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The Relationship of Individual Characteristics, Work Stress and Work Fatigue with Patient Safety Culture at X Hospital, East Tanjung Jabung Regency in 2025

[1]Agusnawati*, [2]Guspianto, [3]Asparian, [4]Andy Amir, [5]Ummi Kalsum, [5]Willia Novita Eka Rini, [7]Muldiasman

[1]Faculty of Medicine and Health Sciences, Universitas Jambi, Indonesia*; email: agusnawati43@gmail.com
[2] Faculty of Medicine and Health Sciences, Universitas Jambi, Indonesia
[3] Faculty of Medicine and Health Sciences, Universitas Jambi, Indonesia
[4] Faculty of Medicine and Health Sciences, Universitas Jambi, Indonesia
[5] Faculty of Medicine and Health Sciences, Universitas Jambi, Indonesia
[6] Faculty of Medicine and Health Sciences, Universitas Jambi, Indonesia
[7] Faculty of Medicine and Health Sciences, Universitas Jambi, Indonesia
*Correspondence

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Abstract
Introduction: *Patient safety is a fundamental component of hospital service quality and is strongly influenced by patient safety culture. Various individual factors, including demographic characteristics, job stress, and work-related fatigue, are considered to play an important role in shaping patient safety culture in hospitals.* ***Objective:*** *The study population consisted of all hospital staff, both clinical and non-clinical, with a total sample of 197 respondents selected using proportional random sampling.* ***Method:*** *This study employed an observational analytic design with a cross-sectional approach.* ***Result and Discussion****: showed that patient safety culture at RSUD X, Tanjung Jabung Timur Regency, was predominantly in the low category. Bivariate analysis indicated a significant relationship between gender and patient safety culture, while age, education level, employment status, length of work, job stress, and work fatigue were not significantly associated with patient safety culture. Multivariate analysis revealed that gender was the most dominant factor associated with patient safety culture.* ***Conclusions:*** *patient safety culture at RSUD X still requires improvement, and gender is the most influential individual factor related to patient safety culture.*

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Introduction

Hospitals, as providers of comprehensive individual healthcare services, are highly complex and controversial institutions, despite advances in medical technology. However, they are often burdened with patient safety issues (Komalawati & Triswandi, 2022). The principle of patient safety is fundamental and must be upheld, as Hippocrates stated, "primum non nocere," meaning "service without injury." Patient safety is defined as a system for safer patient care by minimizing risks and preventing injuries due to errors (Rika & Sumarwanto, 2022); (Agusnawati, 2026); (Nu'man et al., 2024); (Purwanto & Nugraheni, 2023)

The Institute of Medicine (IOM), in its report "To err is human, building a safer health system," estimates that approximately 44,000 to 98,000 deaths occur annually in the United States from 33.6 million adverse events (AEs) due to medical errors, ranking them the eighth leading cause of death after traffic accidents, breast cancer, and HIV/AIDS. Ironically, the IOM notes that approximately 58% of these deaths, which cost between $17 and $29 billion annually, are preventable (Afework, Tamene, Tesfaye, Tafa, & Gemede, 2023). Ministry of Health data from June 2021 reported 1,512 near misses, 1,377 non-missing incidents, and 1,517 sentinel incidents. Other data from the Hospital Patient Safety Committee (KKPRS) indicates fluctuating incidents, with 1,489 cases in 2018, 7,465 cases in 2019, and 4,421 cases in 2021. In Jambi province, more than 300 patient incidents were reported in hospitals within a one-year period, most of which were related to medication errors, patient misidentification, and nosocomial infections (Damayanti, 2025); (Anggraini, Kur'aini, & Krisdianto, 2021); (Alrabae, Aboshaiqah, & Tumala, 2021); (Ghasemi, Babamiri, & Pashootan, 2022)

Factors influencing the implementation of BKP have been identified from previous empirical studies, including demographic characteristics including age, gender, employment status, and education, as well as individual factors including length of service, job stress, and fatigue (Febriani & Musharyanti, 2023). Mansour & Sharour's (2021) study found a significant negative correlation between nurses' age and perceptions of BKP (r=-0.166, P=0.039). Putri et al.'s (2022) study of 270 employees at Raden Mattaher Regional Hospital in Jambi found an average age of 33.19 years and indicated a correlation between age and the implementation of patient safety targets (p-value: 0.000).

Regional General Hospital (RSUD X) is a government-owned hospital in Tanjung Jabung Timur district, Jambi province, which has been operating since 2001, which functions to provide secondary level health treatment and recovery services according to standards, especially for the people of Tanjung Jabung Timur district. The implementation of BKP at RSUD X, Tanjung Jabung Timur district, in general, is still weak, where in 2023 it was 56.1%, with the highest dimension being organizational learning (77%) and the lowest dimension being the frequency of incident reports (39%), while in 2024 it was 56.8%, with the highest dimension being organizational learning (76%) and the lowest dimension being staffing (41.9%). Based on the description and data above, the researcher is interested in conducting research on the implementation of BKP and its relationship with demographic characteristics (age, gender, education, length of service) and individual factors (workload, work stress, work fatigue) at RSUD X, Tanjung Jabung Timur Regency.

Method

The method used in this study is quantitative analysis with a cross-sectional approach. Quantitative analysis focuses on the accuracy of the description of each variable and the relationships between variables, having a broad generalization area to explain facts, while the cross-sectional approach is used to study the dynamics of the correlation of independent variables.

Result and Discussion

1. Result

Univariate Analysis

A total of 198 respondents participated in this study. The majority were female (n = 142; 71.7%), while male respondents accounted for 28.3% (n = 56). Most respondents were in the young age category (< 40 years; n = 140; 70.7%), with 29.3% aged 40 years or older. In terms of education, the majority held higher education qualifications above senior high school level (n = 150; 75.8%), while 24.2% had low education (≤ senior high school). Regarding employment status, 53.5% were civil servants (PNS), 36.4% were non-civil servant/contract staff (Non-PNS/PPPK), and 10.1% were fixed-term contract employees (PPPK). Length of service at the hospital was relatively balanced, with 51.3% classified as long-term workers (≥ 10 years) and 48.7% as newer workers (< 10 years). In the unit, the majority had served for fewer than 10 years (62.9%). Regarding work stress, 74.7% were in the normal category, 21.2% had moderate stress, and 4.0% had severe stress. For work fatigue, 80.3% were in the normal category, 19.2% had moderate fatigue, and 0.5% had severe fatigue

Table 1
Description of Age, Length of Service, BKP Score, Work Stress Score, and Work Fatigue Score at Regional General Hospital X, East Tanjung Jabung Regency in 2025

Variable	*Min*	*Max*	*Mean*	95% CI	Median	SD
Age (years)	18	57	36.04	34.97–37.10	36.00	7.54
Length of Service at Hospital (years)	0	23	10.16	9.34–10.48	10.00	5.85
Length of Service in the Unit (years)	0	23	7.99	7.20–8.28	7.00	5.62
Work Stress Score	0	14	4.92	4.33–5.50	4.00	4.17
Work Fatigue Score	0	21	–	7.58–8.94	7.00	4.83
Patient Safety Culture (PSC) Score	52	83	67.65	66.72–68.59	67.08	6.74

Source: Processed Primary Data, 2026

Based on Table 1, the average age of respondents was 36.04 years (95% CI: 34.97–37.10; SD = 7.54). The average length of service at the hospital was 10.16 years (95% CI: 9.34–10.48; SD = 5.85), while the average length of service in the unit was 7.99 years (95% CI: 7.20–8.28; SD = 5.62). The mean work stress score was 4.92 (95% CI: 4.33–5.50; SD = 4.17) and the work fatigue score had a median of 7.00 (95% CI: 7.58–8.94; SD = 4.83). The Patient Safety Culture (PSC) score showed a mean of 67.65 (95% CI: 66.72–68.59; median = 67.08; SD = 6.74).

Bivariate Analysis

Table 2
Results of the Analysis Between Demographic and Organizational Factors and Patient Safety Culture at Regional General Hospital X, East Tanjung Jabung Regency

Variables	Categorical	Patient Safety Culture				PR (95% CI)	P-*Value*
		Low	%	High	%		
Gender	Male	53	94.6	3	5.4	1.21 (1.09–1.35)	0.010
	Female (ref)	111	78.2	31	21.8	Ref	
Age	Young (< 40 years)	114	81.4	26	18.6	0.95 (0.83–1.08)	0.546
	Old (≥ 40 years) (ref)	50	86.2	8	13.8	Ref	
Education	Low (≤ Senior High School)	47	97.9	1	2.1	1.26 (1.14–1.38)	0.003
	High (> Senior High School) (ref)	117	78.0	33	22.0	Ref	
Employment Status	Non-Civil Servant / Contract (Non-PNS/PPPK)	54	75.0	18	25.0	0.35 (0.15–0.79)	0.012
	Fixed-Term Contract (PPPK)	15	75.0	5	25.0	1.00 (0.32–3.14)	1.000
	Civil Servant (PNS) (ref)	95	89.6	11	10.4	Ref	
Length of Service at Hospital	New (< 10 years)	83	86.5	13	13.5	1.08 (0.95–1.22)	0.324
	Long-term (≥ 10 years) (ref)	81	80.2	20	19.8	Ref	
Length of Service in Unit	New (< 10 years)	106	85.5	18	14.5	1.08 (0.94–1.23)	0.370
	Long-term (≥ 10 years) (ref)	58	79.5	15	20.5	Ref	
Work Stress	Severe	8	100.0	0	0.0	–	0.999
	Moderate	41	97.6	1	2.4	–	0.999
	Normal (ref)	115	77.7	33	22.3	Ref	
Work Fatigue	Severe	1	100.0	0	0.0	–	1.000
	Moderate	37	97.4	1	2.6	–	1.000
	Normal (ref)	126	79.2	33	20.8	Ref	

Source: Processed Primary Data, 2026

Based on the table above, the proportion of low PSC was higher among male respondents (94.6%) than female respondents (78.2%), with a statistically significant association (PR = 1.21; 95% CI: 1.09–1.35; p = 0.010). Education level also showed a significant association, with respondents of low education more likely to have low PSC (97.9% vs. 78.0%; PR = 1.26; 95% CI: 1.14–1.38; p = 0.003). Non-civil servant/contract employees showed a significantly different PSC distribution compared to civil servants (PR = 0.35; 95% CI: 0.15–0.79; p = 0.012). Age, length of service (at hospital or unit),

work stress, and work fatigue did not show statistically significant associations with PSC (all $p > 0.05$)

Multivariate Analysis

Table 3
Multivariate Analysis Results

No	Variable	B	p-v*alue*	BY	95% CI	Change POR (%)
1	Gender (Male)	1.336	0.038	3.805	1.075–13.468	4.38
2	Employment Status: Non-Civil Servant / Contract	-0.659	0.135	0.517	0.218–1.227	-17.54
	Employment Status: Fixed-Term Contract (PPPK)	0.124	0.841	1.132	0.337–3.804	0.64
	Employment Status: Civil Servant (PNS) (ref)	–	0.258	Ref	–	–
3	Work Stress: Severe	18.888	0.999	159,496,244.74	–	14.48
	Work Stress: Moderate	17.229	0.999	30,365,065.89	–	-26.73
	Work Stress: Normal (ref)	–	0.296	Ref	–	–
4	Work Fatigue: Severe	0.970	1.000	2.638	–	223.50
	Work Fatigue: Moderate	-0.568	1.000	0.567	–	208.73
	Work Fatigue: Normal (ref)	–	0.354	Ref	–	–

Source: Processed Primary Data, 2026

Following the removal of the education variable from the model, a change in OR exceeding 10% was observed for the severe fatigue, moderate stress, and severe stress variables. This indicates that education functions as a confounding variable and was therefore retained in the final model.

Table 4
Final Multivariate Model

Variable	B	BY (95%CI)	P-*Value*	Omnibus	Nagel Kerke	*Overall Percentage*
Gender (Male)	1.293	1.022	0.046			
Education	1.512	0.534	0.166			
Employment: Non-Civil Servant / Contract	-0.467	0.259	0.300			
Employment: Fixed-Term Contract (PPPK)	0.118	0.334	0.849			
Employment: Civil Servant (PNS) (ref)	–	Ref	0.512			
Work Stress: Severe	18.752	–	0.999	30.267	0.236	82.8%
Work Stress: Moderate	17.540	–	0.999			
Work Stress: Normal (ref)	–	Ref	0.542			
Work Fatigue: Severe	-0.204	–	1.000			
Work Fatigue: Moderate	-1.695	–	1.000			
Work Fatigue: Normal (ref)	–	Ref	0.379			

Source: Processed Primary Data, 2026

Based on the final modeling results, gender was the only variable that remained statistically significant (OR = 1.022; p = 0.046). The Omnibus test yielded a value of 30.267 ($p < 0.05$), indicating that the overall model is statistically significant. The Nagelkerke R^2 value of 0.236 indicates that the independent variables explain 23.6% of the variation in PSC implementation. The overall classification accuracy of the model was 82.8%.

2. Discussion

Patient Safety Culture Score and Hospital Context

The mean PSC score of 67.65 reflects a moderate level of patient safety culture implementation at Regional General Hospital X. This figure is contextually consistent with hospital-level data recorded in 2023 and 2024, where PSC scores remained in the weak category (56.1% and 56.8% respectively), particularly in the dimensions of incident reporting and staffing adequacy. The persistence of low scores across consecutive years suggests that the challenges are systemic rather than situational. In accordance with WHO guidelines and the theoretical framework proposed by McFadden, hospitals characterized by chronic staff shortages, high workloads, and weak reporting systems tend to develop and sustain a low safety culture — not because staff are indifferent to safety, but because structural pressures redirect attention toward workload completion rather than error prevention and reporting. The present findings therefore do not stand in isolation, but reinforce and are reinforced by the institution's longitudinal performance data.

Gender and Patient Safety Culture

Male gender was significantly associated with low PSC in bivariate analysis (PR = 1.21; p = 0.010) and remained the sole statistically significant predictor in the final multivariate model (OR adjusted = 1.022; p = 0.046). While this finding is consistent with cross-country studies using the Hospital Survey on Patient Safety Culture (HSOPSC) that report gender-related differences in safety culture perceptions, the underlying mechanism requires critical examination rather than a simple attribution of gender as an independent determinant.

A cross-country study using the HSOPSC found that gender differences can influence patient safety culture scores and perceptions, although the effect is not consistently strong across all dimensions. Gender plays an indirect role through variables such as profession and managerial function. In the context of Regional General Hospital X, the dominance of male gender as a predictor is more plausibly explained by its correlation with specific professional roles, work shift patterns, and unit placement than by gender per se. In many Indonesian hospital settings, male health workers are disproportionately concentrated in technical and support units — such as emergency, surgical, and maintenance services — that are characterized by high workload intensity, irregular shift rotations, and greater exposure to time-critical decisions. These occupational conditions are independently associated with lower safety culture scores, as they reduce the available cognitive bandwidth for safety reporting and compliance. If male respondents in this sample are systematically over-represented in such high-demand roles, the apparent gender effect may in fact be a proxy for role-based and shift-based occupational exposure.

Furthermore, the relatively small number of male respondents with high PSC (n = 3; 5.4%) limits the precision of the gender estimate and the generalizability of this finding. It is also important to recognize that gender norms may shape how safety culture is perceived and reported: male workers in clinical settings have been observed in some studies to underreport concerns or to rate safety culture more conservatively, potentially reflecting different thresholds for what constitutes a safety problem rather than actual differences in safety behavior. Future studies at this institution should incorporate data on professional category, shift type, and unit of placement as covariates to determine whether the gender effect persists independently or is attenuated when occupational role factors are adequately controlled.

Education, Employment Status, Work Stress, and Work Fatigue

Education level showed a significant association with PSC in bivariate analysis, with respondents of lower educational attainment more likely to fall in the low PSC category (97.9% vs. 78.0%; p = 0.003). Although education did not reach statistical significance in the final multivariate model (p = 0.166), its retention as a confounding variable — confirmed by the >10% change in OR observed for stress and fatigue variables upon its removal — indicates that education modifies the relationships between other predictors and PSC. This finding is theoretically consistent: higher educational attainment is associated with greater capacity to understand safety protocols, interpret reporting procedures, and engage proactively with safety culture initiatives.

Non-civil servant/contract employees demonstrated a significantly lower risk of low PSC compared to civil servants (PR = 0.35; p = 0.012) in bivariate analysis, though this did not persist in the multivariate model. This counterintuitive direction of effect —

suggesting that contract staff have relatively higher PSC — warrants careful interpretation. One plausible explanation is that contract employees, facing greater employment insecurity, may exhibit heightened compliance with institutional procedures and reporting systems as a form of professional self-protection. Alternatively, this pattern may reflect selection effects, where contract positions are more likely to be filled by younger, more recently trained staff who have been exposed to contemporary patient safety curricula.

Work stress and work fatigue did not show statistically significant associations with PSC in either bivariate or multivariate analysis. This finding should not be interpreted as evidence that stress and fatigue are irrelevant to patient safety culture. The extremely inflated OR values for severe and moderate stress categories in the multivariate model (OR > 30 million) and the absence of calculable confidence intervals are diagnostic of complete separation — a statistical phenomenon that arises when one predictor category perfectly or near-perfectly predicts the outcome category. In this dataset, all respondents with severe stress and all but one respondent with severe fatigue were classified in the low PSC category, leaving insufficient variation for stable parameter estimation. This condition does not indicate a lack of association; rather, it reflects a data distribution that is too skewed for conventional logistic regression to produce interpretable coefficients. These variables should be revisited in future studies with larger sample sizes and a more balanced distribution of stress and fatigue severity levels.

Model Fit and Limitations

The final model demonstrated acceptable overall fit, as confirmed by the significant Omnibus test (30.267; $p < 0.05$) and a classification accuracy of 82.8%. The Nagelkerke R^2 of 0.236 indicates that the model explains approximately 23.6% of the variance in PSC, suggesting that a substantial portion of variance remains attributable to factors not captured in the current model. Given the cross-sectional design of this study, causal interpretation of the observed associations is not warranted. The data reflect a single point in time and cannot establish the direction of effect between predictors and PSC. Longitudinal or interventional study designs would be necessary to confirm whether addressing gender-related occupational role disparities, improving educational attainment, or reducing workload-driven stress and fatigue translates into measurable improvements in patient safety culture at Regional General Hospital X.

Conclusion

The implementation of patient safety culture (PSC) at RSUD X, East Tanjung Jabung Regency, remains in the low category at 82.5%. The dominant factor influencing PSC is gender, after controlling for education, work stress, and work fatigue. This model is able to explain 22.6% of the variation in PSC, with a predictive ability of 82.8%. Hospital management is recommended to strengthen policies and programs aimed at improving patient safety culture by considering staff characteristics and creating supportive working conditions to enhance patient safety.

Reference

Afework, Abel, Tamene, Aiggan, Tesfaye, Amanuel, Tafa, Abera, & Gemede, Sisay. (2023). Status and factors affecting patient safety culture at Dilla University teaching hospital: a mixed-method cross-sectional study. *Risk Management and Healthcare Policy*, 1157–1169.

Agusnawati, Agusnawati. (2026). HUBUNGAN KARAKTERISTIK INDIVIDU, STRES KERJA DAN KELELAHAN KERJA DENGAN BUDAYA KESELAMATAN PASIEN DI RSUD X KABUPATEN TANJUNG JABUNG TIMUR TAHUN 2025. *KESANN*, *4*(2).

Alrabae, Yaseen Mohammed A., Aboshaiqah, Ahmad E., & Tumala, Regie B. (2021). The association between self reported workload and perceptions of patient safety culture: A study of intensive care unit nurses. *Journal of Clinical Nursing*, *30*(7–8), 1003–1017.

Anggraini, Anggi Napida, Kur'aini, Sri Nurul, & Krisdianto, Muhammad Agung. (2021). Analisis Budaya Keselamatan Pasien Berbasis HSOPSC (Hospital Survey on Patient Safety Culture) sebagai Upaya Peningkatan Mutu dan Keselamatan Pasien Rumah Sakit di Kabupaten Karanganyar. *Assosiasi Dosen Muhammadiyah Magister Administrasi Rumah Sakit*, *6*(2), 35–49.

Damayanti, Erin. (2025). Jaminan mutu pelayanan kesehatan dan keselamatan pasien. *Jurnal Ad Dustur*, *1*(2), 1–11.

Febriani, Rizky Amelia, & Musharyanti, Lisa. (2023). Correlation between burnout and patient safety culture on nurses at private hospital in Yogyakarta, Indonesia. *Bali Medical Journal*, *12*(2), 2180–2184.

Ghasemi, Fakhradin, Babamiri, Mohammad, & Pashootan, Zahra. (2022). A comprehensive method for the quantification of medication error probability based on fuzzy SLIM. *PLoS One*, *17*(2), e0264303.

Komalawati, Veronica, & Triswandi, Erga Febrianti. (2022). Tanggung Jawab Dokter Atas Insiden Keselamatan Pasien Dalam Pelayanan Kesehatan Di Rumah Sakit Sebagai Institusi Kesehatan. *Jurnal Bina Mulia Hukum*, *6*(2), 174–186.

Nu'man, A. S., Djaharuddin, Irawaty, Nurmala, Dewi Rizki, Hadi, Anto J., Ahmad, Haslina, Tahir, Muhammad, & Amin, Muh Ayyub. (2024). Stres Kerja dan Keselamatan Pasien: Literature Review. *Media Publikasi Promosi Kesehatan Indonesia (MPPKI)*, *7*(4), 871–898.

Purwanto, Sandyaga Ghaffar, & Nugraheni, Sri Achadi. (2023). Pengaruh Akreditasi Rumah Sakit Terhadap Budaya Keselamatan Pasien Menggunakan Hospital Survey on Patient Safety Culture (Hsopsc): Systematic Review. *Jurnal Keperawatan*, *15*(4), 1947–1960.

Rika, Widya, & Sumarwanto, Edi. (2022). Kebijakan Keselamatan Pasien Di Rumah Sakit. *Indonesian Journal of Dentistry*, *2*(2), 17–30.

Jambi Provincial Health Office. Patient Safety Incident Report at Jambi Provincial Hospital [Internet]. Jambi; 2021. Available from: https://dinkes.jambiprov.go.id/

WHO. WHO | Patient safety. WHO [Internet]. 2023; Available from: https://www.who.int/news-room/fact-sheets/detail/patient-safety