The level of knowledge and competency in the use of the Morse Fall Scale as an assessment tool in the prevention of patient falls

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Introduction: Patient falls has been identified as one of the major issues in today's health care despite efforts taken in preventing such incidents from happening (Cox *et al.*, 2014). Patient falls can be prevented by using fall risk assessment tools such as Morse Fall Scale. Morse Fall Scale was implemented in the year 2014 in a private hospital in Malaysia but the patient fall rate did not decrease.

Objective: The research objective is to determine the nurses' level of knowledge and competency in the use of the Morse Fall Scale as an assessment tool in the prevention of patient falls.

Method: A quantitative, descriptive, cross-sectional research design was conducted with 100 registered nurses from a private hospital in Selangor, Malaysia. Universal sampling technique was used to recruit the nurses.

Results: The registered nurses had a moderate level of knowledge (M = 7.72; SD = 1.72) and competency (scoring Morse Fall Scale, M = 4.75; SD = 1.26; planning intervention, M = 13.19; SD = 1.89) in using the Morse Fall Scale.

Conclusion: It is recommended that a review of the training programme on the use of the Morse Fall Scale be implemented in a more structured manner.

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Key words: Assessment tool, competency, patient falls, knowledge, Morse Fall scale

Introduction

Patient falls has been identified as one of the major issues in today's health care despite efforts taken in preventing such incidents from happening (Cox *et al.*, 2014). The World Health Organisation (2012) has defined a fall as 'an event which results in a person coming to rest inadvertently on the ground floor or lower level'. It was reported that nearly one-third of adults, aged above 65 years, had falls each year in the United States (Abou El Enein, Abd El Ghany, & Zaghloul, 2012). Hill *et al.* (2015) stated that 30% of patient falls happened during hospitalisation which resulted in complications such as fractures, head injuries, anxiety, prolonged length of hospitalisation and increased medical costs. Over the past decades, researchers have found that healthcare professionals are able to predict which patients have higher possibility of falls based on the risk assessment tools and fall prevention interventions which can be implemented to protect the patients from injury (Morse, 2009). The risk assessment tools are used to assess patients who are at risk for fall by identifying the fall prevention resources of the patients (Branzan, 2008).

According to the Malaysia Patient Safety Goal (2013), one of the patient safety goals is to reduce the risk of patient harm resulting from falls as patient falls are a potentially serious form of incidents and are considered to be largely preventable. It was recommended to implement a patient fall prevention programme with the target of 10% reduction or more of patient falls each year.

The selected hospital for this study is a 78 bedded private hospital in Selangor with an average in-patient census of 700 to 900 per month from 2012 to 2014. The rate of patient falls in this private hospital has been increasing since 2012. There was a total of four patient falls in 2012, followed by 10 patient falls in 2013 and 15 patient falls in 2014. In order to address this, one of the risk assessment tools, which is the Morse Fall Scale, was introduced in this hospital in 2014 with the intention of identifying patients at risk of falls early so that preventive measures can be taken to prevent falls. Initially, a non-structured briefing on Morse Fall Scale was conducted for all the existing staff by the respective ward managers on the usage of Morse Fall Scale while for all the new staff, introduction to the use of Morse Fall Scale was conducted by the nursing clinical educators as part of the orientation programme of the hospital.

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According to the central policy of the private hospital (2012) a clinical incident is defined as "an event or circumstances resulting from health care which could have, or led to unintended harm to a person, loss or damage, and/or a complaint". Patient falls has been categorised as one of the reportable clinical incidents. The standard operating procedure (SOP) of the private hospital has defined a fall as "an event which results in a person coming to rest inadvertently on the ground floor or lower level", which is the same as WHO's (World Health Organisation, 2012) definition.

According to the current SOP of this hospital, fall risk assessment will be conducted for the following situations:

- All in-patients will be assessed for their fall risk by the staff nurse on their admission to the facility, on any transfer from one unit to another unit within the facility, following any change of status, and/or following a fall.

- Assessment of fall will be determined by using the fall risk assessment chart (Morse Fall Scale).

- For patient with a high risk for falls, documentation will be done in the patient's medical records, a fall prevention plan which is appropriate to the source of the risk will be applied and a colour sticker placed on the patient's name card on the headboard to identify the patient who is classified under "High Risk" for falls.

In the event of a fall, immediate actions must be taken by the nurse to see to the wellbeing of the patient followed by submission of an incident report to the nurse manager within 24 hours. The nurse manager will decide whether the incident is a minor or major event. An inquiry will be conducted to establish the root cause of the incident.

Despite efforts taken in preventing patient falls, the patient fall rate did not seem to be improving; the latest total patient fall rate was eight (8) from January to July 2015. The quality objective in terms of patient falls of this private hospital is 10% reduction of patient falls from the previous year. Hence, the purpose of this study was to determine the level of knowledge and competency in using the Morse Fall Scale among the registered nurses.

The three specific research questions for this study were:

1. What is the nurses' level of knowledge in the use of Morse Fall Scale as an assessment tool in the prevention of patient falls?

2. What is the nurses' level of competency in the use of Morse Fall Scale as an assessment tool in the prevention of patient falls?

3. Do the nurses know how to use the Morse Fall Scale scores to plan interventions related to prevention of patient falls?

Methods

Study design, setting and sample

A descriptive research design was used to determine the level of knowledge and competency in using the Morse Fall Scale among registered nurses (n=100). A sample size of 80 was determined using the Raosoft® sample size calculator, with 5% margin of error, 95% confidence level and 50% of response distribution. In order to cater for attrition, 10% (n = 10) was added which makes the total number of sample size required to be 90. Data was collected from the private hospital within two months starting from November 2015. The subjects were chosen using the universal convenience sampling technique. The selection of participants was based on the following criteria: (1) registered nurse who is employed in the respective hospital with certified annual practicing certificate (APC), (2) registered nurse who has been briefed on to use of the Morse Fall Scale. The exclusion criteria included (1) personal care assistants (2) registered nurses who had not been briefed on the Morse Fall Scale.

Reach, effectiveness, adoption, implementation, and maintenance (RE-AIM) framework by Glasgow, Vogt, and Boles (1999) was used for this study. According to Glasgow, Vogt, and Boles (1999), "Reach" refers to the assessment of the targeted population which includes the characteristic of the participants i.e. the registered nurses of the private hospital. "Effectiveness" refers to the positive and negative outcomes of the programme i.e. the effectiveness of the briefing of Morse Fall Scale. "Adoption" refers to the responsiveness of the targeted population towards the given policy or programme i.e. in the level of understanding and adoption of the registered nurses in utilising the Morse Fall Scale. "Implementation", refers to the extent to which a programme is carried as planned i.e. the use of Morse Fall Scale. Lastly, "Maintenance", refers to the extent to which a practice becomes routine.

Ethical considerations

The research was approved by the International Medical University (IMU) Joint Committee of the Research and Ethics. Written permission was obtained from the General Manager and Chief of Nursing Services of the selected hospital and nurses before conducting the study. Explanation on the study and reassurance regarding confidentiality and anonymity were provided to the respondents (nurses) prior to commencement of the study.

Measurement and instrument

The instrument of the study was adapted from a Morse Fall Scale Training Module from Partners Healthcare and Health East Care System. Permission was obtained from the original author to use the instrument with minimal modification based on the needs of the study. The instrument consists of three parts: Part A: Demographic data, Part B: Knowledge on Morse Fall Scale and Part C: Competency in using Morse Fall Scale.

Part A consisted of demographic characteristics of the nurses, including the current working department,

age, years of working experience and highest level of nursing qualification. Part B was on nurses' knowledge regarding Morse Fall Scale. There were total of 10 items which assessed the respondents' knowledge in all 6 sections of the Morse Fall Scale, namely history of fall three (3) months before hospitalisation, secondary diagnosis, ambulatory aids, attachment to equipment (IV or heparin lock), gait or transferring, and mental status. Six (6) questions were pertaining to each section of the Morse Fall Scale, while the remainder four (4) questions were general questions regarding the Morse Fall Scale, its content, purposes, documentation, and planning of measures to prevent falls. In this part, a correct answer was given a score of 1 while a wrong answer was given a score of 0. Scores ranged from 0 to 10. The level of knowledge was developed based on the mean and standard deviation. Part C consisted of a scenario based assessment in which the respondents were required to score, interpret and plan interventions to prevent falls based on the Morse Fall Scale. Each correct answer was given a score of 1 while each wrong answer was given a score of 0. Scores ranged from 0 to 25. The category of the level of competency was based on the mean and standard deviation.

Validity and reliability testing

The instrument was measured and tested for its status of validity and reliability to obtain a representative data. A pilot study was conducted among 10 registered nurses to determine the reliability of the questionnaire. Content validity was done by a panel of experts consisting of a Nursing Matron, three (3) Nursing Sisters and one (1) Senior Staff Nurse from multidisciplinary wards of the private hospital. Cronbach's alpha coefficient was 0.78 which illustrated an acceptable degree of internal consistency reliability.

Data analysis

Data was analysed using Statistical Package for Social Sciences (SPSS) 23.0 version. Descriptive statistics were used to analyse both the demographic and research

variables, and the data was presented in the form of frequency and percentages.

Results

Demographic characteristics

As reported in Table 1, the majority of the respondents were diploma nurses (62%), belonging to the age group between 21-30 years (73%) and had less than five years of working experience (43%).

Table 1 : Demographic profile of respondents

Demographics Variables	Mean (M)	Standard Deviation (SD)	n (%)
Current working department			
Medical			17 (17)
Surgical			17 (17)
Pediatric			14 (14)
Obstetrics and Gynecology			11 (11)
Emergency and Outpatient Department			16 (16)
Operation Theatre			10 (10)
Ambulatory Day Care			4 (4)
Others			11 (11)
Age (years)	29.56	6.792	
21 to 30			73 (73.0)
31 to 40			17 (17.0)
41 to 50			10 (10.0)
Working experience (years)			
Below 5 years			43 (43.0)
5 to 10 years			30 (30.0)
Above 10 years			27 (27.0)
Highest level of nursing qualification			
Diploma in Nursing			62 (62.0)
Degree in Nursing			20 (20.0)
Advanced Diploma in Nursing or Post Basic			17 (17.0)
Master in Nursing			1

Nurses' Knowledge on Morse Fall Scale

A total of six out of ten questions (item B1, B2, B6, B7, B9, B10) were answered correctly by more than 80% of the participants. Two items, item B2 (understanding on areas covered in Morse Fall Scale) and B10 (documentation on Morse Fall Scale in patient's medical record) scored the highest correct answers, 95% (n = 95) followed by item B9 (what to do when there is a change in patient's fall risk score) with 91% (n = 91). However, item B5 (definition of mental status in Morse Fall Scale) obtained the lowest score of 45% (n = 45) followed by item B8 (purpose of Morse Fall Scale) with a score of

50% (n = 50). Figure 1 shows that only 55% (n = 55) of the respondents obtained a total score of 6 – 8 out of 10, whereas 35% (n = 35) scored 9 – 10, 9% (n = 9) scored 3 – 5 and 1% (n = 1) of the respondents was only able to answer two items correctly. The mean score of the level of knowledge according to total score is 7.72 (SD = 1.718) as presented in Table 2. This shows that the nurses have a moderate level of knowledge on the Morse Fall Scale.
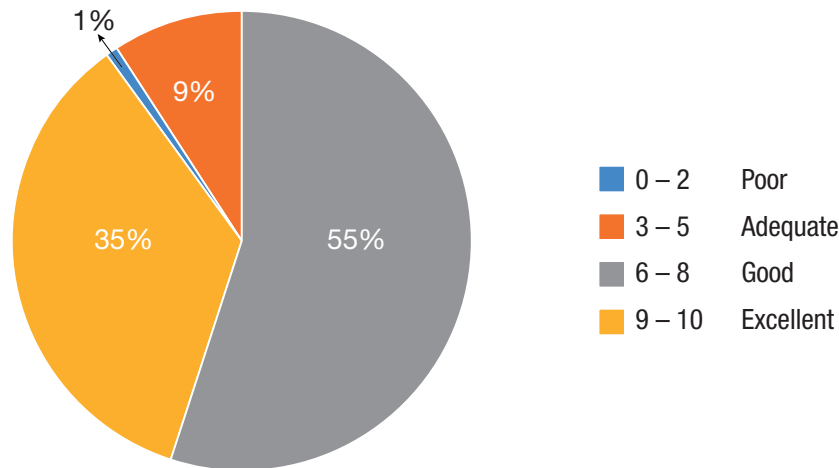

Figure 1: Level of knowledge according to total score

Table 2: Nurses' Knowledge on Morse Fall Scale

Item No	Nurses' Knowledge on Morse Fall Scale	Answered Correctly n (%)	M (SD)
B1	If a patient had a fall during his/her present hospital admission or if there is an immediate history of physiological falls, what score should be used for the variable "History of falling"?	87 (87.0)	
B2	How many areas are covered in the Morse Fall Scale?	95 (95.0)	
B3	A patient scored 15 for "Secondary diagnosis" when _____	66 (66.0)	
B4	A patient walks with head erect and arms swinging freely at their side. What score should the patient receive for the variable of "Gait"?	73 (73.0)	
B5	When administering the Morse Fall Scale, the phrase "Mental status" is defined in terms of the _____	45 (45.0)	
B6	An "impaired gait" receives a score of _____ based on the patient having difficulty rising from a chair, their head is down, and he/she watches the ground. In addition, the patient's balance is poor; he/she grasps onto the furniture, a support person, or a walking aid for support and cannot walk without assistance.	81 (81.0)	
B7	What score should the patient receive for the "Ambulatory aid" variable? (Stooped with walker)	89 (89.0)	
B8	The purpose of a fall risk assessment using the Morse Fall Scale is to identify _____	50 (50.0)	

Item No	Nurses' Knowledge on Morse Fall Scale	Answered Correctly n (%)	M (SD)
B9	What do you do when there is a change in patient's fall risk score _____	91 (91.0)	
B10	Do the patient's Morse Fall Scale score need to be recorded in the patient's medical record when an assessment is done?	95 (95.0)	
	Sum Score Knowledge		7.72 (1.72)

Nurses' Level of Competency on Morse Fall Scale

All respondents (n = 100) scored item C8 (fall risk) correctly but only 4% (n = 4) of the respondents were able to score item C6 (total score of Morse Fall Scale) correctly. A total of 93% (n = 93) respondents scored correctly for item C1 (assessment of fall risk factors for history of fall within 3 months) correctly, 84% (n = 84) for item C2 (secondary diagnosis) followed by 82% (n = 82) for item C4 (attachment to equipment). More than 60% (n=60) of the respondents answered incorrectly for items on assessment of fall risk factors for ambulatory aids 85% (n = 15) (item C3), gait 41% (n = 59) (item C5), and mental status 62% (n = 38) (item C6). Figure 2 shows that only 4% (n = 4) scored 100% correct while 61% (n = 61) of the respondents obtained a total score of 4 – 5 out of 8, which implies that more than half of the participants had only adequate competency level on how to score the patients risk of fall using the Morse Fall Scale. The mean score of the level of competency in scoring the Morse Fall Scale according to total score is 4.75 (SD = 1.258), as shown in Table 3. Therefore, the nurses' competency level of rating the Morse Fall Scale was considered to be moderately adequate.
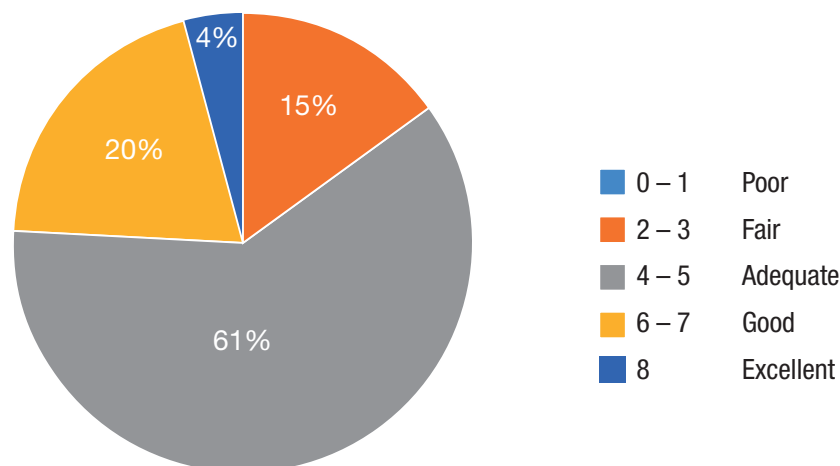

■ 0 – 1	Poor
■ 2 – 3	Fair
■ 4 – 5	Adequate
■ 6 – 7	Good
■ 8	Excellent

Figure 2: Level of competency in using Morse Fall Scale according to total score

Table 3: Nurses' level of competency in rating Morse Fall Scale (n = 100)

Item No	Nurses' level of competency in rating Morse Fall Scale	Answered Correctly n (%)	M (SD)
C1	History of fall in 3 months	93 (93.0)	
C2	Secondary diagnosis	84 (84.0)	
C3	Ambulatory aids	15 (15.0)	
C4	Attachment to equipment	82 (82.0)	
C5	Gait	59 (59.0)	
C6	Mental status	38 (38.0)	
C7	Total score	4 (4.0)	
C8	Correct fall risk	100 (100.0)	
	Sum score competency		4.75 (1.26)

Nurses' Level of Competency in Planning Intervention

Nurses' competency level in planning intervention based on the score of Morse Fall Scale is presented in Table 4. All the participants (n = 100) had identified the fall risk correctly. However, only 4% (n = 4) of the participants were able to score the total score of the Morse Fall Scale correctly. The findings showed that 12 out of 17 interventions were answered correctly by 80% of the participants.

A total of 45% (n = 45) of the respondents had answered correctly for item C24 (limit visitor to ensure sufficient rest), 54% (n = 54) for item C11 (past history of falls in patient's family), and 57% (n = 57) for item C15 (consult physiotherapist for the use of ambulatory aids). From Figure 3, 66% (n = 66) of the respondents obtained a total score of 10 – 14, which implies that more than half of the participants had good competency level in planning intervention for high fall risk patient based on Morse Fall Scale; 28 (28%) of the respondents scored a total of above 15; 6% (6) of the respondents had a total score of 5 – 9. The mean score of the level of competency in planning intervention for high fall risk patients is 13.19 (SD = 1.893) (refer Table 4). From the findings, the nurses had good level of competency in planning intervention for high fall risk patients.

Table 4: Nurses' level of competency in planning intervention by using Morse Fall Scale (n=100)

Item No	Nurses' competency in planning intervention by using Morse Fall Scale	Answered Correctly n (%)	M (SD)
C9	Total Morse Fall Scale risk score	4 (4.0)	
C10	Fall risk category	100 (100.0)	
C11	History of falls: Past history of falls in patient's family	54 (54.0)	
C12	History of falls: Communicate risk status via plan of care, change of shift report and signage	96 (96.0)	
C13	History of falls: Document circumstances of previous fall	87 (87.0)	
C14	Secondary diagnosis: Consider factors which may increase risk for falls: illness/medication timing and side effects such as dizziness, frequent urination, unsteadiness	92 (92.0)	
C15	Ambulatory aids: Request order for PT consult	57 (57.0)	
C16	Ambulatory aid: Provide Ambulatory aid	98 (98.0)	
C17	IV or Hep lock present: Implement toileting/rounding schedule	81 (81.0)	

Item No	Nurses' competency in planning intervention by using Morse Fall Scale	Answered Correctly n (%)	M (SD)
C18	IV or Hep lock present: Instruct patient to call for help with toileting	95 (95.0)	
C19	IV or Hep lock present: Administer IV medications as ordered without review its side-effects	90 (90.0)	
C20	Gait: Assist with out of bed	94 (94.0)	
C21	Gait: Consider PT consult	69 (69.0)	
C22	Mental status: Bed alarm/chair alarm	93 (93.0)	
C23	Mental status: Place patient in far from nurses counter	82 (82.0)	
C24	Mental status: Limit visitors to ensure sufficient rest	45 (45.0)	
C25	Mental status: Frequent rounding	92 (92.0)	
	Sum score plan intervention		13.19 (1.89)

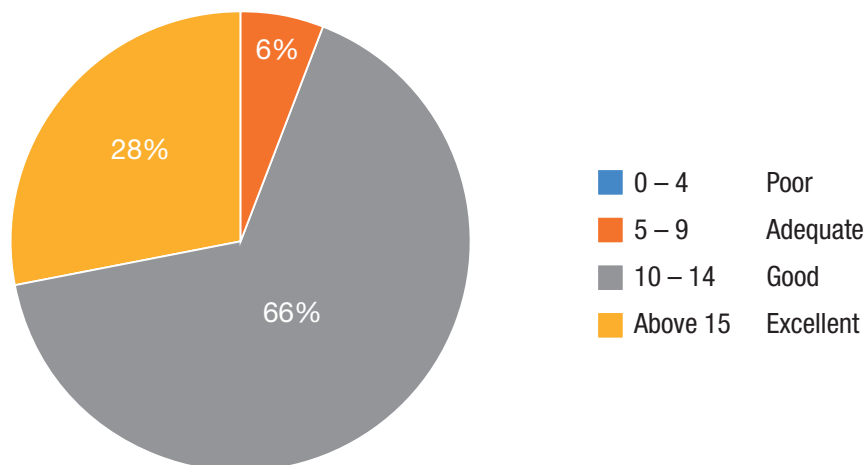|		
■	0 – 4	Poor
■	5 – 9	Adequate
■	10 – 14	Good
■	Above 15	Excellent

Figure 3: Level of competency in planning intervention according to total score

Discussion

The findings of the study showed that the registered nurses in the private hospital had a moderate level of knowledge on the Morse Fall Scale as 55% of the nurses managed to score 6 – 8 (out of 10) for the questions pertaining to the Morse Fall Scale. The findings showed that nurses had insufficient understanding on the purpose of Morse Fall Scale, as only 50% had answered correctly. The two areas of the Morse Fall Scale are secondary diagnosis, which were answered correctly by 66% and mental status, which were answered correctly by 45 %. The findings of this study contradicted with the findings from Abou El Enein *et al.* (2012) where the three lowest scores for nurses' knowledge on patient fall risk assessment were the location of patient's room (10%), attachment of heparin lock (12.5%), and history of fall (17.5%). The understanding and knowledge of nurses on fall prevention assessment tool is important because poor judgment and lack of awareness are among the crucial points causing patient falls (Abou El Enein *et al.*, 2012). Few studies (Alcee & Mather, 2000; Sherood & Good, 2006) have found it significant to

assess the knowledge of the staff nurses regarding falls and risk assessment tools and the education to staff should be prioritised. In this study, there were several fall risk factors which scored less than 60% correct answers from the nurses such as ambulatory aids (15%), gait (59%) and mental status (38%). From the findings, all the nurses were able to identify patients in the correct high fall risk, but only 4% of the nurses scored the correct score of the Morse Fall Scale. The findings of the study were similar with another study conducted by Sherood & Good (2006) where the most common activities associated with patient falls based on nurses' competency level were toileting (33%), permanent or temporary altered mental status (25%), and ambulatory (25%). This showed that the level of competency needs to improve on the assessment of mental status and ambulatory. Based on the findings, 66% of the respondents obtained a total score of 10 – 14, which showed that more than half of the participants had good competency level in planning intervention for high fall risk patient based on the Morse Fall Scale. In addition, the findings showed that more than half of the nurses believed that past history of fall in patient's family has an effect on patient's fall prevention and limiting visitors could reduce in patient falls. These findings of the study were found to contradict with the study conducted by Branzan (2008), where it was shown that the nurses failed to apply the necessary fall prevention interventions on patients. The findings from Branzan (2008) showed that the nurses scored correctly for these items such as bed alarm (93%), change of high fall risk signage (96%), place patient near to nurses counter (82%) and frequent rounding (92%).

Limitations

Limitation of this study is the small sample size, as the study was conducted at one site only. This may not represent the registered nurses from other hospitals and hence the results cannot be generalised to a larger population.

Recommendations

Findings of this study should be shared with the other hospitals under this group as they also practiced the same standard procedure where the Morse Fall Scale is introduced to the new staff during orientation. From the findings of the study, it was found that only 4% of the respondents were able to score item C6 (total score of Morse Fall Scale) correctly and 50% of the respondents were able to understand the purpose of fall risk assessment using the Morse Fall Scale correctly (item B8). This is alarming and needs to be addressed as this tool is intended to provide a measure in identifying patients at risk for fall and it is of high priority that the nurses are aware of its purpose in ensuring patient safety.

Several recommendations are suggested for the current practice especially for the private hospital involved in the study. In view of the importance of ensuring patient safety, all nursing personnel in the hospital including nurse managers, nurse educators and hospital assistants need to be well informed on the usage of the Morse Fall Scale and if possible be included as a compulsory competency for confirmation of nursing personnel. A formalised training programme on the use of the Morse Fall Scale should be conducted as part of continuous nursing education other than incorporating it as part of the orientation programme for new nursing recruits. The content of the training should emphasise on the purpose and risk factors of the Morse Fall Scale (history of fall 3 months before hospitalisation, secondary diagnosis, ambulatory aids, attachment to equipment, gait, and mental status).

In addition, audit by the interdisciplinary patient safety committee of the hospital as well as feedback from participants can be conducted to evaluate the effectiveness of the training programme as part of quality improvement process. Studies can be conducted in other branches of the private hospital to find any similarities in the results, as all the nurses in the same group of hospitals undergo the same briefing processes on the Morse Fall Scale. A quasi-experimental study on the

effectiveness of the retraining programme on the Morse fall Scale in the same private hospital in Selangor can also be conducted.

Conclusion

Overall, there is a need to address the lack of knowledge on the purpose and competency in the scoring of the Morse Fall Scale. As patient safety is of utmost importance, a higher level of knowledge and competency in the usage of Morse Fall Scale among nurses should be expected and emphasised. Therefore, a more structured and formalised training programme on the Morse Fall Scale is recommended to improve the level of knowledge and competency in the use of the Morse Fall Scale as an assessment tool in the prevention of patient falls.

Acknowledgements

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