

Higher Mental Workload Reduces Nurses' Compliance in Fall Injury Prevention

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ABSTRACT

Nurses' compliance with patient safety practices, particularly fall prevention is a critical indicator of healthcare quality. Elevated mental workload may impair concentration and negatively affect nurses' performance in implementing safety procedures. This study aimed to examine the relationship between mental workload and nurses' compliance with fall prevention measures. A mixed-methods design with a concurrent triangulation approach was employed. Quantitative data were collected using a cross-sectional design involving 47 nurses selected through total sampling. Qualitative data were obtained through in-depth interviews with six nurses to explore their perceptions of workload and compliance. The study findings demonstrated that the Mental Demand indicator ($p = 0.001$), Frustration Level ($p = 0.029$), and Total Mental Workload ($p = 0.003$) were significantly associated with nurses' compliance levels. Qualitative findings revealed that the most dominant perception expressed by informants was the complexity of nurses' mental workload. The integration of quantitative and qualitative results confirmed that nurses' mental workload is a critical factor influencing their level of compliance in implementing fall injury prevention measures. This study concludes that nurses' compliance is the result of an adaptive process to complex workload demands and is influenced by multiple factors; therefore, effective workload management and supportive work systems can enhance compliance in patient safety practices.

Keywords: mental workload; nurse compliance; patient safety; fall risk management

INTRODUCTION

Health care services in hospitals must be evaluated regularly as part of the national accreditation process, in which patient safety goals constitute a critical component for ensuring service quality. Patient safety is a fundamental principle of global health care delivery and a priority for achieving optimal service quality. It represents an ethical and professional responsibility of health care institutions to strengthen practices, protocols, and communication systems in order to ensure the best possible outcomes for individuals receiving care [1]. Within the Global Patient Safety Action Plan 2021–2030, the World Health Organization has established a strategic objective aimed at reducing harm caused by unsafe health care practices worldwide to the greatest extent possible [2]. This policy encourages health authorities in each country to disseminate and adapt their programs to optimize health care services that guarantee patient safety.

Global data indicate that the incidence of unexpected adverse events remains high, ranging from 3% to 16% in several countries and reaching 12.9% in the United Kingdom. Furthermore, approximately 134 million injury-related incidents occur annually in low- and middle-income countries, with nearly half of these events considered preventable [3]. Nurses, as the frontline providers of health care services, play a pivotal role in maintaining service quality and ensuring patient safety [4]. Prevention of fall-related risk is one of the essential quality indicators that must achieve a minimum score of 85% according to national hospital accreditation standards [5]. To address the high incidence of unexpected adverse events and meet patient safety standards, hospitals must strengthen nurses' compliance through patient safety training, reinforcement of fall-prevention protocols, optimal workload management, and regular evaluation and supervision to enhance the overall culture of patient safety.

In Indonesia, fall incidents rank as the third most frequent type of patient safety incident, with a substantial proportion occurring in hospitals within the Jakarta metropolitan area [1]. This situation indicates that the implementation of patient safety regulations remains suboptimal despite the existence of national standards [6]. A fall incident is defined as an event in which a patient unexpectedly descends to a lower position, with or without sustaining injury. The consequences of such incidents extend beyond patient harm, contributing to increased hospital operational costs and prolonging the length of stay by an average of 6.3 days [7]. The government supports improvement efforts through regulations such as national quality indicators that emphasize fall-risk prevention and the obligation of health care facilities to meet patient safety standards [8]. These policies reflect a national commitment to strengthening patient safety in alignment with global standards. Nurses' compliance with patient safety procedures is influenced by multiple factors, one of which is workload. Compliance itself refers to behavior that reflects adherence to established standards and procedures [9].

Nursing workload, both physical and mental, affects performance and levels of occupational stress [10]. Mental workload is particularly associated with cognitive demands such as reasoning and clinical decision-making, which frequently fall within the high-demand category in nursing practice [11,12]. Mental workload can be measured using the NASA Task Load Index (NASA-TLX), a questionnaire consisting of six indicators used to assess the level of mental workload experienced by nurses. These indicators include mental demand, physical demand, temporal demand, performance, effort, and frustration [13]. A study conducted by [14] reported that nurses working in the emergency department of Dr. Mohammad Hoessein General Hospital had an average score of 91 points, categorized as heavy mental workload, based on interviews with thirteen participants. Another study [13] highlighted different elements, finding low performance scores, moderate frustration levels, and high scores for mental demand, physical demand, temporal demand, and effort. Additional research also found that among the six mental workload indicators, performance consistently fell within the low category [15].

Preliminary observations conducted by the researcher among five nurses working in the adult inpatient unit at Hospital X using the NASA-TLX instrument revealed that 60% had scores ranging from 50 to 79 points, indicating very high mental workload, while 40% had scores above 80 points, indicating extremely high mental workload. The results of national quality indicator assessments for patient safety; specifically fall-injury prevention at Hospital X showed compliance rates of 85% in 2023 and 83% in 2024, below the expected standard of 100%. From 2023 to the first trimester of 2025, fourteen fall incidents were recorded, one of which was classified as a sentinel event.

Studies on nurses' mental workload should inform nursing management programs aimed at addressing existing challenges. Based on these circumstances, the present research aims to analyze nurses' mental workload in relation to their compliance with fall-injury prevention procedures at Hospital X in West Jakarta. This study also provides a detailed overview of the six mental workload indicators, which will be examined through bivariate analysis, thereby offering a more comprehensive understanding of nursing service conditions at Hospital X.

METHODS

This study employed a mixed-methods design using a concurrent triangulation model. This approach ensures that the research process assigns equal priority to qualitative and quantitative data collected simultaneously, allowing for a comprehensive understanding of the relationship between nurses' mental workload and compliance with fall-injury prevention procedures at Hospital X in Jakarta [16]. The study was conducted in the adult, pediatric, and maternity inpatient units of Hospital X, with data collection carried out from 19 to 31 January 2026. The study population consisted of all 50 inpatient nurses, and total sampling was applied for the quantitative component, resulting in 47 respondents after exclusions. For the qualitative component, purposive sampling was used to select six informants until data saturation was achieved [16,17]. The independent variable was nurses' mental workload, while the dependent variable was compliance with fall-injury prevention procedures. Mental workload was measured using the NASA Task Load Index (NASA-TLX), and compliance was assessed using the Implementation of Nurses in Inpatient Wards in Preventing Falls among Patients (INI-PFP) questionnaire.

The NASA-TLX is a questionnaire developed by the NASA Ames Research Center to measure mental workload. The assessment consists of two stages: weighting of indicators based on paired comparisons of the most influential factors, and subjective rating of six indicators on a scale of 0–100. Scores are obtained by multiplying the rating and weight of each indicator. The product value is calculated using the formula: product value = rating × tally (weight), and subsequently categorized into low or high mental workload based on the median score. Compliance with fall-injury prevention procedures was measured using the INI-PFP self-reported questionnaire, which consists of 36 positive statements across four domains. Compliance levels were categorized as low if the score was ≤ median and high if the score was > median.

Qualitative data were collected through semi-structured interviews using six open-ended questions aligned with the NASA-TLX dimensions [18]. Examples of open-ended questions include: describing daily work experiences in the unit; perceptions of physical activities typically performed; strategies for managing daily tasks within available time; self-assessment of work performance related to fall-injury prevention; emotional experiences while performing duties; and suggestions for improving work processes, particularly in fall-injury prevention. Validity testing of the NASA-TLX questionnaire showed that all indicators had corrected item–total correlation values greater than 0.24, indicating validity. Reliability testing yielded a Cronbach's alpha of 0.833, confirming that the instrument was reliable [19]. Reliability testing of the INI-PFP questionnaire among 30 respondents at Primaya Pasar Kemis Hospital produced a Cronbach's alpha of 0.977 (>0.6), indicating high reliability.

Data collection involved the distribution of questionnaires and semi-structured interviews. Quantitative data were obtained through the questionnaires, while qualitative data were gathered through in-depth interviews lasting 25–40 minutes using NASA-TLX-based interview guides [16,18]. Data analysis was conducted separately and then integrated. Quantitative data were analyzed using descriptive and bivariate analyses, with Chi-square tests applied to examine relationships between variables [20]. Qualitative data analysis involved several steps: transcribing all interview data, generating initial codes, identifying major themes, reviewing theme coherence, defining and naming themes, and systematically preparing the final report using NVivo software [16]. The credibility of qualitative findings was ensured through source and time triangulation as well as member checking [16].

This study adhered to a comprehensive set of ethical principles that guide responsible conduct in health research. The principle of beneficence was upheld by ensuring that all research procedures were designed to maximize potential benefits and minimize any foreseeable risks to participants. Respect for human dignity was maintained through the recognition of each participant's autonomy, rights, and inherent value as an individual involved in the research process. The principle of justice was applied by guaranteeing fairness in participant selection and equitable treatment throughout the study. Informed consent was obtained through a clear and transparent process in which participants were provided with complete information regarding the study's objectives, procedures, potential risks, and benefits before voluntarily agreeing to participate. Confidentiality was ensured by safeguarding all personal and professional information shared by participants, while anonymity was preserved by removing identifying details from transcripts, datasets, and reports to prevent any linkage between participants and the information they provided. Collectively, these ethical safeguards ensured that the study was conducted with integrity, respect, and accountability [21].

RESULTS

The mixed-methods analysis of nurses' mental workload and compliance with fall-injury prevention procedures at Hospital X Jakarta in 2025 involved participants selected based on predefined inclusion criteria. The study consisted of 47 quantitative respondents and 6 qualitative informants. All participants received adequate information regarding the research procedures and provided informed consent prior to participation. Respondent characteristics

Table 1. Characteristics of quantitative respondents

Variable	Category	Frequency	Percentage
Educational level	Diploma	9	19.1
	Bachelor	38	80.9
Clinical ladder	Pre-clinical	20	42.6
	Clinical level 1	25	53.2
	Clinical level 2	1	2.1
	Clinical level 3	1	2.1

Table 2. Characteristics of qualitative participants

Respondent code	Education	Clinical ladder	Position
I1	Nurse professional	Clinical level 2	Shift leader
I2	Nurse professional	Clinical level 1	Staff nurse
I3	Nurse professional	Clinical level 1	Staff nurse
I4	Nurse professional	Clinical level 3	Shift leader
I5	Nurse professional	Clinical level 3	Shift leader
I6	Nurse professional	Pre-clinical	Staff nurse

Table 3. Distribution of nurses' mental workload based on Six NASA-TLX indicators

Variable	Low n (%)	High n (%)	n	Total (%)
Mental demand	27 (57.4%)	20 (42.6%)	47	100
Physical demand	31 (64.0%)	16 (34.0%)	47	100
Temporal demand	24 (51.1%)	23 (48.9%)	47	100
Performance	28 (59.6%)	19 (40.4%)	47	100
Effort	24 (51.1%)	23 (48.9%)	47	100
Frustration	24 (51.1%)	23 (48.9%)	47	100
Total mental workload	29 (61.7%)	18 (38.3%)	47	100

Table 4. Distribution of nurses' compliance with fall-injury prevention procedures

Variable	Measurement result	n	%
Nurse compliance	Low compliance	31	66
	High compliance	16	34

included educational level and clinical ladder classification, both of which are essential contextual variables that may influence mental workload and compliance with patient-safety procedures.

Based on the characteristics of the quantitative respondents (Table 1), most nurses held a Bachelor/Nurse Professional degree, while a smaller proportion held a Diploma in Nursing. In terms of clinical ladder classification, the majority were positioned at Clinical Level 1 and Pre-Clinical levels, with only a few at Clinical Levels 2 and 3. These findings indicate that most respondents were professional nurses in the early stages of their clinical career development.

Based on Table 2, all qualitative informants were professional nurses. Most participants were positioned at early-to-mid clinical ladder levels, predominantly Clinical Level 1, with additional representation from Clinical Levels 2, 3, and Pre-Clinical. Their roles included staff nurses and shift leaders, providing diverse perspectives on mental workload in inpatient care settings. This variation in clinical ladder and job roles enriches the qualitative insights regarding nurses' perceptions of mental workload.

Based on Table 3, most nurses were categorized as having low mental workload across all NASA-TLX indicators, although a substantial proportion experienced high workload in specific dimensions. The highest proportions of high workload were observed in temporal demand, effort, and frustration, indicating that time pressure, exertion, and emotional strain were dominant contributors to mental workload. Mental demand also showed a considerable proportion of high workload, reflecting significant cognitive demands in nursing care. Physical demand and performance were more frequently categorized as low. Overall, most nurses had low total mental workload, although a notable subset experienced high workload.

The majority of nurses in the inpatient units of Hospital X Jakarta demonstrated low compliance with fall-injury prevention procedures, while a smaller proportion exhibited high compliance (Table 4). This indicates that most nurses have not yet fully adhered to fall-prevention standards required for patient safety.

Based on Table 5, nurses with low mental demand predominantly demonstrated high compliance, whereas those with high mental demand mostly exhibited low compliance. Statistical testing confirmed a significant relationship between mental demand and compliance ($p = 0.001$), indicating that higher cognitive demands are associated with reduced adherence to patient-safety procedures.

Based on Table 6, nurses with higher physical demand tended to show better compliance, although the relationship was not statistically significant ($p = 0.183$). Physical demand does not appear to be a decisive factor influencing compliance with fall-injury prevention procedures.

Based on Table 7, compliance levels were relatively similar across both temporal-demand groups, and no significant relationship was found ($p = 0.454$). Time pressure does not significantly influence compliance with fall-prevention procedures.

Based on Table 8, nurses with higher performance tended to show better compliance, but the relationship was not statistically significant ($p = 0.137$). Performance alone does not significantly determine compliance.

Based on Table 9, effort levels showed balanced compliance distributions, and no significant relationship was found ($p = 0.454$). Effort does not significantly influence adherence to fall-injury prevention procedures.

Based on Table 10, most nurses with low frustration demonstrated high compliance, whereas those with high frustration predominantly showed low compliance. The relationship was statistically significant ($p = 0.029$). The odds ratio ($OR = 0.265$) indicates that nurses with low frustration are more likely to exhibit high compliance.

Based on Table 11, nurses with low total mental workload predominantly demonstrated high compliance, whereas those with high workload mostly showed low compliance. The relationship was statistically significant ($p = 0.003$). The odds ratio ($OR = 0.147$) suggests that nurses with lower mental workload are substantially more likely to comply with fall-injury prevention procedures.

The project map supported the researcher in grouping, organizing, and classifying interview data through coding, which involved identifying core ideas emerging from informants' narratives. Several major themes were identified, reflecting nurses' perceptions of mental workload in inpatient units, including: the complexity of mental workload, high physical activity demands, time pressure and priority management, the role of teamwork in managing workload, and strategies used by nurses to prevent fall-related risks. These themes provide a comprehensive understanding of the multifaceted nature of mental workload among inpatient nurses.

Table 5. Relationship between mental demand and nurse compliance

Variable	Low compliance: f (%)	High compliance: f (%)	p-value
Low mental demand	5 (18.5%)	22 (81.5%)	0.001
High mental demand	16 (80.0%)	4 (20.0%)	

Table 6. Relationship between physical demand and nurse compliance

Variable	Low compliance: f (%)	High compliance: f (%)	p-value
Low physical demand	16 (51.6%)	15 (48.4%)	0.183
High physical demand	5 (31.3%)	11 (68.8%)	

Table 7. Relationship between temporal demand and nurse compliance

Variable	Low compliance: f (%)	High compliance: f (%)	p-value
Low temporal demand	12 (50.0%)	12 (50.0%)	0.454
High temporal demand	9 (39.1%)	14 (60.9%)	

Table 8. Relationship between performance and nurse compliance

Variable	Low compliance: f (%)	High compliance: f (%)	p-value
Low performance	15 (53.6%)	13 (46.4%)	0.137
High performance	6 (31.6%)	13 (68.4%)	

Table 9. Relationship between effort and nurse compliance

Variable	Low compliance: f (%)	High compliance: f (%)	p-value
Low effort	12 (50.0%)	12 (50.0%)	0.454
High effort	9 (39.1%)	14 (60.9%)	

Table 10. Relationship between frustration and nurse compliance

Variable	Low compliance: f (%)	High compliance: f (%)	p-value
Low frustration	7 (29.2%)	17 (70.8%)	0.029
High frustration	14 (80.0%)	9 (20.0%)	

Table 10. Relationship between total mental workload and nurse compliance

Variable	Low compliance: f (%)	High compliance: f (%)	p-value
Low mental workload	8 (27.6%)	21 (72.4%)	0.003
High mental workload	13 (72.2%)	5 (27.8%)	

DISCUSSION

The findings of this study indicate that both quantitative and qualitative respondent characteristics were predominantly composed of professional nurses positioned at early clinical ladder levels. This composition is important because educational background and clinical experience are known to influence nurses' adaptive capacity in managing mental workload and adhering to patient-safety procedures. Educational attainment plays a critical role in shaping an individual's competencies, attitudes, and professional behaviors, and was found to be significantly associated with compliance in fall-injury prevention ($p = 0.015$). Prior studies similarly emphasize that education is a key determinant in nurses' ability to understand and implement preventive measures effectively [1,22,23]. In relation to mental workload, previous research reported that nurses with professional degrees tend to experience higher mental workload (59%) [15], suggesting that academically trained nurses often face more complex cognitive demands due to their broader scope of practice.

The predominance of early-stage clinical ladder nurses in this study further highlights the potential influence of limited clinical experience on mental workload and compliance. According to the Ministry of Health Regulation No. 40/2017 on professional career development for nurses, one of the strongest professional responsibilities is demonstrating adherence to nursing standards and guidelines [24]. Implementation of patient-safety goals in hospitals is shaped by multiple nurse-related factors, including age, attitudes, knowledge, work motivation, workload, length of service, supervision, and organizational culture [25]. A study by [1] found that longer work experience is significantly associated with improved fall-prevention practices. These contextual factors may shape how nurses interpret their workload and respond to the demands of inpatient care.

Analysis of mental workload distribution among the 47 respondents revealed that most nurses fell within the low mental workload category (61.7%), while 38.3% experienced high mental workload. This variation presents a managerial challenge in regulating mental workload across staff. One strategy for managing mental workload is designing professional nursing tasks that motivate nurses and allow them to utilize their skills effectively [26]. Comparable findings were reported in another study, which identified 38% of nurses as having high mental workload [15]. In that study, nearly half of the respondents experienced high mental demand, including concentration requirements, rapid decision-making, and clinical vigilance. Workers may experience boredom when job demands exceed their capabilities, whereas insufficient demands may lead to fatigue [15]. These findings suggest that although most nurses can manage cognitive demands adequately, a substantial proportion still face significant mental challenges requiring sustained concentration and rapid clinical judgment.

The physical demand dimension showed that most respondents were categorized as low. High physical demand can lead to fatigue, reduced concentration, and increased risk of service errors [15]. Although physical activity levels among nurses were generally manageable, some continued to face substantial physical demands such as patient mobilization, clinical procedures, and extended shifts. Temporal demand was nearly evenly distributed, with 51.1% categorized as low and 48.9% as high. This indicates that almost half of the respondents experienced time pressure in completing tasks such as documentation, clinical interventions, and team coordination. Time pressure is a well-established contributor to increased occupational stress, particularly in high-intensity units [26]. Without adequate time management and staffing, time pressure may negatively affect compliance with patient-safety procedures.

Respondents' perceptions of performance were also noteworthy. Most nurses rated performance as contributing minimally to mental workload. Optimal performance is achieved when tasks align with individual capabilities and are supported by a conducive work environment; however, performance does not always directly correlate with compliance to safety protocols [8,26,27]. From a quality-management perspective, nursing performance is closely linked to care quality and patient safety.

The effort dimension showed that 51.1% of respondents reported low effort and 48.9% reported high effort. This suggests that nearly half of the nurses exert substantial physical and mental effort to complete their tasks. Effort reflects the energy expended during work, but does not necessarily influence compliance, as nurses continue striving to meet service standards [27]. Nurses hold a professional responsibility to deliver safe care. Frustration levels were relatively balanced, with 51.1% categorized as low. High frustration can reduce concentration and emotional stability, potentially affecting compliance with safety procedures [25]. Elevated frustration may also decrease productivity, performance, attendance, and morale [15]. Although most nurses managed emotional pressure adequately, frustration remained a significant factor with potential implications for service quality.

The study found that 66% of nurses exhibited low compliance with fall-injury prevention procedures, indicating suboptimal implementation and highlighting the need for managerial attention and systemic improvement. Compliance reflects adherence to patient-safety standards and SOPs, including fall-prevention protocols based on risk screening. Non-compliance increases the likelihood of adverse events such as medication errors, nosocomial infections, and falls [6,28]. Strengthening compliance is therefore integral to nursing quality management and essential for ensuring optimal service delivery.

The analysis of relationships between mental workload dimensions and compliance revealed that mental demand and frustration were significantly associated with compliance ($p \leq 0.05$), whereas physical demand, temporal demand, performance, and effort were not ($p \geq 0.05$). This indicates that cognitive and emotional factors are primary determinants of compliance behavior. High cognitive demands may reduce nurses' attentional capacity for safety procedures, increasing the risk of non-compliance [25]. Total mental workload also showed a significant relationship with compliance, demonstrating that higher mental workload increases the likelihood of reduced adherence to safety protocols. From the perspective of Roy's Adaptation Theory, increased cognitive and emotional demands may exceed an individual's adaptive capacity, resulting in decreased performance and compliance [29–31]. Effective adaptation requires balance between job demands and individual capacity. Mental workload should therefore be managed through proportional task allocation, appropriate patient-to-nurse ratios, supervision, and psychological support to prevent cognitive overload. Optimal adaptation helps nurses maintain performance, reduce stress, and enhance compliance with safety procedures.

Qualitative findings reinforced the quantitative results. Themes identified included the complexity of mental workload, high physical activity demands, time pressure and priority management, teamwork roles, and strategies for fall-risk prevention. Nurses perceived mental workload complexity as arising from high-concentration tasks, complex care processes, role responsibilities, and performance expectations. Informants described situations requiring heightened concentration, such as caring for multiple total-care patients or leading a shift. High cognitive demands may reduce attentional capacity for safety procedures, potentially lowering compliance [25]. These findings align with studies showing that high cognitive workload increases error risk and reduces service quality [32].

Regarding physical activity demands, informants described exerting significant physical effort when caring for patients located far from the nurse station, mobilizing heavy patients, or managing high patient turnover. Although physical demands were substantial, they did not directly influence compliance, as physical workload is more closely related to service dynamics than clinical decision-making [33].

Time pressure was also evident, with nurses reporting insufficient time despite careful planning. They described prioritizing tasks, organizing workflow, and allocating time based on patient needs. Effective time management helped mitigate the impact of time pressure on compliance [34]. Patient load was identified as a factor contributing to perceived time constraints.

Teamwork played a crucial role in managing workload. Informants emphasized communication, collaboration, delegation, and coordinated handovers. Poor teamwork increased anxiety, especially during high patient loads. According to adaptation theory, individuals and groups use adaptive systems to adjust to their work environment [35]. Studies show that workload is associated with nurse burnout, where high pressure increases emotional exhaustion and reduces work effectiveness [36].

Strategies for fall-risk prevention included collaborating with families, monitoring high-risk patients, placing patients in easily observable areas, and applying additional preventive measures such as physical restraints for non-cooperative patients. Nurses adapt to patient behavior, promote positive adaptation through environmental interaction, and support patients in responding positively to their surroundings [35]. Mental workload is a key factor influencing compliance with fall-prevention procedures [27]. Most informants emphasized patient education, regular observation, and physical restraint as essential strategies for reducing fall incidents.

The concurrent triangulation mixed-methods approach enabled the researcher to interpret quantitative and qualitative findings collected simultaneously, providing a comprehensive understanding of the relationship between mental workload and compliance. Convergence of findings strengthened the interpretation by comparing, validating, and explaining quantitative results using qualitative insights. Overall, this discussion underscores that nurse compliance in fall-injury prevention is influenced not only by individual factors but also by complex interactions among mental workload, emotional conditions, work environment, and organizational systems. Therefore, managerial and systemic approaches are necessary to manage mental workload and optimize patient safety.

This study has limitations, including a relatively small sample size drawn from a single hospital, limiting generalizability. Additionally, some variables did not show significant relationships, possibly due to small sample size and median-based categorization that reduced data variability. The study also did not account for other potential influencing factors such as safety culture, supervision, leadership, and physical workload.

CONCLUSION

The study demonstrates that nurses' mental workload is most pronounced in the dimensions of temporal demand, effort, and frustration, while overall compliance with fall-injury prevention procedures remains predominantly low. Statistical analysis confirms that mental demand, frustration, and total mental workload are significantly associated with compliance, indicating that cognitive and emotional pressures play a central role in shaping nurses' adherence to safety protocols. Qualitative findings reinforce these results, revealing that nurses frequently perceive high cognitive complexity and substantial physical demands in their daily practice. Collectively, the evidence suggests that factors such as sustained concentration requirements, complex care processes, and professional responsibility are key determinants of compliance in fall-prevention efforts. To improve adherence and strengthen patient-safety culture, hospitals should optimize workload management through staffing adjustments, task distribution, managerial support, enhanced teamwork, and routine evaluation. Future research should employ stronger designs to explore causal relationships, incorporate additional variables such as safety culture, leadership, and physical workload, and continue using mixed-methods approaches to achieve a more comprehensive understanding of nurse compliance.

Ethical consideration, competing interest and source of funding

- Ethical approval for this study was granted by the Ethics Committee of STIK Sint Carolus under approval number 008/KEPPKSTIKSC/II/2026.
- The author declares that there is no conflict of interest associated with this research. All stages of the study—from conceptualization, data collection, analysis, to interpretation—were conducted objectively and independently, without influence from any individual, institution, or external organization that could compromise the integrity, neutrality, or independence of the research findings.
- This study was fully self-funded by the author, with no financial support from sponsors, agencies, or external institutions. No external funding sources were involved in the implementation, management, or preparation of this research. The absence of external financial involvement ensures that the study was carried out without financial bias and reflects the author's sole responsibility for the research process and outcomes.

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