Study on the Knowledge and Attitudes of Falls and Awareness of Fall Risk Factors among Nursing Students

Myoung-Hee Kim¹, Hye-Won Jeon^{2*} and Mi-Young Chon³

¹Department of Nursing, Semyung University, Jecheon, 390-711, South Korea ²Department of Nursing, Kkottongnae University Cheongju, 363-707, South Korea; hwjeon@kkot.ac.kr ³Department of Nursing, Konkuk University, Chungju, 380-701, South Korea

Abstract

The purpose of this study was to investigate the nursing student's knowledge of falls, attitudes on falls, and awareness of in-patient fall risk factors. The subjects were 404 nursing students from four universities in Chungbuk, Korea. Data were collected from January to March, 2013 using structured questionnaires which explored students' knowledge about falls, attitudes on falls, and awareness of fall risk factors. Then the data were analysed using descriptive statistics, Pearson correlation and t-test with SPSS/WIN 17.0 program. The average value of the nursing students' attitude on falls was 3.86 (1-5 scale). The average value of the subjects' knowledge on falls was 12.86 out of 15 points in total. In conclusion, fall prevention education programs should be developed and provided to nursing students to ensure accurate knowledge and positive attitudes on falls. In addition to this, nursing students should be encouraged to use fall risk tools so as to assess potential fall risk for in-patients during practice at hospitals.

Keywords: Awareness, Falls, Knowledge, Nursing Student

1. Introduction

Falls are defined as "an unexpected event in which the subjects come to rest on the ground, floor, or lower level". Falls are a major problem in older adults and are reported as the most common patient safety incident occurring in hospitals². Falls cause the patients to suffer and increase costs to health care providers³. Falls can be associated with physical injury, functional impairment, psychological trauma, loss of independence, and death⁴.

Falls are one of the most important problems related to safety among the elderly. According to research conducted in 2011, 21.0% of the elderly experienced falls in the past year. Among them 72.4% were cured in hospitals and

47.4% were suffering aftereffects following falls⁵. Inpatient falls are one of the most frequent occurrences in medical institutions. According to research conducted by Kim and Lee⁶, falls were the leading medical accident affecting patients over 65 years of age. Also falls were the second most frequent cause of unintended death factors throughout the world⁷. Moreover, medical expenses associated with falls among the elderly account for approximately 50% of the total medical expenses incurred in hospitals⁷. Falls occur because of various complicated interactions rather than one factor, and are divided into internal factors and external factors⁸.

The risk factors most commonly seen in hospital patients are previous falls, muscle weakness or difficulty

^{*} Author for correspondence

in mobilizing safety, dementia, delirium, continence problems or urinary frequency, medication that increases the risk of falls, and orthostatic hypotension².

In-patient falls may sometimes result in fractures, brain damage if severe, and death9. Aftereffects following falls cause a kind of severe complication, and increase the morbidity rate and death rate¹⁰. Patients may also be at increased risk for falls if they are suffering from a mental injury like psychological anxiety and physical injury. Based on falls that occur through various factors, nurses should assess risk factors and put into practice preventive activities to prevent in-patients from falling. Patients' safety management in hospitals is carried out by nurses who provide constant care to patients, therefore nurses are in an ideal position to utilize active preventive interventions to minimise the fall risk to patients. In order to prevent in-patient falls, nurses must assess not only the patients' individual attention, but also their fall risks and then establish a nursing plan to minimise fall risk while the patient is hospitalised.

Nursing students are educated about patient safety including falls prevention in their basic nursing training. However, falls and fall risk are not addressed in the clinical training curriculum. This study supports the need for continued fall prevention education to be included in the nursing curriculum by demonstrating the importance of knowledge of falls and fall risk, in addition to attitudes of falls, in order to effectively prevent falls. Unfortunately, however, no research has yet been made on the importance of knowledge and attitude of falls on nursing students.

Thus, the purpose of this research was to understand nursing students' knowledge on falls, attitudes of falls and awareness on fall risk factors. Also through this research, we aimed to increase nursing students' attention regarding falls and provide them with basic information to reinforce fall precaution activities.

The purpose of this study was to understand practicing nursing students' knowledge on falls, attitude towards falls and awareness of falls risk factors. In order to meet the purpose of this study, we analysed:

- General characteristics of the subjects.
- Attitudes on falls, knowledge on falls and awareness on falls risk factors of the subjects.
- · Knowledge and attitudes on falls according to the general characteristics' of the subjects.
- Correlations between knowledge and attitude on falls of the subjects.

2. Methods

2.1 Study Design

The study uses descriptive research which includes knowledge and attitude on falls and understands the awareness of fall risk factors of nursing students. With these, it analyses relationships between their variables. The purpose of this study was to investigate the nursing students' knowledge, attitudes and awareness of fall risk factors of in-patients falls.

2.2 Subjects of the Study and Sampling

A descriptive research design was implemented for exploring knowledge, attitudes and awareness of inpatient fall risk factors among nursing students at four universities in Chungbuk, Korea. After researchers explained the purpose of this study, the questionnaires were administered to the clinical practice nursing students who participated voluntarily. Of the 410 completed questionnaires, 404 were used when completing the final analysis. The criteria used to determine eligibility in the study were that the nursing students had to be doing their clinical practice in hospitals and they had to agreement to participate in the study.

2.3 Instruments

A standard questionnaire was developed by Kim⁹ and modified by the researcher based on the literature review. The data was collected from January to March, 2013. The research questionnaires consisted of total 71 items, including 13 items of general characteristics, 30 items of awareness on risk factors of falls, 13 items of attitude on falls and 15 items of knowledge on falls.

Questions relating to respondents' knowledge on falls were made up of the types of falls, places where falls frequently, degrees of falls, and medicine which can increase fall risk, and 15 points were allocated to these items. The higher the score that the students' get, the greater their knowledge of falls. The measuring instruments of attitude of falls consisted of interest in falls, responsibilities for falls' occurrence, and fall prevention. It uses a 5-point scale, and getting a higher score means having a good attitude towards falls. Awareness of fall risk factors are made up of 30 items dividing internal and external factors based on Julie¹¹. The reliability of this study was analysed using Cronbach's alpha, wherein α = 0.75.

2.4 Data Analysis

The data were analysed using SPSS version 17.0. for Windows.

Descriptive statistics were used to identify the general characteristics of the participants. An independent t test was used to compare differences in the mean of attitude on falls and knowledge on falls according to general characteristics. The Pearson correlation coefficient was used to determine the relationship between attitude on falls and knowledge on falls among nursing students. A value of p < 0.05 was considered statistically significant.

3. Results

3.1 General Characteristics of Subjects

The general characteristics of the subjects are shown as Table 1. Among all the subjects, 92.6% were female, 41.6% of the subjects were juniors and 58.2% were seniors. 55.7% practiced a religion, and 51.7% had been in for clinical practice under 5 months (as opposed to 41.6% having practiced between 6 months and one year). The average period of clinical practice was 6.4 months.

The majority of the subjects (99.8%) responded that they have heard of falls, and 75.7% have good knowledge about falls. 72.3% have gotten falls preventive education and 21% have experienced patients' that have sustained falls. 75.7% have a significant knowledge on the risks of falls and 84.9% know about the necessity of fall prevention education. However, only 67.7% showed knowledge about how to prevent in-patient falls.

Table 1. General characteristics of participants (N = 404)

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Characteristics	n	%
Gender ^a		
Male	29	7.2
Female	374	92.6
Grade ^a		
3	168	41.6
4	235	58.2
Practical experience		
Yes	403	99.8
No	1	0.2
Religion		
Roman catholic	90	22.3
Buddhism	31	7.7

Christian	103	25.5
Others	1	0.2
None	177	43.8
Unknown	2	0.5
Period of practical experience		
<6 months	209	51.7
6~11 months	168	41.6
12~17 months	8	2.0
18~23 months	7	1.7
≥ 24 months	3	0.7
Unknown	9	2.2
Previous patient fall experience		
Yes	85	21.0
No	319	79.0
Fall prevention education ^a		
Yes	292	72.3
No	111	27.5
Fall prevention activity ^a		
Known	273	67.7
Unknown	122	30.2

Note. a. The missing data were excluded.

3.2 Subject's Attitude on Falls

The average value of the subjects' attitudes towards falls was 3.86±0.33 out of 5 points in total. The item which had the highest average value (representing 4.52±0.57) was 'Falls preventive education is necessary', followed by 'Falls risk level should be inspected when hospitalised, and 'I don't think physical injury is not severe when patients fall'. The item which showed the lowest score was "I feel guilty if my patient falls", representing 2.15±0.83 Table 2.

Table 2. Subjects' attitude on falls (N = 404)

Items	M ± SD
I am concerned about patient falls.	4.18±.72
I think falls among patients is unavoidable.	$3.68 \pm .95$
I think nurses are responsible for patients' falls.	3.92±.75
Fall prevention is higher priority for	$4.05 \pm .71$
intervention.	
I have concern about nursing interventions for	3.96±.71
fall prevention.	
Fall prevention interventions should be con-	4.26±.66
ducted actively.	

A patients' fall risk level should be inspected when hospitalised.	4.43±.58
Falls preventive education is necessary.	$4.52 \pm .57$
Falls occur because of patients.	$2.79 \pm .89$
I will help immediately if someone asks for	$4.28 \pm .64$
help when they move.	
Physical injury is not severe even if a fall hap-	$4.43 \pm .84$
pens.	
The hospital environment is safe for falls.	$3.54 \pm .85$
I feel guilty if my patient falls.	2.15±.83

3.3 Subject's Knowledge on Falls

Knowledge level of the subjects is shown as Table 3. The average value of the subjects' knowledge on falls was 12.86±2.08 out of 15 points in total. The average value of knowledge among nursing students was 12.86±2.08 (range 0-15) in total scale. Inspecting per item, "The more medicine patients take, the higher risks on falls they will have" showed accounting for 62.4%, which represented the lowest of all the items. The second lowest item was "Taking medicine for diabetes is not related to falls". The item which had the highest percentage of correct answers was "The person who has visual impairment increase falls risk", accounting for 396 subjects (98%). The items scoring over 95% of correct answers were "Anyone who experiences a fall has a higher risk of recurrence", "Dysuria is one of the risk factors of falls", "Falls occur more when patients get up from and down on the bed".

Table 3. Subjects' knowledge on falls (N = 404)

Items	$M \pm SD$
Recurrence rate is high among anyone who has	0.96±.20
already experienced a fall.	
Falls occur most frequently among safety inci-	$0.84 \pm .36$
dents in hospitals.	
Falls increase an elderly persons' death rate.	$0.87 \pm .34$
Elderly hip fractures occur by falls.	$0.86 \pm .35$
Sliding is not falling.	$0.90 \pm .30$
The more medicine you take, the higher your	$0.62 \pm .49$
fall risk.	
The more diseases you have, the higher your	$0.78 \pm .42$
fall risk.	
Depression is not related to falls.	$0.80 \pm .40$
Someone who has a visual impairment has a	$0.98 \pm .14$
higher risk for falls.	
Being numb in the limbs is not related to falls.	$0.86 \pm .35$

Dysuria is a risk factor for falls.	0.95±.21
Hearing impaired is not related to falls.	0.87±.33
Taking medicine for diabetes is not related to	$0.75 \pm .43$
falls.	
Taking medicine for blood pressure is not	$0.86 \pm .34$
related to falls.	
Falls occur more when getting up from and	0.96±.21
down on beds in hospitals.	

3.4 Knowledge and Attitudes on Falls **According to the General Characteristics**

The differences of knowledge and attitudes on falls according to the general characteristics' of the subjects are shown in Table 4. The knowledge (t = 1.80, p = 0.07) and attitude (t = -0.01, p = 0.99) on falls according to gender had no statistical significance. According to grade, there was a statistical significance in knowledge of falls (t = -2.27, p = 0.02), however there was no statistical significance in attitude of falls (t = -0.07, p = 0.95). There was also no statistical significance between knowledge (t = -0.88, p = 0.38) and attitude (t = 0.01, p = 0.99) on falls according to clinical practice. There was a statistical significance shown in knowledge of falls according to subjects' experience of falls (t = 1.96, p = 0.05), while attitude on falls (t = -0.33, p = 0.74) in this area had no statistical significance. Additionally there had no statistical significance differences in the level of knowledge on falls (t = 0.55, p = 0.58) and attitude on falls (t = 0.49, p = 0.63)according to experience of fall preventive education.

Table 4. Knowledge and attitudes on falls according to general characteristics (N = 404)

Characteristic	Knowledge Attitude	
	M±SD t (p)	M±SD t (p)
Gender	1.80 (0.07)	-0.01 (0.99)
Male	13.52±1.43	3.86 ± 0.41
Female	12.80±2.11	3.86 ± 0.33
Grade	-2.27 (0.02)	-0.07 (0.95)
3	12.61±2.01	3.86 ± 0.34
4	13.07±2.01	3.86 ± 0.33
Practice duration	-0.88 (0.38)	-0.01 (0.99)
<6 months	12.75±2.09	3.86±0.33
≥6months	12.94±2.08	3.86±0.33

Fall prevention education	0.55 (0.58)	0.49 (0.63)
Yes	12.89±2.05	3.86±0.34
No	12.77±2.16	3.85±0.33
Experience of falls accident	1.96 (0.05)	-0.33 (0.74)
Yes	13.24±1.78	3.85±0.29
No	12.75±2.14	3.86 ± 0.02

3.5 Subjects' Awareness on Risk Factors on **Falls**

The subjects recognized that patients' activity level, use of assistance tools, sight, falls anxiety, walking disorder, capabilities of daily lives, and dizziness as risk factors, while gender, educational degree, number of chronic diseases, taking medicine, urinary incontinence and disorientation were recognized as less dangerous factors as shown Table 5.

Table 5. Subjects' awareness on risk factors on fall (N = 404)

Risk factor	Category	n	%
Gender	Unrelated	222	55.5
	Related	182	45.5
Educational level	Unrelated	175	43.3
	Related	229	56.7
Hearing	Unrelated	48	11.9
	Related	356	88.1
Depression	Unrelated	60	14.9
	Related	344	85.1
Taking medicine	Unrelated	28	6.9
	Related	376	93.1
Urinary incontinence	Unrelated	28	6.9
	Related	376	93.1
No. of chronic diseases	Unrelated	24	5.9
	Related	380	94.1
Cognitive function	Unrelated	13	3.5
	Related	391	96.8
Insomnia	Unrelated	15	3.7
	Related	389	96.3
Age	Unrelated	12	3.0
	Related	392	97.0
Use of assistant tools	Unrelated	6	1.5
	Related	398	98.5

Anxiety for falls	Unrelated	8	2.0
	Related	396	98.0
Sight	Unrelated	3	0.7
	Related	401	99.3
Walking disorder	Unrelated	3	0.7
	Related	401	99.3
ADL	Unrelated	5	1.2
	Related	399	98.8
Dizziness	Unrelated	4	1.0
	Related	400	99.0

Note. ADL = Activities of daily living.

3.6 Correlation between Knowledge on Falls and Attitude on Falls

As shown in Table 6, correlation between knowledge and attitude of falls showed significance statistically (r = 0.16, p<0.01). That is, the more knowledge of falls the nursing students have, the more positive thoughts on falls they show.

Table 6. Correlation between knowledge on falls and attitude on falls (N= 404)

Variables	Knowledge
Attitude	0.16 (p<0.01)

4. Discussion

Falls are preventive accidents. With the role that nursing plays in helping to manage healthcare within society, development of a fall risk preventative program for clinical practice nursing students will help to avoid many in-patient falls, thereby saving lives and money. This study was performed to understand nursing students' knowledge, attitude towards falls and awareness on fall risk factors, and to lay the foundations of a proper falls preventive program for nursing students. First of all, in inspecting nursing students' characteristics related to falls, 21% of the subjects responded that they have experienced patients' falls. This finding was similar to Choi¹². The study on the nurse subjects' conducted by Seo13 showed 49.7 and 56.1 by Kim9 differed due to longer clinical periods by nurses than nursing students. The subjects' that experienced falls preventive education accounted for 72.3% in Kim's study, showing 74.5% lower than

Choi (74.2%)¹². Lee's study¹⁴ (with nurse participants) showed 77.2% had experienced some fall prevention education, and Choi and Oh15 had 73.0%. Most of nurses have received annual safety education, however nursing students have received safety education in the subject of basic nursing or adult nursing prior to clinical practice. However, onsite education is needed because nursing students who knew well about preventive interventions on falls accidents showed 67.6%.

The average value of the attitude of falls among nursing students was 3.86, equivalent to 77.2 showing relatively positive attitude. This result was similar to that of the previous studies; one study subjected by nurses^{9,13} and the other study involving nursing students¹². When inspecting attitude on falls per item, the subjects showed the necessity of fall prevention education when patients are hospitalised and the attitude to evaluate fall risk factors related to patients. This result was similar to the study conducted by nurses9,13. On the whole, this result was not that different from nurses, showing nursing students' have higher interest in falls and feeling the necessity of falls preventive education. On the contrary, the subjects think physical injury is not severe when patients fall, and responsibilities for falls are up to nurses by responding that they feel guilty if patients fall.

The study did not show any differences according to clinical period, grade and whether or not the subjects had experienced falls. However, the longer practice period the nursing students have, the greater the score they get, and the nursing students who had fall prevention education got higher score too. Recent studies subjected by nurses9,12,14,15 showed statistical significance according to educational background, age, clinical experience, onduty ward and whether or not they had experienced falls. It appears that the more experience nurses have, the more responsibilities they have and their interest in falls increases. The subjects that participated in this study had the average clinical period of 6.4 months - that is relatively short period, so it did not influence their attitude on falls.

The knowledge of falls was quite high, showing 12.86 out of 15 points, equivalent to 85.7%. The knowledge on how the number of patients taking medicine for diabetes is related to falls appeared compared to other questions. The study subjected by nurses9,14 resulted in a similar finding, so content on which medicine which may incur falls should be included when preparing the fall prevention education materials.

The knowledge of falls had statistical significance according to grade and experience of falls incidents. The higher the grade in which the subjects are enrolled, the more interested in falls they get. It is thought the knowledge increases by changing the attitude on falls when they have a fall experience.

The highest risk factors noted in this study were activity level, the use of assistance tools, sight, falls anxiety, walking disorder, capability of daily lives, and dizziness. The lower risk factors appreciated by the subjects were gender, educational degree, number of chronic diseases, taking medicine, urinary incontinence and disorientation.

Similar to the questions which showed lower percentage of correct answers in knowledge on falls, awareness of medicine and diseases as fall risk factors appeared low, therefore those should be reflected in the contents of falls preventive education program.

The correlation between knowledge and attitude of falls had statistical significance. The higher the score on knowledge that the subjects had, the better their attitude toward falls. Thus falls incidents should be prevented by continuing fall risk and fall prevention education to nurses and nursing students. Nursing intervention education for patients' safety and falls prevention is thought to be needed not only prior to clinical practice but during practice period. Moreover, as shown in the previous studies, the higher score on knowledge and attitude on falls the subjects got, the more falls preventive actions they did; giving fall risk and fall prevention lessons on to nursing students will help prevent falls. However, since this study was only targeted 404 Chungbuk nursing students, there was limit to generalise consequences as the whole nursing students.

5. Conclusion

Falls are one of the most frequently occurring safety incidents, and is frequently accompanied by physical and psychological injury, as well as economical damage. Hence nurses who are near and take care of patients should be aware of fall risk factors and provide nursing intervention. Nursing students should learn fall preventive activities through clinical practice and recognize fall risks. Under this context, this study explored knowledge of falls, attitude of falls and awareness of in-patient fall risk factors of among clinical nursing students. It is also a descriptive study which enhances awareness of nursing students' knowledge of falls and provides basic information to reinforce falls preventive activities.

The research subjects were 404 nursing students located in the area of Chungbuk, and data were collected through questionnaires on knowledge, attitude and awareness of fall risk factors. The knowledge and attitude on falls by nursing students were similar to those of nurses, and the more knowledge of falls the nursing students' had, the more positive attitude they got. Among risk factors, taking medicine or diseases were shown as lower factors.

The following are proposals shown through this study: Continuous and professional falls preventive training should be offered nursing students to have positive attitude on falls; University level fall prevention and subjects related to patients' safety should be developed and needed; When a fall prevention program is developed, fall risk factors should be reflected then made up of its contents.

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