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ORIGINAL ARTICLE

Awareness of Fall Prevention Strategies among Nurses Caring for Older Adults

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ABSTRACT

Background: Falls are one of the most common events that impact the older adult population and can lead to morbidity, mortality, longer hospital stays and lower quality of life. This study aimed to find the level of knowledge about fall prevention strategies of nurses caring for older people and to identify factors associated with their knowledge of fall prevention strategies. **Methodology:** A cross-sectional study (n=140) used non-probability sampling technique (convenience sampling) for selection of participants. The socio-demographic characteristics, professional experiences, training history, and fall prevention strategies awareness were collected through a structured self-administered questionnaire after an informed consent. Fall risk assessment, assistive devices use, medications risks, safe patient transfer, environmental safety, and patient education were the areas of awareness (SPSS version 26.0, p-value<0.05). Descriptive statistical analysis, Chi-square test, Pearson correlation, multiple linear regression was done. **Results:** The mean awareness score was found to be 81.3 ± 10.4. There were significant positive correlations between years of professional experience ($r = 0.42$, $p < 0.001$), level of education ($r = 0.31$, $p < 0.001$), and number of training sessions attended ($r = 0.53$, $p < 0.001$) and awareness scores. Multiple regression analysis revealed that attendance at training (B (0.39); p<0.001), years of professional experience (B (0.27); p=0.003) and education level (B(0.21); p=0.012) were significant predictors of awareness. **Conclusion:** The overall knowledge of fall prevention measures among older adults among the nurses was satisfactory. In the context of the increment of awareness, participation in training, level of professional experience, and higher educational qualifications were pertinent.

Keywords: Fall prevention, older adults, nurses, awareness, patient safety, geriatric care, fall risk assessment.

Falls are among the most common causes of injuries, disability, hospitalization and death among older adults around the world [1]. Population ageing has turned fall-related complications into a major public health problem because of the important impact these have on physical functioning, psychological health, health services use, and quality of life [2]. Falls are a common event among older adults and are especially dangerous due to physiologic changes, decreased mobility, chronic health conditions, a decline in cognitive functioning, and prescription of certain medications [3]. Falls can have impacts beyond the immediate physical injury, leading to fear of falling, loss of independence, extended hospital stays, and higher health care costs [4].

Fall prevention has thus become a key element of patient safety and quality patient care efforts within healthcare organizations. Effective fall prevention requires a multifactorial approach including risk assessment, environmental modifications, assistive device use, and medication review, supervision of the patient and patient/family education [5]. Nurses have a key role in the implementation of these preventive strategies because they have constant contact with patients and are required to watch for any changes in patient status or functioning [6]. Thus, evidence-based fall prevention strategies are important for clinical settings and the knowledge and awareness of the nurse's role play a vital role in the success of fall prevention programs [7]. Fall prevention knowledge among nurses in acute care and geriatric and long-term care settings have been reported as conflicting findings [8]. Research has shown that in general, nurses are aware of the importance of fall risk assessment and the safety of their environment, but there are still weaknesses in understanding medication-related fall risk, the use of mobility aids, and the implementation of individual fall prevention plans [9].

Studies have also demonstrated that nurses with specialized geriatric education or fall prevention training have significantly higher knowledge scores and higher compliance with recommended safety practices than un-trained nurses [10]. Additionally, it has been found that the number of years in professional practice and the level of education may play a role in nurses' competence in managing the risk of falls in older people [11]. Other research has also highlighted the need for ongoing professional development in order to enhance patient safety practices. The training

programs that have been related to improved recognition of fall risk factors, better clinical decision making, and successful implementation of preventive interventions have been targeted at geriatric care [12,13].

Although there is increasing knowledge about patient safety, significant disparities in knowledge and application of fall prevention measures remain between health services and profession groups [14]. While fall prevention has been discussed extensively internationally, there is still a limited amount of evidence about how aware nurses are of fall prevention strategies in many healthcare institutions. The purpose of the present study was thus to evaluate the level of awareness of fall prevention strategies among nurses working with older adults and to identify the demographic, educational and professional factors correlated with level of awareness about evidence-based fall prevention strategies.

METHODOLOGY

A cross-sectional analysis was used to determine the knowledge on fall prevention among nurses attending to older adults. The study was carried out in authors affiliated tertiary care hospitals in departments where old people are routinely treated such as medical wards, surgical wards, geriatric wards, intensive care units and emergency departments (April 2022 to September 2022). The target population was registered nurses who had direct contact with older adult patients and in charge of their care and management. All the institution's ethics committees had given ethical approval prior to the commencement of the study. All participants in the study gave written informed consent to participate in the study, after explaining the purpose of the research. All collected data was kept confidential and anonymous and participation in the study was voluntary.

The total number of nurses recruited were 140, who were obtained by the non-probability method of convenience sampling. RNs with at least six-months of clinical practice and engaged in patient care were included. The students who worked only in an administrative role, students in extended leave during data collection period, and those who did not want to participate were excluded from the study. A structured, self-administered questionnaire was used to gather data based on existing geriatric nursing and fall prevention guidelines. The survey was divided into two main parts. The first part gathered socio-demographic and professional data such as age, sex, educational level, years of professional experience, workplace and training in geriatric care and/or falls prevention. The second section evaluated fall prevention knowledge such as the knowledge of fall risk assessment, environmental safety measures, assistive devices, medication related falls, patient supervision, safe transfer techniques, patient and family education. A point was awarded for each correct response and total score was calculated for awareness scores. The Awareness level was classified as poor, moderate, good based on the pre-determined criteria. The higher the score, the more aware older adults were of fall prevention evidence-based practices.

The data were entered and analyzed in IBM SPSS version 26.0. Participant characteristics and levels of awareness were summarized using descriptive statistics such as frequencies, percentages, means and standard deviations. Chi-square test was used to identify association between categorical variables. Pearson correlation analysis was used to investigate the relationships between awareness scores and professional characteristics; multiple linear regression analysis was used to determine independent predictors of awareness. Statistically significance p value was defined as < 0.05.

RESULTS

A total of 140 nurses involved in the care of older adults participated in the study. The mean age of participants was 30.9 ± 6.8 years, and the majority were female (70.0%). Overall awareness regarding fall prevention strategies was satisfactory, with most nurses demonstrating moderate to good knowledge of risk assessment, environmental safety, and patient education measures. **Table I** shows the socio-demographic and professional characteristics of the participating nurses. Over half of the participants (51.4%) were aged from 25 to 34 years and 22.1% were aged from 35 to 44 years. The study population consisted of 70.0% female nurses. In terms of educational attainment, 54.3% had a BS Nursing degree, 32.1% were diploma nurses and 13.6% had postgraduate qualifications. Professional experience of the respondents is also divided as 41.4% had 5-10 years of experience while 38.6% had not more than 5 years' experience. Moreover, 59.3% of the nurses indicated that they had received geriatric care training.

Table I: Socio-Demographic and Professional Characteristics of Nurses (n = 140)

Variable	Category	n	%
Age (years)	<25	24	17.1
	25–34	72	51.4
	35–44	31	22.1
	≥45	13	9.3
Gender	Male	42	30.0
	Female	98	70.0
Education	Diploma Nursing	45	32.1
	BS Nursing	76	54.3
	Postgraduate	19	13.6
Experience	<5 years	54	38.6
	5–10 years	58	41.4
	>10 years	28	20.0
Geriatric Care Training	Yes	83	59.3
	No	57	40.7

Table II presents the awareness of fall prevention strategies among nurses. The mean awareness score was 81.3 ± 10.4, which showed the overall level of awareness was satisfactory. A significant number of nurses (58.5%) showed good awareness level, 33.6% moderate awareness, and 7.9% poor awareness. 88.6% of the participants reported knowledge about fall risk assessment, 85.0% about environmental safety, 82.1% about the use of assistive devices, and 77.1% about fall risks associated with medication.

Table II: Awareness of Fall Prevention Strategies among Nurses (n = 140)

Variable	Category	n (%)
Awareness Score	Mean ± SD	81.3 ± 10.4
	Poor (<60%)	11 (7.9)
Awareness Level	Moderate (60–79%)	47 (33.6)
	Good (≥80%)	82 (58.5)
Knowledge of Fall Risk Assessment	Correct Response	124 (88.6)
Knowledge of Environmental Safety	Correct Response	119 (85.0)
Knowledge of Assistive Devices	Correct Response	115 (82.1)
Knowledge of Medication-Related Risks	Correct Response	108 (77.1)

The awareness of specific fall prevention practices is shown in **Table III**. The most frequently reported awareness was appropriate use of the bedside rail (91.4%), and ensuring adequate lighting (90.0%) and safe transfer techniques (87.9%). 87.1% of the nurses reported being aware of the importance of regular fall risk assessment, and 85.7% reported being aware of the importance of non-slip footwear. With regard to patient/family education, 83.6% of the participants reported this as positive, while awareness of medication review for fall risk was somewhat less at 77.9%.

Table III: Awareness of Specific Fall Prevention Practices

Practice	Aware n (%)
Use of bed side rails when appropriate	128 (91.4)
Regular fall risk assessment	122 (87.1)
Ensuring adequate lighting	126 (90.0)
Use of non-slip footwear	120 (85.7)
Medication review for fall risk	109 (77.9)
Patient and family education	117 (83.6)
Safe transfer techniques	123 (87.9)

Association between training status and awareness level is presented in **Table IV**. Nurses who had participated in geriatric care or fall prevention training showed a good level of awareness (73.5%) while the non-trained nurses showed lower level of awareness (36.8%). On the other hand, untrained nurses had significantly greater awareness of the problem (15.8%) as compared to trained nurses (2.4%). A significant relationship between training status and awareness level was found ($p<0.001$).

Table IV: Association between Training Status and Awareness Level

Training Status	Poor n (%)	Moderate n (%)	Good n (%)	p-value
Received Training	2 (2.4)	20 (24.1)	61 (73.5)	
No Training	9 (15.8)	27 (47.4)	21 (36.8)	<0.001

The correlation between awareness scores and professional characteristics is shown in **Table V**. Significant positive correlations were observed between awareness scores and years of professional experience ($r = 0.42$, $p < 0.001$), age ($r = 0.28$, $p = 0.001$), number of training sessions attended ($r = 0.53$, $p < 0.001$), and education level ($r = 0.31$, $p < 0.001$). There was a highest association between awareness scores and number of training sessions attended.

Table V: Correlation between Awareness Score and Professional Characteristics

Variable	Correlation with Awareness Score (r)	p-value
Years of Experience	0.42	<0.001
Age	0.28	0.001
Number of Training Sessions	0.53	<0.001
Education Level	0.31	<0.001

Table VI presents the results of the multiple linear regression analysis of the predictors of awareness. Attendance at training sessions was the greatest predictor of awareness ($\beta = 0.39$, $p < 0.001$), followed by professional experience ($\beta = 0.27$, $p = 0.003$) and education level ($\beta = 0.21$, $p = 0.012$). There was no significant relationship between age and gender with regards to awareness. In general, the regression model was significant ($F = 21.63$, $p < 0.001$) and accounted for about 49% of the variability in awareness scores ($R^2 = 0.49$).

Table VI: Multiple Linear Regression Analysis for Predictors of Awareness

Predictor	β Coefficient	p-value
Number of Training Sessions	0.39	<0.001
Professional Experience	0.27	0.003
Education Level	0.21	0.012
Age	0.14	0.087
Gender	0.05	0.462

$R^2 = 0.49$, Adjusted $R^2 = 0.47$, $F = 21.63$, $p < 0.001$.

The fall prevention strategies awareness score by department is presented in **Table VII**. The highest mean awareness score was in the geriatric wards (86.4 ± 8.2), followed by medical wards (82.1 ± 9.6), and intensive care units (80.7 ± 10.3). The awareness scores of nurses were lower in surgical wards (78.9 ± 10.8) and emergency departments (76.8 ± 11.1) as compared to the other wards. One-way analysis of variance showed that there were significant difference in awareness between departments ($F = 4.88$, $p = 0.002$).

Table VII: Department-Wise Awareness Scores Regarding Fall Prevention

Department	Mean Awareness Score ± SD
Geriatric Ward	86.4 ± 8.2
Medical Ward	82.1 ± 9.6
Intensive Care Unit	80.7 ± 10.3
Surgical Ward	78.9 ± 10.8
Emergency Department	76.8 ± 11.1

ANOVA: *$F = 4.88$, $p = 0.002$, indicating significant differences in awareness levels among nurses working in different departments*

DISCUSSION

The present study aimed to assess the extent to which nurses working with older people were aware of the fall prevention strategies, and to identify factors associated with nurses' awareness of fall prevention strategies. The overall results showed acceptable awareness, with more than half of the participants having good knowledge of fall prevention measures and a mean awareness score of 81.3 ± 10.4. Nurses' knowledge was greater about fall risk assessment, environmental safety, transfer techniques, and the use of bedside rails. This study reveals that ongoing education and professional development are essential to enhance EBP fall prevention practices of nurses working with older adults. The current study found satisfactory levels of awareness which are similar to those of previous investigations in hospital and geriatric care environments [15].

Nurses were found to have sufficient knowledge of fall prevention in general as reported by several studies, and falls are known to be a major issue affecting patient safety in healthcare institutions [16]. In line with our results, previous studies have shown high fall risk awareness, high levels of knowledge about the environment and patient supervision, and high levels of knowledge about falls risk assessments among nursing staff [17]. It is noted that the percentage of nurses who noticed the need for good lighting, non-slip footwear and regular risk assessment is high, which shows the integration of fall prevention principles into routine nursing practice. Theoretical knowledge about fall prevention, however, has not always led to optimal clinical practice, as gaps in the application of individualized fall prevention interventions have also been identified in previous studies [18,19].

The geriatric care trained nurses and fall prevention trained nurses showed significantly higher awareness than the non-geriatric care trained nurses and non-fall prevention trained nurses, respectively. The results of this study are consistent with prior research indicating that there is a significant increase in knowledge, confidence, and fall prevention procedures among nurses when education is provided [20]. Structured training provides increased awareness of risk assessment tools, medication-related risk, patient mobility concerns and evidence-based preventive interventions. There are similar associations between ongoing professional development and better patient safety outcomes in the acute care and long-term care sectors [21]. The findings of the present study are in line with the significance of repeated educational exposure to enhance nurses' competency in fall prevention practices, as the number of training sessions attended showed a significant positive correlation with awareness scores [22].

There are several limitations to consider in interpreting the findings of this study. The cross-sectional design does not allow the determination of causal relationships between professional characteristics and awareness level. The study was done in selected tertiary care hospitals which might restrict the generalizability of the results in other health care settings. Future multicenter studies that include direct observation of clinical practice and evaluation of the impact of educational interventions are strongly suggested to further investigate fall prevention competencies and its effect on fall outcomes for older adults being cared for by nurses.

CONCLUSION

The present study revealed that the overall knowledge of the nurses in relation to fall prevention was satisfactory with most of them having adequate knowledge in fall risk assessment, fall prevention in the environment, use of assistive devices, and patient education. The level of awareness was significantly correlated with being involved in geriatric care training, years of experience, and education. In addition, nurses employed in geriatric wards had higher awareness scores than other clinical areas.

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Authors' Contribution

KK: conceptualization, patient recruitment, data collection, drafting the introduction and discussion, and final approval. MK: Methodology design, data curation, statistical analysis, drafting the methodology and results, and final approval. MR: study follow-up, investigations, data validation, critical revision of the manuscript for intellectual content, and final approval. All Authors contributed as per ICMJE.

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