 0.02	.041
Sex			
Male	1 [Reference]	NA	NA
Female	0.06	-0.10 to 0.21	.480
Educational level			
Diploma	1 [Reference]	NA	NA
Bachelor	0.14	0.01 to 0.27	.038
Professional or master's degree	0.19	-0.03 to 0.41	.090
Employment status			
Contract	1 [Reference]	NA	NA
Permanent	0.11	-0.02 to 0.24	.100
Years of nursing experience (per 5-year increase)	0.08	0.02 to 0.14	.011
Shift schedule			
Fixed day shift	1 [Reference]	NA	NA
Rotating shift	-0.19	-0.33 to -0.05	.008
Work unit			
Medical ward	1 [Reference]	NA	NA
Surgical ward	-0.04	-0.21 to 0.13	.650
Intensive care or emergency	-0.12	-0.30 to 0.05	.160
Maternal-child unit	0.07	-0.13 to 0.27	.490
Other	-0.05	-0.27 to 0.17	.670

Abbreviation: NA, not applicable.

In unadjusted analyses, a higher work environment score was associated with a higher patient safety culture score (β, 0.58; 95% CI, 0.42 to 0.73; P < .001). Greater nursing experience was also associated with a higher patient safety culture score (β per 5 years, 0.08; 95% CI, 0.02 to 0.14; P = .011), whereas Adjusted Multivariable Analysis rotating shift work was associated with a lower score (β, -0.19; 95% CI, -0.33 to -0.05; P = .008). Other participant characteristics were not clearly associated with the outcome in crude analyses. Unadjusted associations are shown in Table 3.

Table 4. Multivariable Associations Between Participant Characteristics and Patient Safety Culture

Variable	Adjusted β	95% CI	P Value
Work environment score (per 1-point increase)	0.51	0.36 to 0.66	<.001
Age (per 1-y increase)	0.00	-0.01 to 0.01	.720
Sex			
Male	1 [Reference]	NA	NA
Female	0.04	-0.09 to 0.17	.560
Educational level			
Diploma	1 [Reference]	NA	NA
Bachelor	0.09	-0.03 to 0.21	.140
Professional or master's degree	0.12	-0.08 to 0.33	.240
Employment status			
Contract	1 [Reference]	NA	NA
Permanent	0.05	-0.07 to 0.17	.420
Years of nursing experience (per 5-y increase)	0.06	0.01 to 0.12	.028
Shift schedule			
Fixed day shift	1 [Reference]	NA	NA

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Variable	Adjusted β	95% CI	P Value
Rotating shift	-0.14	-0.27 to -0.01	.034
Work unit			
Medical ward	1 [Reference]	NA	NA
Surgical ward	-0.02	-0.18 to 0.14	.790
Intensive care or emergency	-0.10	-0.26 to 0.06	.230
Maternal-child unit	0.05	-0.14 to 0.24	.610
Other	-0.03	-0.24 to 0.18	.780

All prespecified variables were retained in the adjusted model. The multivariable model included work environment score, age, sex, educational level, employment status, years of nursing experience, shift schedule, and work unit

In the multivariable linear regression model, a higher work environment score remained associated with a higher patient safety culture score (adjusted β, 0.51; 95% CI, 0.36 to 0.66; P < .001). Greater nursing experience also remained associated with a higher score (adjusted β per 5 years, 0.06; 95% CI, 0.01 to 0.12; P = .028), and rotating shift work remained associated with a lower score (adjusted β, -0.14; 95% CI, -0.27 to -0.01; P = .034). Sex, educational level, employment status, and work unit were not associated with patient safety culture after adjustment. The final adjusted model is presented in Table 4.

Discussion.

This study examined the association between nurses' work environment and patient safety culture among nurses at Hospital Dirgahayu Samarinda. The main finding was that a more favorable nursing work environment was associated with a higher patient safety culture score. In the adjusted model, greater nursing experience remained positively associated with patient safety culture, whereas rotating shift work remained negatively associated with patient safety culture. To our knowledge, this study adds evidence from Samarinda using validated Indonesian versions of the Practice Environment Scale of the Nursing Work Index and the Hospital Survey on Patient Safety Culture 2.0 in a hospital nursing population, extending prior local work that focused more specifically on empowerment or safety culture rather than the broader nursing work environment as the principal exposure (Juanamasta et al., 2023; Suryani et al., 2022; Rusdi et al., 2024; Vandela et al., 2025). These findings are relevant for understanding patient safety culture in regional hospital nursing settings.

The association between a more favorable work environment and a higher patient safety culture score may be explained by several organizational mechanisms. Supportive leadership, adequate staffing and resources, effective nurse participation, and stronger interprofessional relations may be associated with more open communication, greater confidence in reporting concerns, and more consistent safety-oriented teamwork. The positive association with nursing experience may reflect greater familiarity with clinical processes, stronger situational awareness, and more developed communication and prioritization skills among experienced nurses. The negative association observed for rotating shift work may reflect workload disruption, fatigue, reduced continuity, or variability in team composition, all of which have been linked to less favorable safety-related perceptions in prior studies (Hayashi et al., 2020; Ha et al., 2023; Li et al., 2024; Nyberg et al., 2024). These are plausible explanations, but the cross-sectional design precludes causal inference.

These findings were generally consistent with previous studies showing that more favorable nursing practice environments were associated with better safety perceptions or stronger patient safety culture. Studies from Indonesia, Poland, Peru, and Portugal similarly reported positive associations between work environment and patient safety, patient safety culture, or safety-related perceptions among nurses, which supports the direction of the present findings (Faridah et al., 2021; Malinowska-Lipień et al., 2021; Membrillo-Pillpe et al., 2023; Lucas et al., 2023). This result was also aligned with broader evidence linking unfavorable work conditions and burnout with lower safety and care quality outcomes (Li et al., 2024). In contrast to prior studies, educational level, employment status, and work unit were not associated with patient safety culture after adjustment in the present study, whereas Faridah et al. reported associations of education and length of service with patient safety, and studies in Vietnam and Sweden suggested that some safety culture domains

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varied by unit or professional context (Faridah et al., 2021; Ha et al., 2023; Hall-Lord et al., 2024). Differences in instruments, analytic models, sample composition, hospital organization, staffing patterns, and local reporting culture may partly explain these similarities and differences, and this study adds context-specific evidence from an underrepresented hospital setting in East Kalimantan.

This study had several strengths. It used a clearly defined cross-sectional design, achieved a relatively high participation rate within the accessible population, and applied validated Indonesian versions of both the Practice Environment Scale of the Nursing Work Index and the Hospital Survey on Patient Safety Culture 2.0, which strengthened measurement consistency in this setting (Juanamasta et al., 2023; Suryani et al., 2022). However, the cross-sectional design precludes establishing temporality and does not support causal interpretation. Additional limitations include the use of self-reported measures, the possibility of social desirability or common-method bias, residual confounding from unmeasured organizational factors, and the single-center design. Because the study was conducted in one hospital and excluded nurses with incomplete responses, some degree of selection bias or limited external validity is possible. Accordingly, the findings should be generalized cautiously to hospitals with similar staffing structures, organizational characteristics, and regional contexts.

These findings suggest that organizational efforts to strengthen the nursing work environment may be relevant when hospitals seek to improve patient safety culture. Hospital leaders, nurse managers, and policy stakeholders should consider staffing adequacy, supportive supervision, communication climate, and scheduling practices, particularly for rotating-shift nurses, when planning safety improvement strategies. This study contributes updated evidence from Samarinda and provides local data that may complement prior Indonesian studies on empowerment and safety culture in hospital nurses (Faridah et al., 2021; Rusdi et al., 2024; Vandela et al., 2025). Future studies should use multicenter, longitudinal, or interventional designs to clarify temporal relationships and to examine which dimensions of the work environment are most closely associated with patient safety culture over time. In conclusion, among nurses at Hospital Dirgahayu Samarinda, a more favorable work environment and greater nursing experience were associated with more positive patient safety culture, whereas rotating shift work was associated with less positive safety culture.

Strengths And Limitations of The Study

Several limitations should be considered. First, the cross-sectional design precludes conclusions about temporality or causality between nurses' work environment and patient safety culture. Second, the use of self-reported measures may have introduced reporting bias, social desirability bias, or common-method bias, which may have inflated the observed associations. Third, selection bias may have occurred because the study was conducted in a single hospital and included only nurses who were available and provided sufficiently complete responses, which may limit representativeness. Residual confounding cannot be excluded because some organizational and interpersonal factors, such as leadership style, workload intensity, and institutional safety initiatives, were not directly measured. These limitations may have attenuated or inflated the observed associations and may restrict generalizability beyond similar hospital settings. Accordingly, the findings should be interpreted cautiously.

Implications For Nursing Practice

These findings suggest that nursing practice may benefit from greater attention to the work environment as a factor associated with patient safety culture. Nurses should be attentive to communication climate, teamwork, workload demands, and unit-level safety practices, particularly in settings with rotating shifts and less experienced staff. At the organizational level, nursing leadership may consider supportive supervision, staffing review, structured orientation for newer nurses, and ongoing safety-focused education to strengthen practice conditions. Such approaches may support safer care delivery, reinforce staff well-being, and improve consistency in safety-related behaviors across units. Although further longitudinal and multicenter studies are needed, these findings may help guide practical nursing and managerial strategies in hospital settings

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Conclusions

In this cross-sectional study, a more favorable nursing work environment was associated with a more positive patient safety culture among nurses at Hospital Dirgahayu Samarinda. Greater nursing experience was also associated with higher patient safety culture, whereas rotating shift work was associated with lower patient safety culture. These findings suggest that work environment conditions may be relevant to nursing practice and hospital safety strategies, and further longitudinal studies are needed to clarify temporality.

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Conflict of Interest Statement

The authors declare no conflicts of interest.

Author contribution

Oktaria had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. Concept and design: Oktaria. Acquisition, curation, and management of data: Jalaila, Susanti. Analysis and interpretation of data: Burhan. Drafting of the manuscript: Burhan. Critical revision of the manuscript for important intellectual content: Oktaria, Jalaila, Susanti, Burhan. Administrative, technical, or material support: Jalaila, Susanti. Supervision: Oktaria.

Data Availability

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

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