



# Effectiveness of Fall Prevention Education on Nurses' Compliance and Patient Safety Attitude: Experimental Study in Elderly

Liany Kimberly<sup>1</sup>, Azizah Khoiriyati<sup>1</sup>

<sup>1</sup>Master of Nursing, Universitas Muhammadiyah Yogyakarta

Email correspondence: [lianykimfr@gmail.com](mailto:lianykimfr@gmail.com)

<p><b>Track Record Article</b></p> <p>Revised : 28 March 2025 Accepted : 29 May 2025 Published : 12 June 2025</p> <p><b>How to cite :</b> Kimberly, L., &amp; Khoiriyati, A. (2025). Effectiveness of Fall Prevention Education on Nurses' Compliance and Patient Safety Attitude: Experimental Study in Elderly. <i>Contagion : Scientific Periodical of Public Health and Coastal Health</i>, 7(1), 64–79.</p>	<p style="text-align: center;"><b>Abstract</b></p> <p><i>Falls pose a significant challenge in elderly hospital care, often resulting in severe injuries and increased morbidity risk. Two critical factors in reducing fall incidence are nurses' adherence to fall prevention protocols and their attitudes toward patient safety. The Fall Tailoring Intervention for Patient Safety (TIPS) toolkit is an innovative tool designed to enhance nurses' awareness and implementation of fall prevention strategies. However, its adoption in Indonesian hospitals remains limited, necessitating further research on its effectiveness. This study aims to evaluate the impact of the Fall TIPS toolkit on fall prevention by assessing its influence on nurse compliance and patient safety attitudes. Using a quasi-experimental pre-posttest design with a control group, this study involved 52 nurses from the adult inpatient unit of a private hospital in Manado, Indonesia. Participants were divided into an intervention group and a control group. Data on compliance and patient safety attitudes were collected through questionnaires. The Wilcoxon test showed no significant difference in nurse compliance before and after the intervention (<math>p &gt; 0.05</math>), but a significant improvement was observed in patient safety attitudes (<math>p &lt; 0.05</math>). Additionally, Mann-Whitney test results indicated a significant difference between the intervention and control groups in both compliance and patient safety attitudes. The findings suggest that the Fall TIPS toolkit is an effective strategy for enhancing nurses' compliance and patient safety attitudes in hospital settings. To ensure sustained adoption and effectiveness in fall prevention, hospitals are encouraged to integrate the toolkit into standard nursing protocols and provide continuous training.</i></p> <p><b>Keywords:</b> <i>Compliance, Fall Prevention Education, Safety attitude</i></p>
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## INTRODUCTION

Falls are most common among the elderly, posing a significant health risk. Globally, the prevalence of falls in this population is 26.5% (Salari et al., 2022). In Indonesia, 12.8% of older adults experience one or more fall-related injuries, with 7.6% reporting a single fall and 5.2% suffering injuries from recurrent falls (Pengpid & Peltzer, 2018). Fall risk management in Indonesia is regulated by the Minister of Health of the Republic of Indonesia under Regulation Number 11 of 2017 on Patient Safety, which mandates healthcare facilities to assess fall risks and implement preventive measures. These risk factors include a history of falls, medication and alcohol consumption, gait and balance issues, and the use of walking AIDS. .

Falls among the elderly present a serious health concern and cannot be overlooked. Their consequences include increased morbidity and mortality, diminished physical function and mobility, heightened fear of falling, loss of independence, and social isolation (Vaishya & Vaish, 2020). Additionally, falls can lead to severe injuries such as head trauma and fractures

(Bergen, et al., 2021). Given these risks, nurses play a crucial role in fall prevention and patient care, emphasizing the need for proactive interventions and comprehensive support.

In hospital settings, nurses play a vital role in implementing patient safety measures, including fall prevention. Several challenges affect nurses' adherence to safety protocols, including excessive workload, lack of regular training, staff shortages, insufficient hospital policies, inadequate facilities and resources, and limited knowledge (Elseesy, et al., 2023). To effectively prevent falls, nurses must employ various strategies, such as risk assessment, intervention planning, continuous monitoring, and collaboration with patients and their families (Wulandari & Sianturi, 2019). However, while many nurses are aware of fall prevention policies and procedures, they often lack a comprehensive understanding of fall risk factors, which may hinder effective implementation (Alsaad, et al., 2024).

Adequate knowledge is essential for fostering appropriate actions and attitudes in fall prevention. Cho and Jang (2020) identified a positive correlation between nurses' knowledge and their active involvement in fall prevention measures. Additionally, nurses' patient safety mindset significantly enhances the effectiveness of fall prevention strategies for the elderly (Alanazi, Sim, & Lapkin, 2022). Compliance and commitment to implementing fall prevention programs play a crucial role in minimizing fall risks among older adults. To ensure effective intervention, nurses must assess patients' fall rates, balance, and injuries related to falls.

Educating both nurses and patients about fall prevention strategies is essential for improving patient safety. Research indicates that such educational efforts yield positive outcomes (Ojo & Thiamwong, 2022). Numerous studies have shown that educational interventions enhance nurses' compliance and safety attitudes, contributing to more effective fall prevention practices. The Theory of Planned Behavior (TPB) suggests that an individual's behavior is shaped by their intention to act, which is influenced by three key factors: attitude toward the behavior, subjective norms, and perceived behavioral control (Chen & Slade, 2024). In the context of fall prevention, educational interventions can strengthen nurses' attitudes by reinforcing the importance and effectiveness of using tools such as Fall TIPS.

The Fall Tailoring Interventions for Patient Safety (TIPS) toolkit is an effective strategy that supports nurses in fulfilling their responsibilities to ensure patient safety, particularly in fall prevention. The Fall TIPS toolkit is a patient-centered approach that includes a comprehensive fall risk assessment checklist and an associated care plan (Dykes et al., 2017). Educating patients and their families about the toolkit can enhance their participation in fall prevention efforts, as it fosters confidence in their ability to minimize fall risks (Christiansen et al., 2020). Several studies, including those by Khandagale, et al. (2021); Martin dan Costa

(2022); Temmis (2022); and Thang (2022) have demonstrated the effectiveness of the Fall TIPS toolkit in reducing hospital fall incidence.

Fall prevention education through the Fall TIPS toolkit is designed to establish a strong foundation for enhancing patient safety-centered clinical procedures. This tool introduces a unique approach by actively involving patients and their families in the fall prevention process, empowering them as partners in care. It also utilizes visual aids, such as color-coded signs and posters, to effectively communicate individual fall risk factors and personalized prevention plans at the bedside. These elements strengthen communication, improve visibility, and enhance accountability in fall prevention efforts (Dykes, et al., 2021).

This study was conducted in Indonesian hospital settings, focusing on inpatient units with elderly populations. A key issue identified was the limited implementation of structured fall prevention tools, such as the Fall TIPS toolkit, primarily due to a lack of awareness, education, and training among nursing staff. Without adequate education, nurses may struggle to consistently apply fall prevention strategies, ultimately compromising patient safety. The challenge is not merely the absence of tools but rather the insufficient integration of these tools into routine nursing practices due to institutional gaps in training and policy support. This study aims to evaluate the effectiveness of Fall TIPS toolkit education in enhancing nurses' compliance and patient safety attitudes in fall prevention for hospitalized elderly patients. By assessing these outcomes, the study seeks to determine whether targeted educational interventions can facilitate broader adoption of the Fall TIPS toolkit and reduce fall incidents.

## **METHODS**

### **Design**

This study employed a quasi-experimental design with a control group and pre-post test approach. Conducted from January 19 to February 7, 2025, at a private hospital in Manado, North Sulawesi, Indonesia, the research involved 52 nurses, with 26 assigned to the intervention group and 26 to the control group. Participants were selected using purposive sampling based on specific inclusion and exclusion criteria. The inclusion criteria were: (1) nurses providing care to elderly patients in the adult inpatient unit, (2) holding a bachelor's degree in nursing or higher, and (3) having received fall prevention training. Exclusion criteria included nurses who were inactive or on leave during the study period. The sampling process identified all eligible nurses working in four inpatient wards: two medical wards, one surgical ward, and one VIP ward. A sampling frame was constructed by listing all nurses who met the criteria in each ward. From this list, 13 nurses were selected from each ward, with an equal

distribution between the intervention and control groups to ensure comparability of characteristics.

Participants were assigned to either the intervention or control group based on their respective wards to minimize contamination between groups. Two wards were designated as intervention settings, while the remaining two served as control settings. This distribution enabled researchers to control for interactions and information leakage between groups. The Hawthorne effect was reduced by informing participants about general aspects of nursing care quality rather than specific study details. Additionally, the inclusion of a control group helped mitigate bias stemming from behavioral changes due to study participation. Strict confidentiality of participants' identities was maintained throughout the study by using initials, allowing for honest and natural responses.

### **Data Collection**

The intervention in this study involved education on the use of the Fall TIPS toolkit. Data were collected using observation sheets and questionnaires. The accuracy of Fall TIPS toolkit implementation was assessed through a randomized audit. Audits were conducted using the Fall TIPS Toolkit Observation Sheet, which consists of three yes/no questions: (1) "Is the Fall TIPS poster displayed at the bedside?", (2) "Can the patient or family verbalize the patient's fall risk factors?", and (3) "Can the patient or family articulate a personalized fall prevention plan?".

To assess compliance with fall prevention measures, respondents completed the Fall TIPS Audit Quality Tool, which consists of ten statements with "Yes" and "No" responses. Additionally, they filled out the Indonesian version of the Safety Attitude Questionnaire (SAQ-INA), which includes 41 items rated on a Likert scale (1 = "strongly disagree," 2 = "disagree," 3 = "neutral," 4 = "agree," 5 = "strongly agree"). The instrument was tested for validity and reliability, yielding a person separation index (PSI) ranging from 0.67 to 0.78, indicating acceptable internal consistency. However, further examination of the 95% confidence intervals (CI) for these domains revealed that the lower bounds included the value 0.05, suggesting that the items likely measured the same underlying construct. Compliance and patient safety attitude were assessed twice—before and after the intervention. The original validation reference did not report Cronbach's alpha values.

### **Intervention**

The intervention consisted of an educational program on fall prevention for elderly patients, delivered to nurses in the intervention group. The educational content was based on the Fall TIPS toolkit usage guidelines by Dykes et al. (2022). Materials included printed

handouts and Fall TIPS toolkit posters. The program was conducted through face-to-face sessions with nurses in each ward over a single day. The sessions were delivered by the researcher and lasted approximately 15 minutes. Participants were informed about the study objectives, procedures, and their rights as research subjects. To enhance understanding, interactive question-and-answer sessions were incorporated.

### Data Analysis

Data were analyzed using SPSS version 25, with a 95% confidence interval (CI). Univariate analysis was performed to describe participant characteristics, while bivariate analysis examined associations between variables. This study employed non-parametric statistical tests, specifically the Wilcoxon signed-rank test for within-group comparisons and the Mann-Whitney U test for between-group comparisons. A normality test was not conducted, as the data were categorical, derived from Yes-No and Likert-scale responses. Consequently, the assumption of a normal distribution, which is required for parametric tests, was not applicable.

## RESULTS

### Description of Participants

**Table 1. Characteristics of Respondents (n=52)**

Characteristics	Intervention group (n=26)	Control group (n=26)	Total (n=52)	p-value homogeneity
<b>Gender</b>				
Male	5 (19%)	6 (23%)	11(21,2%)	0,507
Female	21 (81%)	20 (77%)	41 (78,8%)	
<b>Age (years)</b>				
21-30	7 (27%)	10 (38%)	17 (33%)	0,816
31-40	16 (61,5%)	14 (54%)	30 (57%)	
41-50	3 (11,5%)	2 (8%)	5 (10%)	
<b>Level of education</b>				
Associate Degree	2 (8%)	1 (4%)	3 (5,8%)	0,241
Bachelor of Ners	24 ( 92%)	25 (96%)	49 (94,2%)	
<b>Work experience</b>				
< 5 years	6 (23%)	7 (27%)	13 (25%)	0,500
5-10 years	5 (19%)	9 (35%)	14 (26,9%)	
> 10 years	15 (58%)	10 (38%)	25 (48,1%)	
<b>Fall Prevention Training</b>				
Yes	16 (62%)	20 (77%)	36 (69,2%)	0,557
No	10 (38%)	6 (23%)	16 (30,8%)	

Table 1 shows the demographic data of respondents based on gender, age, degree, work experience, and fall prevention training received. Most of the respondents were female

(78.8%), in the age range of 31-40 years old (57%), had worked for more than 10 years (25%), and most of them had previously received fall prevention training (69.2%). The result also shows that the  $p\text{-value} > 0.05$ , indicates that the sample's variance is homogeneous.

### Fall TIPS Education Audit

The Fall TIPS Toolkit Observation Sheet was used to evaluate its utilization. The audit was conducted through direct observation of the Fall TIPS toolkit poster at the patient's bedside. There were twenty elderly patients involved in this study, 11 in the intervention group and 9 in the control group. Table 2 shows the audit of the Fall TIPS toolkit usage in the intervention group.

**Table 2. Fall TIPS Toolkit Observation**

Item	Room A (n=5)	Room B (n=6)
Fall TIPS is hanging at the patient's bedside	4	5
Patient/family can verbalize the fall risk factors	5	6
Patients/families can express the personalized fall prevention plan	5	6

Based on the Fall TIPS audit, the formula for scoring results is formulated as follows.

$$\frac{31}{33} \times 100\% = 94\%$$

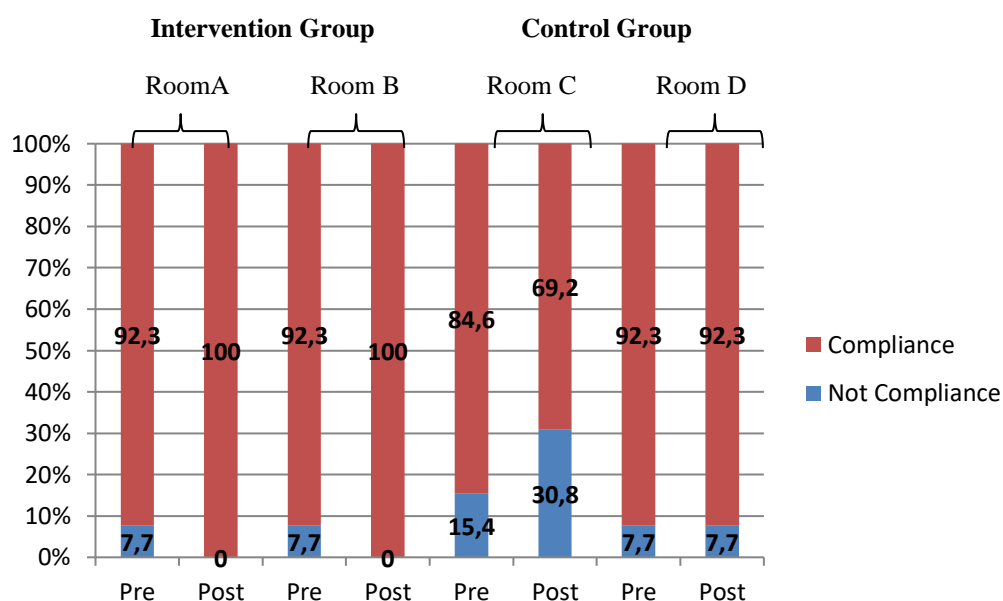
The result showed that as many as 94% of the Fall TIPS toolkit posters had been used well by nurses after being educated.

### Compliance

Table 3 shows nurses' compliance levels before and after intervention. The result indicates that the intervention group had a higher compliance level than the control group. However, the Wilcoxon test revealed that the  $p\text{-value} > 0.05$ , which means there was no significant difference in nurses' compliance before and after the intervention. The analysis showed a Cohen's d value of 0.24 and 0.05, which falls into the small effect size category, based on Cohen's interpretation, indicating a relatively small difference between the two groups.

**Table 3. Nurses' Compliance Score**

Group	Room	Test	Not Compliance f (%)	Compliance f (%)	p-value	Cohen's d
Intervention	A	Pre	1 (7.7)	12 (92.3)	0.673	0.24
		Post	0	13 (100)		
	B	Pre	1 (7.7)	12 (92.3)		
		Post	0	13 (100)		
	<b>Total (n=26)</b>	Pre	<b>2 (7.7)</b>	<b>24 (92.3)</b>		
Post	<b>0</b>	<b>26 (100)</b>				
Control	C	Pre	2 (15.4)	11 (84.6)	0,476	0.05
		Post	4 (30.8)	9 (69.2)		
	D	Pre	1 (7.7)	12 (92.3)		
		Post	1 (7.7)	12 (92.3)		
	<b>Total (n=26)</b>	Pre	<b>3 (11.5)</b>	<b>23 (88.5)</b>		
	Post	<b>5 (19.2)</b>	<b>21 (80.2)</b>			

**Figure 1. Nurses' Compliance Level Pre-Post test**

### Patient Safety Attitude

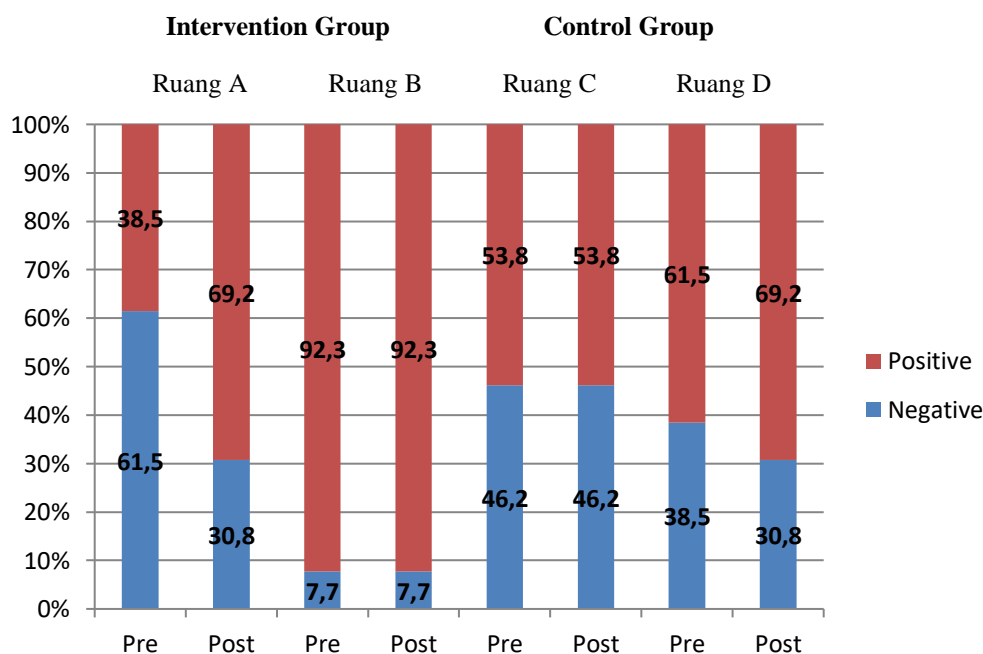
According to the findings in Table 4, nurses' pre-post test scores on patient safety attitude improved in both the intervention and control groups. The final results show that the patient safety attitude scores in the intervention group were higher compared to the control group. The Wilcoxon test also shows that the *p-value* < 0.05, which means there is a difference in nurses' patient safety attitude before and after intervention. The analysis of the effect size analysis using Cohen's *d* showed a value of 0.54 in the intervention group and 0.22 in the control group. According to Cohen's guidelines, a value of 0.54 is considered a moderate effect size, indicating that the intervention had a meaningful and noticeable impact on improving nurse's patient safety attitude in the intervention group. In contrast, the control group showed

a Cohen's *d* of 0.22, which falls into the small effect size category. This indicates that any changes in nurse's patient safety attitudes within this group were relatively minor and possibly influenced by factors other than the intervention.

Overall, the difference in effect sizes between the two groups suggests that the Fall TIPS toolkit had a greater impact on the intervention group compared to the control group, supporting its potential as a moderately effective tool in promoting safety attitude with fall prevention measures when appropriately implemented.

**Table 4. Nurses' Patient Safety Attitude Score**

Group	Room	Test	Negative f (%)	Positive f (%)	p-value	Cohen's d
Intervention	A	Pre	8 (61.2)	5 (38.2)	0.000	0.54
		Post	4 (30.8)	9 (69.2)		
	B	Pre	1 (7.7)	12 (92.3)		
		Post	1 (7.7)	12 (92.3)		
	<b>Total (n=26)</b>	Pre	<b>9 (34.6)</b>	<b>17 (65.4)</b>		
Post	<b>5 (19.2)</b>	<b>21 (80.8)</b>				
Control	C	Pre	6 (46.2)	7 (53.8)	0.003	0.22
		Post	6 (46.2)	7 (53.8)		
	D	Pre	5 (38.5)	8 (61.5)		
		Post	4 (30.8)	9 (69.2)		
	<b>Total (n=26)</b>	Pre	<b>11 (42.3)</b>	<b>15 (57.7)</b>		
Post	<b>10 (38.5)</b>	<b>16 (61.2)</b>				



**Figure 2. Nurses' Patient Safety Attitude Level Pre-Post Test**



**Table 5. SAQ Domain Descriptive**

<b>Domain</b>	<b>Item</b>	<b>Mean Score</b>
Teamwork climate	11	68
Safety climate	7	66
Job satisfaction	5	75,5
Stress recognition	4	58
Perception of management (unit)	5	64,6
Perception of management (hospital)	5	64
Working condition	4	67

Table 5 shows the mean scores from each domain of the Safety Attitude Questionnaire (SAQ). The mean score is obtained from the total number of nurses' responses in each domain, then divided by the number of items. After that, the mean score per domain is divided again by the number of respondents/nurses. To align the scoring results with the previous studies, the formula  $(\text{mean domain item} - 1) * 25$  was used. A score of 75 or higher indicates strong agreement on issues related to patient safety in that domain. The final results show that the Stress Recognition score is the lowest, and Job Satisfaction is the highest.

Next, a Mann-Whitney test was used to assess nurses' compliance and patient safety attitude. This aims to evaluate the differences between the intervention and control groups. The final result can be seen in Table 6.

**Table 6. Mann-Whitney Test**

<b>Variable</b>	<b>Compliance</b>	<b>Patient Safety Attitude</b>
<i>p-value</i>	0,000	0,001

The results of the data analysis in Table 6 show that the *p-value* < 0.05 for both variables. This means there is a significant difference between the intervention and control group. This implies that nurses' compliance and patient safety attitudes are influenced by the Fall TIPS toolkit education.

## **DISCUSSION**

### **Compliance in Preventing Falls**

The data analysis results in Table 2 indicate no significant difference in nurses' compliance with fall prevention before and after the intervention. This finding contrasts with a study by Dykes et al. (2022), which reported greater compliance improvements alongside enhanced attitudes, possibly due to a longer intervention period. A potential explanation for the lack of significant change in this study is that the majority of nurses ( $\geq 80\%$ ) already possessed a strong foundation in fall prevention knowledge and skills. This is supported by the

participant characteristics, which reveal that most nurses hold a bachelor's degree in nursing, have over 10 years of work experience, and have previously undergone fall prevention training. Given the high level of expertise among the nurses included in this study, the intervention may have had a limited impact on compliance rates..

Factors such as education level, work experience, and training can influence nurses' compliance levels. The higher the level of education and work experience, the more information nurses acquire, which can trigger an increase in their compliance (Fatonah, et al., 2023). This is supported by a study by Sulawa and Wirawan (2021), which found that nurses with higher education and knowledge levels demonstrated better compliance in applying fall prevention procedures. This may be caused by those with higher education having broader knowledge of nursing theories, concepts, and practices.

Another factor that affects nurses' compliance may be more dominant, such as the workload. A high workload can reduce the time for nurses to focus on patient safety procedures (H. Cho & Steege, 2021). Nurses burdened with excessive tasks may be more likely to overlook important aspects of patient care. This is in line with a study by Sulawa and Wirawan (2021), which found that workload influences nurses' compliance in implementing standard operating procedures for fall prevention in high-risk patients.

In this study, participants were gathered from different rooms. Each room may have different facilities and infrastructure that can make the care environment less safe, thereby reducing work efficiency and nurse motivation (Fatonah et al., 2023). Therefore, a combination of good education and a supportive work environment is key to enhancing nurses' compliance (Paramarta, et al., 2024).

Nurses' attitudes, good collaboration among staff, the work environment, as well as organization and management can also influence compliance levels (Vaismoradi, et al., 2020). Nurses with comprehensive knowledge and a positive attitude are more likely to consistently apply procedural standards. The work environment also plays a significant role in nurse compliance, such as supportive colleagues and management (Garcia, et al., 2023).

However, even though the nurses' compliance level was good, these findings show that education remains important to update information and knowledge (Saki, 2023). Thus, to maintain high levels of compliance, continuous training, and reminders may be necessary. Fall TIPS toolkit education could help to introduce the most recent knowledge in fall implementation (P. C. Dykes et al., 2022). Assessment tools, such as the Fall TIPS toolkit, could facilitate communication among healthcare providers and enhance nurse's compliance.

## Patient Safety Attitude in Preventing Falls

Nurses' patient safety attitudes before and after receiving the intervention differ significantly according to the results in Table 3. Nurses who received education showed a positive attitude in terms of patient safety. This strengthens the nurses' commitment to minimizing fall risks and enhancing their confidence in their ability to prevent falls (Alsaad et al., 2024). More proactive behavior may result from this positive changes in nurses' attitudes.

As a result of nurses' proactive fall risk identification, the elderly patients would receive care in a safer setting (Vaishya & Vaish, 2020). Having a positive attitude on patient safety will also enhance collaboration among nurses and other medical teams in taking effective steps (Al-Mugheed et al., 2022). Thus, this change in attitude not only enhances the safety of individual patients, but also supports the creation of a safety culture within the healthcare institution.

Patient safety attitude in this study was measured using the Safety Attitude Questionnaire – Indonesian Version (SAQ-INA), which contains 7 domains: teamwork climate, safety climate, job satisfaction, stress recognition, perception of management in unit, perception of management in hospital, and working condition. The analysis of the SAQ-INA domains in Table 4 shows that Job Satisfaction has the highest score. Most nurses stated that the wards where they work are good. This means there is a high level of trust in the safety system implemented. When hospital staff have high trust in their workplace, they tend to have a positive attitude and are more compliant with safety protocols (Classen et al., 2021).

On the contrary, the domain of Stress Recognition is the lowest. This means that nurses were less aware of the impact of stress on their work. Effective stress management is possible for nurses who have a good understanding of stress (Iwona et al., 2021). Most of the nurses in this survey, however, claimed fatigue or burnout will impair their performance. According to Galleryzki et al. (2023), fatigue or burnout will affect attitudes toward patient safety. Overwhelming physical dan mental exhaustion will increase of making mistakes (Sucinta et al., 2024).

Based on research findings, a positive teamwork climate significantly influences nurses' attitudes. Most of the nurses feel they received necessary assistance from other staff regarding patient care, indicating good collaboration. Nurses with good adaptability and collaboration skills will demonstrate a positive attitude (Moussa et al., 2022). Furthermore, in the domain of safety climate, the majority of nurses agreed that they would feel safe if treated at the hospital where they work. This means there is a high level of trust in the safety system

that is being implemented. When hospital staff have high trust in their workplace, they tend to have a positive attitude and are more compliant with safety protocols (Classen et al., 2021).

The nurses claimed that they received sufficient information about incidents that could disrupt their work from the ward or hospital management. Maintaining patient safety depends on management's ability to communicate effectively (Aisyiah, et al., 2024). Lastly, nurses reported that they receive adequate supervision for their work, which supports efforts to raise nurses' awareness of safety by promoting incident reporting, enhancing clinical procedures, and fostering a stronger safety culture (Hursepuny et al., 2024).

### **Gap Between Nurses' Compliance and Patient Safety Attitude**

This study explored the effectiveness of the Fall TIPS toolkit education in preventing falls among elderly patients by examining two key behavioral dimensions: nurses' compliance with fall prevention protocols and their attitudes toward patient safety. The findings demonstrated that the intervention contributed positively to both areas, with moderate improvement in safety attitudes and a smaller yet measurable improvement in compliance behaviors. The moderate effect size observed in attitudes suggests that the Fall TIPS toolkit education successfully raised awareness and fostered a stronger safety mindset among nursing staff. However, the discrepancy between improved attitudes and only modest behavioral change points to a well-known challenge in healthcare education: changes in mindset do not automatically lead to changes in practice.

This gap is consistent with behavioral change models, such as the Theory of Planned Behavior, which highlights that intention and attitude are important precursors to action. It must be supported by perceived behavioral control and reinforcement. Nurses may feel more positively toward patient safety, but the translation of this attitude into routine compliance with fall prevention measures may be hindered by real-world challenges, such as workload pressures, time constraints, staffing limitations, or organizational culture (Labrague, 2024).

Moreover, compliance with fall prevention protocols often requires habit formation, which involves repetition, peer modeling, and structural support. A single educational session may spark initial awareness, but without continued reinforcement, practical tools, and leadership support, behavior change is unlikely to be sustained (Galleryzki et al., 2023). These findings suggest that while education is a critical first step, it must be part of a broader strategy that includes environmental changes, clear accountability, and integration into daily clinical workflows (Saki, 2023).

### **Limitation of the Study**

Several limitations were discovered as a result of the research conducted on nurses. First, non-probability sampling, namely purposive sampling, was applied as sampling technique in this study. This may cause the data collected influenced by other uncontrolled factors, such as the work culture and managerial support of each group. Second, the education was given to nurses who had a different shift, which cause it difficult to meet and evaluate them directly. Lastly, this study was conducted over a relatively short period, so further research is required on nurse compliance and the factors influencing it for fall prevention.

### **CONCLUSIONS**

Based on the result, we can conclude that fall education with the Fall TIPS toolkit effectively influences nurses' compliance and safety attitude. There was no significant difference in nurses' compliance level, but there a significant differences in nurses' patient safety attitudes before and after receiving Fall TIPS toolkit education. There was also a significant difference in compliance level and patient safety attitude between the intervention and control groups.

Education using the Fall TIPS toolkit significantly impacts nurses' patient safety attitude, although it does not directly influence their compliance level with fall prevention procedures. Furthermore, the study found significant differences in both compliance levels and patient safety attitudes between the intervention and control groups. The nurses who received Fall TIPS toolkit education demonstrated better performance compared to the control group. This educational method is effective in raising awareness and improving patient safety practices among nurses, even if the impact on compliance may not be immediately apparent. This suggests that hospitals should pilot Fall TIPS in other wards, such as high-risk wards.

Further research may be needed to find out a more comprehensive educational approach, not only focusing on the use of the Fall TIPS toolkit but also on patient safety education in general. Longitudinal studies would be beneficial to assess the long-term impact of the intervention and identify when and how behavior begins to align with positive attitudes. Importantly, this study confirms that attitudinal shifts can act as a foundation for future behavioral change. It is reasonable to expect that, with time and further reinforcement, improved safety attitudes may lead to stronger and more consistent compliance.

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