# A Study of Knowledge, Recognition and Practice about Delirium in General Hospital Nurses

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### Abstract

*The purpose of this study is to determine the levels of delirium-related knowledge, recognition, and practice, and to identify their correlation in nurses working at general hospitals. This study is a descriptive correlation study attempting to provide raw data for the development of a tool to assess groups at high risk for delirium, as well as preventive intervention programs. The sample size of this study is 206 nurses working at medical surgical units, the intensive care unit (ICU) and the emergency room (ER) with primary assessment of delirium-related knowledge, followed by the secondary assessment of delirium-related recognition and practice one day after. Before commencement, the study was able to obtain the approval of the Institutional Review Board. The data analysis is conducted using the PASW statistic 18 program, by frequency, percentage, mean, standard deviation, Pearson correlation, t-test and ANOVA. The delirium-related knowledge was 69.8 out of 100 points. The cause-related knowledge was shown as the highest point, followed by patient care-related knowledge and symptom-related knowledge in that order. The mean value of delirium-related recognition was 82.26±8.74 out of 100 points, whereas the practice had shown the mean 74.43±12.17 out. There was no statistically significant correlation between delirium-related knowledge and practice, but it was reported that there was a statistically significant correlation between recognition and practice. Since making nurses become more aware of the group at the highest risk for delirium is the most important factor in connection to preventive intervention, it is necessary to develop a tool to assess the group at high risk of delirium for nurses to be more easily aware.*

*Keywords: Delirium, nurse's knowledge, nurse's recognition, nurse's practice*

## 1. Introduction

Delirium is a neuropsychiatric syndrome accompanied by a wide range of symptoms such as functional impairment in recognition and perception, collapse of sleep-wake cycle, impairment in cognition, thought disorders, language disorder, and mood lability. Typical symptoms include anxiety, nervousness, poor concentration, memory disorder, confusion, cognitive disorder, hallucination, and delusion [1]. Delirium is classified into three types depending on the alertness: the hyperactive type, hypoactive type, and mixed type.

Risk factors for delirium are varied. The internal risk factors for delirium include dementia, stroke, or a history of depression, aging, damaged vision and hearing, severity of the disease, electrolyte imbalance, metabolic abnormalities and noise, whereas external risks factors include onset of stroke, dehydration, fever, pain,

infection, water-electrolyte imbalance, immobility, surgery, sleep disorders, use of restraints, alcohol abuse or intake of psychiatric, narcotic, and anticholinergic drugs [2].

Delirium is a cognitive disorder that commonly appears in the elderly in-patients. Overseas, it occurs to 10-30% of patients in the department of internal medicine, 10-40% in the elderly patients, 25% of patients with malignant tumors and about to 80% of terminally ill patients [1,3]. Locally, delirium was prevalent in 58% of the elderly patients ≥ 60 years old, in 22~44% of the patients under in the Intensive Care Unit, in 68% of patients who had undergone endotracheal intubations or tracheostomy, in 68% of patients with mechanical ventilation, in 82% of patients applied with physical restraints, in 7~10% of patients who underwent surgical procedures, and in 34% of patients with cancer. When delirium occurs in elderly patients, it causes a decline of in cognitive and physical functions resulting in an increase of complications, and their time to stay in hospital was prolonged or mortality was increased due to disease progression reportedly which can prolong their hospital stay and even increase their mortality rate due to disease progression [4,5].

Therapeutic intervention on delirium has little effect, but preventive intervention on delirium can slow down the prevalence, disease period, and functional impairment reportedly [6]. Therefore, prevention and early detection of delirium are important for patient care, and for this reason, it is necessary to perform periodic monitoring on groups at high risk for delirium. Nurses spend a lot of time at the bedside of patients and continuously have frequent contact with them; they could be considered as medical staff who can detect delirium at early stages and who can provide nursing care in timely manner, they are also important for periodic monitoring on the group at high risk for delirium, as well as performing preventive intervention activities. However, many nurses lack in delirium-related knowledge that makes them insufficient at assessing delirium early [7]. Sometimes, they confuse delirium for dementia, depression, or psychosis [8]. As they cannot recognize the importance of preventive intervention for delirium, they cannot practice sufficient patient care in reality.

In previous studies, Moon, *et al* [2] had investigated the effects of delirium prevention programs applied to cancer patients at the Intensive Care Unit and Park, *et al* [9] had investigated the evidence-based guidelines for delirium care practices in patients with cancer and verified its effectiveness. However, those studies were not enough to suggest any standardized program for preventive intervention of delirium. Additionally, at current clinical settings, it is not easy to suggest available tools to assess the group at high risk for delirium that can be relatively easy for nurses to perform and simply implement. The insufficiency keeps delirium-related care, recognition, and practices under low levels.

To this end, this study intended to determine the levels of delirium-related knowledge, recognition, and practices in nurses who provide direct patient care at a tertiary general hospital, and then to identify their correlation so as to use the study findings as base data for developing assessment tools for the patient group at high risk for delirium, as well as developing a preventive intervention program.

## 2. Method

### 2.1. Research Design

This study is designed to determine the levels of delirium-related knowledge, recognition, and practice, and to compare these levels while investigating their relationship.

The 1st survey was from April 22, 2015 to May 8, 2015 about general characteristics and delirium-related knowledge.

The 2nd survey was from May 11, 2015 to May 22, 2015 about delirium-related recognition and delirium-related practice.

The 2nd survey was implemented after more than 1 day after the completion of the 1st survey.

## 2.2. Selection of Study Population

This study is to be conducted among nurses who are working at medical surgical units, intensive care units, and emergency rooms in a general hospital, and the details of subject inclusion criteria are as follows.

### 2.2.1. Inclusion Criteria

Nurses who provide direct care service to the patients at the wards of medical surgical units

Nurses who provide direct care service to the patients at special units, such as the Intensive Care Unit and the Emergency Room

### 2.2.2. Exclusion Criteria

Nurses working at the outpatient units who do not participate in direct care services to the patients

Nurses working at the delivery room, the neonatal unit, and department of pediatrics who do not participate in direct care services to the adult patients.

## 2.3. Research Tools and Measurement

A structured questionnaire sheet was used as the tool of this study.

### 2.3.1. Delirium-related Knowledge

Delirium-related knowledge was measured by using a tool developed by Lee, *et al* [10]. The tool had 45 questions in total, and consisted of 10 questions related to the cause of delirium, 15 questions related to symptoms, and 15 questions related to the patient management. When the responder answered correctly, it was given 1 point, whereas when the responder answered incorrectly or chose "don't know", it was 0 point. The higher the scores were meant that the higher the delirium-related knowledge was. The reliability of the tool at the time of development by Lee, *et al* [10] was Cronbach's $\alpha = .75$ and in this study it was Cronbach's $\alpha = .70$.

### 2.3.2. Delirium-related Recognition and Practices

To measure the levels of delirium -related recognition and practices, a tool developed by Suh, *et al* [11] and modified by Park, *et al* [12] was used. The tool had 25 questions in total, consisted of 4 questions for assessment of the risk factors for delirium and 21 questions for intervention. The scoring was done on the following responses: 'nearly no implementation' (not important at all) as 1 point, 'occasionally implement' (not important) as 2 points, 'frequently implement' (important) as 3 points, and 'always implement (very important) as 4 points. The higher the scores were, the higher it indicated that the levels of delirium-related recognition and practice were. Reliability of the tool modified by Park, *et al* [12] was Cronbach's $\alpha = .74$ and in this study it was Cronbach's $\alpha = .70$.

## 2.4. Data collection method

### 2.4.1. Selection and Sampling of Subjects

The sample size was primarily calculated as 199 subjects using G*POWER 3.1.9.2 program, a sample size calculation program adapted with Cohen's Sampling Equation, at the significance level (alpha) as 0.05 and the effect size as 0.20, but as the study took the drop-out rate into account, it was 240 subjects. When excluding 34 subjects whose questionnaire sheets were not retrieved, a total of 206 was the final number of subjects in this study.

### 2.4.2. Data Collection Procedures and Methods

Data collection began after the approval (KBSMC 2015-04-002) of the Institutional review board (IRB) of K General Hospital, from April 22 until May 22 of 2015.

The data collection method used was the self-report questionnaires and each time taken for data collection was about 15 to 20 minutes. The investigator personally distributed the questionnaires to nurses working at the wards of medial surgical units and the Intensive Care Unit and the Emergency Room of K General hospital, who provide direct care service to the patients.

After an explanation by the investigator of the questionnaires, the nurses who agreed to participate in the study signed the informed consent form.

Thereafter, the questionnaires for assessment of delirium-related knowledge were distributed to them for the 1st survey. When one or more days were passed, the questionnaires for assessment of the levels of delirium-related recognition and practice were distributed and the investigator retrieved them personally.

### 2.5. Data Analysis Method

The collected data was analyzed using PASW Statistics 18.0 program.
General characteristics of subjects were analyzed using descriptive statistics.
The levels of delirium-related knowledge, recognition, and practice of the subjects were analyzed using descriptive statistic, ANOVA and t-test.
The correlation between delirium-related knowledge, recognition, and practice of the subjects were analyzed using Pearson's correlation coefficient.

## 3. Result

### 3.1. General Characteristics of Subjects

The gender of the study subjects was mostly women (96.1%), and the mean age was $27.34 \pm 4.00$ years old. The average work career was $57.19 \pm 51.03$ months, 74.3% of the subjects were working at medical surgical units, while 25.7% of the subjects were working at special units. About half of the subjects, 56.3%, had experience in delirium-related education whereas 94.7% considered they needed delirium-related education reportedly. More than 1/3 of subjects had experienced nursing a patient with onset of delirium, and the stress level when nursing the patient was reported as $5.54 \pm 3.66$ points <Table 1>.

**Table 1. General Characteristics of Subjects (N=206)**

| Item | Classification | n(%) or M±SD |
|------|----------------|--------------|
| Gender | Female | 198 (96.1) |

| | | |
|---|---|---|
| | Male | 8 (3.9) |
| Age (years) | Younger than 30 yrs. old | 157 (76.2) |
| | Younger than 40 yrs. old | 45 (21.8) |
| | 40 yrs. old or older | 4 (1.9) |
| | | 27.34±4.00 |
| Career | Less than 1 year | 30 (14.6) |
| | Less than 1~3 years | 61 (29.6) |
| | Less than 3~5 years | 31 (15.0) |
| | Less than 5~10 years | 62 (30.1) |
| | 10 years or more | 22 (10.7) |
| Work Unit | Medical unit | 82 (39.8) |
| | Surgical unit | 71 (34.5) |
| | Others | 53 (25.8) |
| Experiencing Any Education on Delirium | No | 90 (43.7) |
| | Yes | 116 (56.3) |
| Necessity of Education on Delirium | Very much in needs | 52 (25.2) |
| | In needs | 143 (69.4) |
| | More or less | 11 (5.3) |
| Experiencing Patients with Delirium | No | 55 (26.7) |
| | Yes | 151 (73.3) |
| Delirium Patients-related Stress | | 5.54±3.66 |

* * Others: Emergency Room, Intensive Care Unit

## 3.2. The Levels of Delirium-related Knowledge, Recognition and Practice

### 3.2.1. Delirium-related Knowledge

The mean score for the level of delirium-related knowledge was presented as 31.42±4.66 points out of 45 points, which was confirmed as 69.8 points as scaled score of 100 points. As for the score by delirium-related knowledge domain, the level of the cause-related knowledge was 90.1 points as scaled score of 100 points, the level of the symptom-related knowledge was 61.3 points, and the level of patient management-related knowledge was 67.7 points reportedly <Table 2>.

**Table 2. Level of Delirium-related Knowledge (N=206)**

| Domain | Number of Questions | M±SD (Scaled score of 100 points) |
|---|---|---|
| Total | 45 | 31.42±4.66 (69.8) |
| Cause | 10 | 9.01±1.44 (90.1) |
| Symptom | 20 | 12.25±2.32 (61.3) |
| Patient Management | 15 | 10.16±2.39 (67.7) |

### 3.2.2. The Levels of Delirium-related Recognition and Practice

The mean level for the necessity of delirium-related intervention was 82.26±8.74 points, and the mean level of practice was 74.43±12.17 points <Table 3>.

**Table 3. Levels of Delirium-related Recognition and Practice** (N=206)

| Item | M±SD |
|---|---|
| Recognition | 82.26±8.74 |
| Practice | 74.43±12.17 |

### 3.2.3. Differences in the Levels of Knowledge, Recognition, and Practice in accordance with General Characteristics

The level of knowledge by career had presented significantly higher scores in nurses with a career for more than 10 years compared to the nurses with a career less than 10 years (Z=-1.90, p=.506), but the level of recognition (Z=-.71, p=.473) and the level of practice (Z=-.69, p=.489) were confirmed as no statistical difference <Table 4>.

**Table 4. Differences in the Levels of Knowledge, Recognition, and Practice in accordance with Career (N=206)**

| | ≥ 10 years (n=21) | Less than 10 years (n=185) | Z | p |
|---|---|---|---|---|
| | M±SD | M±SD | | |
| Knowledge | 33.33±2.86 | 31.16±4.76 | -1.90 | .506 |
| Recognition | 83.71±9.37 | 82.02±8.64 | -.71 | .473 |
| Practice | 76.09±11.30 | 74.30±12.22 | -.69 | .489 |

The level of knowledge by work unit had presented statistically significant higher scores in nurses in the medical unit than in nurses in the surgical unit, but it appeared there were no significant differences between the surgery ward and other special sections, as well as between the medical surgical units and other special units (F=4.10, p=.018).

It was confirmed that the levels of recognition (F=1.02, p=.359) and the level of practice (F=1.19, p=.304) had no significant differences by the work unit <Table 5>.

**Table 5. Differences in the levels of Knowledge, Recognition, and Practice in accordance with Work Unit (N=206)**

| | Medical unit (n=81) | Surgical unit (n=72) | Special unit (n=53) | F | p |
|---|---|---|---|---|---|
| | M±SD | M±SD | M±SD | | |
| Knowledge | 32.32±3.90 | 30.20±5.26 | 31.56±4.53 | 4.10 | .018 |
| Scheffe | b | a | a, b | | |
| Recognition | 82.33±7.87 | 81.15±8.22 | 83.39±10.42 | 1.02 | .359 |
| Scheffe | a | a | a | | |

| Practice | 72.86±11.21 | 75.59±12.98 | 75.45±12.19 | 1.19 | .304 |
|----------|-------------|-------------|-------------|------|------|
| Scheffe | a | a | a | | |

It was confirmed that there were no statistically significant differences between the levels of knowledge (Z=-1.00, p= .317), Recognition (Z=-.68, p= .493) and Practice (Z=-1.45, p= .146) by experience of education <Table 6>.

**Table 6. Differences in the levels of Knowledge, Recognition and Practice by experience of Education (N=206)**

| | With experience (n=116) M±SD | Without experience (n=90) M±SD | Z | p |
|---|---|---|---|---|
| Knowledge | 31.80±4.24 | 30.85±5.10 | -1.00 | .317 |
| Recognition | 82.59±9.50 | 81.67±7.59 | -.68 | .493 |
| Practice | 73.43±11.95 | 75.83±12.27 | -1.45 | .146 |

There were no statistically significant differences between the levels of knowledge (Z=-2.44, p= .014) and practice (Z=-1.17, p= .240) in accordance with experiences with patients with delirium, but the recognition was confirmed as significantly high in nurses who had experiences with patients with delirium (Z=-1.67, p= .940) <Table 7>.

**Table 7. Differences in the Levels of Knowledge, Recognition, and Practice by Experiences of Patients with Delirium (N=206)**

| | With experience of patient (n=152) M±SD | Without experience of patient (n=54) M±SD | Z | p |
|---|---|---|---|---|
| Knowledge | 31.94±4.20 | 29.83±5.46 | -2.44 | .014 |
| Recognition | 82.75±8.64 | 80.61±8.79 | -1.67 | .940 |
| Practice | 75.12±12.01 | 72.68±12.34 | -1.17 | .240 |

## 3.3. Correlations of Delirium-Related Knowledge, Recognition, and Practice

### 3.3.1. Correlation between the Levels of Knowledge and Practice

As for the correlation between the levels of delirium-related knowledge and practice, the level of practice by the level of knowledge had shown no statistically significant correlation (p= .521) <Table 8>.

**Table 8. Correlation between the Levels of Knowledge and Practice in Nurses (N=206)**

| | Knowledge | Practice |
|---|---|---|
| Knowledge | 1 | |
| Practice | .045 | 1 |

$(P=.521)$

### 3.3.2. Correlation between the Levels of Recognition and Practice

The correlation between the levels of recognition and practice in terms of delirium-related intervention showed that the higher the recognition was, the higher the level of practice was. It was reported that they had statistically significant correlation (p<.001) <Table 9>.

**Table 9. Correlation between the Levels of Recognition and Practice in Nurses (N=206)**

|  | Recognition | Practice |
|---|---|---|
| Recognition | 1 |  |
| Practice | .541 <br> $(P<.001)$ | 1 |

## 4. Conclusion

This study was conducted to determine the levels of delirium-related knowledge, recognition of interventions, and its practice, and to identify their correlations in nurses working at a tertiary general hospital so as to utilize the findings as base data for the development of preventive intervention programs at clinical settings.

It was found that $\geq 2/3$ of nurses had experienced caring for patients who had an onset of delirium among the study subjects, which was similar to the study result of Yang [13] that had suggested more than 80% of nurses working at the general hospital had experienced caring for patients with delirium. In this study, only about half of the subjects at 56.3% had answered that they had experienced delirium-related education. Most of the subjects (94.7%) had answered that education would be necessary at clinical practice, which was also similar to the study result of Lee, *et al* [10] that reported 95.7% had answered that delirium-related education was needed. Such results could be considered as associated that the nurses had experienced caring for patients with delirium more than experiencing delirium-related education at actual clinical settings. Therefore, it is considered that there should be more opportunities to get education associated to the actual practice at clinical setting.

The level of delirium-related knowledge was confirmed as 69.8 points out of 100 points, which was consistent with the study result that had shown 70 points out of 100 points [13] in a study that investigated the delirium-related knowledge in nurses working at a general hospital, and the study results with 70 points out of 100 points in a study conducted among nurses working at a general hospital [7]. These findings present delirium-related knowledge is staggering at the same level without improvement, despite the fact that the group at high risk for delirium is increasing due to an increase in the elderly population and diversification of diseases. When reviewing the level of delirium-related knowledge by sub-domain, the cause-related knowledge was 90.1 points, the patient management-related knowledge was 67.7 points, and the symptom-related knowledge was 61.3 points, showing the cause-related knowledge was the highest level, followed by the patient management-related knowledge and the symptom-related knowledge in that order. These outcomes are consistent with the results of a study conducted among nurses working at a general hospital by Lee, *et al* [9], which had presented cause-related knowledge at 87 points, the patient management-related knowledge at 69 points and the

symptom-related knowledge was at 62 points. Whereas it was consistent with results of a study conducted in among nurses working at the a general hospital by Choi, *et al* [7], that also presented the cause-related knowledge was at 90 points, the patient management-related knowledge was at 68 points and the symptom-related knowledge was at 62 points in the order. This indicates that nurses know the contents of cause but it is difficult to detect a patient with the onset of delirium due to the low level of the symptom and the patient management-related knowledge. Even if delirium was detected in the patient, it was likely difficult to provide the appropriate nursing care.

The mean score of recognition on the needs of delirium-related intervention was 82.26±8.74 points out of 100 points, whereas the mean score of practice was 74.43±12.17 points out of 100 points. In respect to the needs of delirium-related intervention, it is difficult to compare the recognition because there is no previous study available, but in a study by Suh, *et al* [11] conducted among nurses working at the Intensive Care Unit, the practice was 70 points, and in a study conducted among nurses working at Orthopedic Department by Kim, *et al* [14], the practice was 72 points, both of which were similar to the results of this study.

Although delirium-related education experience or experience of patients with delirium had shown no significant differences in the level of knowledge, nurses with a career of more than 10 years had shown significantly high levels of knowledge. This result was similar to the outcome of a study conducted by Kim, *et al* [14] that had shown higher knowledge in nurses with more than 10 years of career, and to the result of a study conducted by Suh, *et al* [11] that also had shown higher knowledge in nurses with more than 10 years of career.

The results had shown that the nurses at the medical unit had higher knowledge than nurses at the surgical unit. This was similar to the results of a study by Weon [15] that the level of knowledge was higher in nurses at the medical unit than in the nurses at the surgical unit. Also, the level of knowledge in nurses at general wards, including the medical and the surgical unit, was not so different from that in the nurses at special units, which was similar to the study results of Kim [16] that had shown no differences in the level of knowledge between the nurses at general ward and those at Intensive Care Unit.

The recognition on of the importance of delirium nursing care was presented at a high level in the nurses who had experiences with the patients with delirium. This is associated with the results from a study by Choi, *et al* [7] that reported the experiences of patients with delirium as a predictive factor of the capacity for delirium assessment. The experiences of nursing the patients with delirium increase the recognition on of the needs and the importance of delirium nursing, resulting in an increase of practice ability to perform assessment of on patients with delirium.

In this study, the levels of delirium-related knowledge and practice were not correlated, as consistent with the results of a study conducted by Park [17] in on nurses working at general hospitals that had reported there was no correlation between the knowledge and practice of nursing. However, in a study by Kim, *et al* [15], it was shown that the knowledge was correlated to the practice, and such different results were considered as caused by differences in the study method and in the subjects. Therefore, it is considered that a repeated study would be required on the medical staff, such as nurses who provide direct nursing care service to the patients at clinical settings, and not just some nurses and doctors who directly participate in medical care service to the patients.

In this study, the higher the recognition gets, the higher the practice will be in the correlation between the levels of recognition and practice of delirium-related nursing. It is not easy to make any comparison because there is no previous study available about the determination of the relationship between delirium-related

recognition and practice. Lee, *et al* [18] had reported that the higher recognition of nurses working at intensive care unit on the patient safety was, the higher it indicated the level of delirium-related practice was. In consideration of the results of a study conducted by Kim, *et al* [19], the higher the recognition of nurses at the emergency room on of tuberculosis transmission management, the higher the level of practice was. This can be considered when the higher the recognition is in nursing the patient, the higher the level of practice becomes, thereby making it necessary to arrange measures to increase the recognition of nurses on the delirium nursing intervention so as to increase the level of practice. In addition, when considering the score of practice was lower than the score of recognition, it can be estimated that the nurses recognizes the importance of delirium-related nursing, but there are difficulties in practicing nursing for delirium at clinical settings.

Thereby, it is considered that an assessment program for the early detection of groups at high risk for delirium be developed and made easy to access and apply as well, to increase practice at clinical settings, and that programs for delirium patient intervention and its diffusion be developed as well.

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