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## Evaluation of Nursing Documentation of Delirium Care

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### Abstract

*The purpose of the study was to determine whether a delirium educational program has a positive outcome on nurses' documentation in patient records of delirium care. A one group pre-post design was used. A convenient sample of 60 consecutive records that included documentation by participating nurses in four medical wards of one regional general hospital in South Korea was audited two months before and two months after a delirium educational program. Although an educational program in this study positively changed nurses' knowledge and attitudes, these positive effects did not translate to improvement in the documentations of delirium care. There was no significant increase in the frequency of nursing documentation of delirium assessment following participation in the educational program. Furthermore, there was no significant increase in the frequency of nursing documentation of the use of non-pharmacological management following the documentation of keywords associated with delirium after participation in the educational program. The findings indicate the need to develop, implement and record a systematic risk assessment for delirium and assessment and management of existing delirium based on evidence-based guidelines in clinical practice in South Korea.*

**Keywords:** Delirium, Evaluation, Nursing, Documentation, Care

### 1. INTRODUCTION

Providing care for older people with delirium is a common experience for nurses. Delirium occurs at least one in five hospitalized older adults on any given shift [1]. Delirium affects 11% to 68% of surgical inpatients following cardiac and orthopedic surgery, 29% to 64% of medical inpatients and up to 88% of persons in intensive care units (ICUs) and palliative care units [3-6].

Delirium is a complex neuropsychiatric syndrome that develops acutely and is characterized by disturbance in attention, awareness, and cognition [2]. For hospitalized older adults, an episode of delirium increases the risk of functional decline, which contributes to increased length of hospital stay [3, 4], increased mortality [5], and increased risk of institutionalization [6, 7]. Poor delirium-related outcomes increase health care costs, including an increase in duration of hospitalization and increased staffing requirement [8, 9]. Its cost exceeds US \$ 160 billion per year in the United States [9]. The experience of delirium is also distressing for patients, family caregivers, and health care professionals [10].

Nurses play a vital role in delirium prevention, recognition and management due to their continuous contact with patients [18]. However, the performance of nurses in recognizing, managing and documenting delirium is inadequate [13, 19, 20]. Several factors for inadequate delirium care include patient factors, health care professionals, particularly nurses, and organizational factors. Patient factors include the nature of delirium and severity of delirium, as well as dementia. Due to the acute onset and fluctuating nature of delirium and the overlap with dementia or depression, it is difficult for nurses to recognize and manage delirium in hospitalized older adults with and without dementia [11, 12]. Nurse factors include lack of knowledge and negative attitude.

Due to their poor knowledge and negative attitude, nurses may fail to identify risk factors, to use

screening tools for delirium detection, and still describe delirium as confusion in patients' records; an unclear term which can be diagnosis or a symptom [11, 13-15]. Organizational factors include disease-oriented and efficiency-driven characteristics of acute hospitals and the lack of standardized care protocols and guidelines [16, 17].

Although several factors contribute to inadequate delirium care, educational intervention is viewed as one way to change nurses' practice in their care of older people with delirium. Recently Chow, Mujahid [21] reported that a geriatrician-guided delirium training incorporating the Confusion Assessment Method (CAM) [22] into regular nursing assessment significantly improved nurses' knowledge of and their self-confidence in delirium care, and significantly increased the frequency of CAM documentation in one orthopedic ward of a tertiary care hospital in the United States. Gordon, Melillo [23] demonstrated that a didactic session coupled with bedside coaching did not significantly improve nurses' knowledge of delirium, but significantly increased the frequency of documentation of delirium screening results in one neuroscience intermediate care unit of one teaching hospital in the United States. However, there are few studies that evaluate nursing documentation practices of delirium assessment and management in South Korean hospitals.

This study reports on the evaluation of nursing documentation of delirium care before and after the implementation of a delirium educational program for nurses in one regional general hospital in South Korea. The three-month program consisted of two one-and-a half hour workshops in the 1<sup>st</sup> month and two fifty-minute ongoing support sessions in the 2<sup>nd</sup> and 3<sup>rd</sup> month [24]. The educational program focused on providing information about delirium prevention, assessment and management in hospitalized older adults with and without dementia. The overall aim of this study was to determine whether an improvement in South Korean nurses' knowledge and attitudes translates into documentation of delirium care. The questions of the study were specifically:

1. Is there a significant difference between pre- and post-intervention in the nursing documentation of the total number of keywords associated with delirium?
2. Is there a significant difference between pre- and post-intervention in nursing documentation of the frequency of non-pharmacological interventions following the documentation of keywords associated with delirium?
3. Is there a significant increase in the nursing documentation for the comprehensiveness of reporting delirium care following an educational program?

## 2. METHODS

### 2.1 Study design, setting and participants

A one group, pre-post design was used with evaluation of patient record documentation before and after implementation the delirium educational program. This study was conducted in four medical wards of one regional general hospital in South Korea. These wards were dedicated to provide care for older patients with dementia and at risk of delirium who need medical treatment.

A convenient sample of patients who met the inclusion criteria was recruited for chart audits. The inclusion and exclusion criteria for nursing documentation of delirium care included as follows, patients who:

#### Inclusion criteria

- were admitted to one of the four medical wards for medical management and were cared for by participating nurses in the previous two months before or two months after the educational program;
- had a minimum of 1-week hospitalization;
- had at least one risk factor for developing delirium at admission or during hospitalization: age (age  $\geq$  70 years); pre-existing dementia and/or cognitively functional difficulties identified in their medical record; medication; urinary retention; infection (urine, lungs, skin); hypoxia; dehydration; hypo/hyperglycemia; pain; immobility; sensory loss (visual and hearing impairment) [25];

- were identified by each medical ward manager to have experienced symptoms associated with delirium, dementia, or confusion; and
- consent was provided by patients or their family caregivers.

#### Exclusion criteria

- were not admitted to one of the four medical wards.

For the nursing documentation audit, medical ward manager provided a list of potential older patients who met the inclusion criteria and arranged times for the researcher to provide an overview of the study and distribute an information sheet individually to patients and/or their family caregivers. The researcher answered any questions from older patients and/or their family caregivers, explained the study in more detail at these times, and assured them of confidentiality of personal information. Older patients' capacity to consent was determined by their attending physician who determined capacity according to DSM-5 criteria [2]. If older patients were deemed to have the capacity to consent, they were asked for permission to allow their paper-based records to be audited. When older patients were deemed unstable to provide consent, the appointed decision-maker, usually family caregivers, provided substituted consent. They were identified and approached by each medical ward manager, and were asked for permission for their family members' paper-based records to be audited. To avoid possible coercion, written informed consent was obtained by each medical ward manager who had no association with this study. Further possible coercion was minimized by assuring that non-participation in this study did not affect the quality of nursing care older patients and/or their family caregivers received.

## **2.2 Data Collection**

Documentation data were collected during a 2-month period at baseline (July–August 2013) and post-intervention (December 2013–January 2014). Reliability and validity issues were addressed by using a precise chart audit tool. This chart audit tool provided consistent unbiased assessment of documentation of delirium care. This assured that the variables assessed were consistent for each subject, increasing internal validity by decreasing assessment errors.

The researcher extracted data from a number of the paper-based patient records. These included nursing history at admission, medication administration records, nursing progress notes, and nursing care plans. With a list of nurse participants' signatures, the researcher reviewed nursing documentation by using the chart audit tool. Paper-based records of each patient who met the inclusion criteria were independently reviewed by the two auditors until one quarter of older patient records (i.e., 15 of 60) were assessed. The nursing documentation review took 30 to 45 minutes per older patient. The researcher and one research assistant discussed the rationale behind each classification to ensure consensus at each of the audit days. The rest of the records were assessed by the researcher alone. The research assistant was a registered nurse (RN) who has a Masters degree and had clinical experience caring for older patients with delirium and/or dementia. The reason for having the second independent auditor was to control for researcher bias and ensure reliability for analysis. This nurse auditor had no association with this study other than for this purpose. She was educated about the audit methods specific to research questions.

An initial inter-rater agreement of between 90% and 100% in this study was planned to be attained and disagreement resolved with discussion [26]. No identifying patient information was shared with the research assistant at any time. The percentage of absolute agreement was used by calculating the number of times raters agreed on a rating and then dividing by the total number of ratings. This measure can vary between 0% and 100% [27, 28]. An agreement of 75% was achieved in this study. This demonstrates an acceptable level of agreement as suggested by various experts [27, 28]. Values from 75% to 90% indicate a satisfactory level of agreement when using percentage of absolute agreement [27, 28].

Following the educational program, a post-intervention nursing documentation review was undertaken in the same way as the baseline audit.

## 2.3 Measurements

The researcher in this study developed the chart audit tool based on the literature review. This chart audit tool was reviewed through depth discussion with three nursing professors who have expertise in education theory and practice, gerontological nursing, delirium and dementia for content validity. This tool included assessing documentation of the patient characteristics, delirium assessment outcomes, management, and comprehensiveness of reporting delirium care. Patient records were assessed to capture demographic details including age, gender, reason for admission to hospital, and dementia diagnosis documented.

Ten keywords associated with symptoms and signs of delirium identified in the literature [29] were used to describe the frequency of the delirium assessment outcome documented by participating nurses. Inouye, Leo-Summers [29] previously validated these 10 keywords in a chart-based review for delirium identification and also demonstrated reasonable sensitivity and specificity of the 10 keywords used for delirium identification, when compared with CAM [22] ratings.

Actions following the documentation of keywords associated with delirium [29] were measured to describe the frequency of management documented by participating nurses. Actions could include pharmacological intervention, physical restraint use, non-pharmacological intervention, or follow-up assessment [25].

Comprehensiveness of nursing documentation [30] was used to assess documentation for the comprehensiveness of reporting delirium care. Ehnfors and Smedby [30] developed the comprehensiveness of nursing documentation audit tool based on Swedish regulations for nursing documentation. A score of 5 indicates optimal comprehensiveness, covering the entire nursing process. A score of 3 is considered to be the minimum score for satisfactory documentation, encompassing problem description, intervention, and outcome. Ehnfors and Smedby [30] reported Cohen's kappa of 0.65 of the comprehensiveness of nursing documentation, which is interpreted as good-to-excellent inter-rater reliability [31].

## 2.4 Data Analyses

Documentation data were analyzed using the Statistical Package for Social Science (SPSS), version 21.0. Participant characteristics and pre- and post-intervention scores were analyzed descriptively. The chi-square tests examined the differences between the pre- and post-intervention with the variables of delirium assessment outcome and management. If the assumptions underlying chi-square analysis were not met, then an alternative of Fisher's exact test was used to improve the validity of the result. The Wilcoxon signed-rank test examined the difference in the pre- and post-intervention mean scores of documentation for the comprehensiveness of reporting delirium care due to violations of the assumptions for normality.

## 2.4 Ethical Considerations

Ethical approval was granted for the study by the university human research ethics committee (NRS/56/12/HREC). All participants were given an information sheet and provided signed consent. Confidentiality of both the participants and the hospital involved were assured.

## 3. RESULTS

### 3.1. Pre- and post-intervention patients

The mean age of the participants was 82.6 (SD = 5.83) and 82.4 (SD = 4.95) years in the pre- and post-intervention groups, respectively. Both groups of participants were predominantly female. Pneumonia and stroke were the most common reasons for admission to hospital in pre- and post-intervention groups, respectively. Eight and seven participants had a documented diagnosis of Alzheimer's disease in the pre- and post-intervention groups, respectively. Table 1 provides additional information about the pre- and post-intervention patient sample.

**Table 1. Pre- and post-intervention patient demographics**

Variable		M (SD)	Minimum	Maximum
Age	Pre-intervention	82.60 (5.83)	70	92
	Post-intervention	82.44 (4.95)	71	91
Variable	Description (N)	Pre-intervention (n = 40)	Post-intervention (n = 36)	
Gender	Women	28	24	
	Men	12	12	
Diagnosis admitted to hospital	Pneumonia	12	6	
	Urinary tract infection	5	2	
	Combined pneumonia and Urinary tract infection	2	3	
	Cancer	4	6	
	Diabetes mellitus	2	0	
	General weakness	3	5	
	Stroke	8	9	
	Other(hypertension, gastrointestinal or rectal bleeding)	4	5	
	Dementia documented in medical record	Yes	8	7
No		32	29	

### 3.2. Delirium Assessment

The frequencies of documented delirium assessments were 15 and 11 in the pre- and post-intervention groups, respectively. There was no significant increase in the frequency of nursing documentation of delirium assessments following participation in the educational program ( $\chi^2 = 0.406$ ,  $df = 1$ ,  $p = 0.522$ ) (Table 2).

*Agitation* was the keyword documented most frequently in the pre- (n = 9) and post-intervention (n = 5) groups. The keywords *delirium*, *inattention*, and *lethargy* were not documented in either groups. There was no significant increase in the frequency of nursing documentation of the use of the keyword *agitation* following participation in the educational program ( $\chi^2 = 0.540$ ,  $df = 1$ ,  $p = 0.462$ ).

In addition, there was no significant increase in the frequency of nursing documentation of delirium assessments in the pre-and post-intervention groups for older patients with a diagnosis of dementia following participation in the educational program ( $\chi^2 = 0.276$ ,  $df = 1$ ,  $p = 0.599$ ) (Table 2).

**Table 2. Comparison of the frequency of nursing documentation of cognitive assessments between groups**

Chart-based review	Pre-intervention (n = 40) N (%)	Post-intervention (n = 36) N (%)	$\chi^2$	P
<b>Cognitive assessments</b>				
Yes	15 (37.5%)	11 (30.6%)	0.406	0.524
No	25 (62.5%)	25 (69.4%)		
Cognitive assessment between dementia groups	Pre-intervention (n = 15)	Post-intervention (n = 11)	$\chi^2$	p
	Dementia	No dementia	Dementia	No dementia

	N (%)	N (%)	N (%)	N (%)		
	8 (53.3%)	7 (46.7%)	7 (63.6%)	4 (36.4%)	0.276	0.599

\* Significant outcome  $p = < 0.05$

### 3.3. Delirium Management Strategies

There was an increase in documentation of non-pharmacological intervention related to the keywords *disorientation* following participation in an educational program. Non-pharmacological interventions related to the keywords associated with delirium included reorientation, reassurance, mobilization, observation for mental status change, isolation, moving the bed close to the nursing station, family caregiver education, and notification of the physician for further action. There was no significant increase in the frequency of nursing documentation in the use of non-pharmacological management strategies following the documentation of keywords associated with delirium following participation in the educational program (Table 3).

In addition, there was no significant decrease in the frequency of nursing documentation of the use of medication following participation in the educational program ( $\chi^2 = 0.949$ ,  $df = 1$ ,  $p = 0.330$ ). Medication included *haloperidol* and *lorazepam*.

**Table 3. Comparison of nursing documentation of management strategies between groups**

Chart-based audit	Pre-intervention (n = 15) N (%)	Post-intervention (n = 11) N (%)	P
Non-pharmacological management following the keywords associated with delirium			
Yes	0 (0%)	2 (18.2%)	0.169
No	15 (100%)	9 (81.8%)	
Non-pharmacological management and medication following the keywords associated with delirium			
Yes	3 (20%)	5 (45.5%)	0.218
No	12 (80%)	6 (54.5%)	
Medication and physical restraint following the keywords associated with delirium			
Yes	3 (20%)	1 (9.1%)	0.614
No	12 (80%)	10 (90.9%)	
Non-pharmacological management, medication and physical restraint following the keywords associated with delirium			
Yes	6 (40%)	1 (9.1%)	0.178
No	9 (60%)	10 (90.9%)	

\* Significant outcome  $p = < 0.05$

### 3.3. Comprehensiveness of nurses' documentation reporting delirium care

The mean scores of the comprehensiveness of documenting delirium care were significantly improved following participation in an educational program ( $Z = -2.640$ ,  $p = 0.008$ ) (Table 5).

**Table 4 Comparison of pre- and post-intervention mean scores for the comprehensiveness of documenting delirium care**

Chart-based review	Pre-intervention M (SD)	Post-intervention M (SD)	Z	P
Comprehensiveness	3.30 (0.46)	3.55 (0.67)	-2.640	0.008*

\* Significant outcome  $p = < 0.05$

#### 4. DISCUSSION

Although the educational program in this study positively changed nurses' knowledge and attitudes [24], these positive effects did not translate to improvements in the documentation of delirium care. There was no significant increase in the frequency of nursing documentation of delirium assessments following participation in the educational program. This finding is inconsistent with previous studies in the United States [21, 23] that have reported on positive effects of educational programs for nurses' documentation of delirium screening results.

Several factors may account for this finding. It is possible that hospitalized older adults with dementia and at risk of delirium simply did not have delirium, so there was nothing to document. For those patients in the study with dementia, nurses may have found it difficult to distinguish the overlapping symptoms of delirium if experienced. As fluctuation is a defining characteristic of delirium, delirium assessment may have missed delirium that was present outside the limited duration of bedside assessment.

The possible explanation may also be a lack of familiarity with CAM. In the current study, nurses received training in the workshops to use the CAM, but they did not receive an opportunity to situate this learning at the bedside while being assessed by the facilitator. Thus, in the current study, education about the CAM [22] use may not have been sufficient to translate into documentation for a real patient population. Further research is needed to determine the most effective ways to introduce and use a standardized assessment tool for recognizing delirium in clinical practice settings in South Korea.

Nurses' documentation of delirium assessment may have been affected by the organizational culture in South Korean hospitals. In a hierarchical, medically-dominated hospital structure, physicians' biomedical perspectives dominate the treatment paradigm and thus define the roles and responsibilities of nurses [32, 33]. With this task-oriented perspective, nurses in the current study perceived that routine cognitive assessment and patients' medication optimization was the responsibility of physicians rather than a nursing role [34]. This finding supports a previous Asian study in which nurses in an ICU relied on direction from medical staff and placed little importance on undertaking a delirium assessment or alternatively saw the assessment as a medically ordered task to be performed [33].

Furthermore, inadequate staff resources may have influenced South Korean nurses' documentation of delirium assessment. Inadequate staff resources involves time constraints, heavy workloads, shortage of staff and busy daily routines [34]. In South Korea and internationally, RNs in ICUs want to apply the CAM-ICU into practice, yet are constrained by inadequate nursing staff and a lack of time for them to introduce the CAM-ICU and adjust to using it in practice [35, 36]. Thus, it is recommended to consider nurses' workload in need of care for older patients with dementia and at risk of delirium.

Meanwhile, as the intent of the current study was to increase nursing documentation of delirium assessment, the accuracy of the nursing documentation of delirium was not evaluated. The keyword *agitation* was documented most frequently in the pre- and post-intervention groups, but there was no significant difference. In addition, nurses did not document the keywords indicative of hypoactive delirium as well as the term *delirium* at pre- and post-intervention. This finding supports previous Western studies that have demonstrated failure of nurses to use the correct term *delirium* in documentation, and indicated under- and non-recognition of delirium, particularly hypoactive delirium, in hospitalized older adults with dementia and at risk of delirium [13, 20, 37]. This failure to recognize and document delirium makes it difficult to ascertain whether adequate delirium management was instituted. Due to the lack of delirium documentation in the transfer summaries, follow-up care for older patients who had experienced delirium is potentially compromised during the transition to another care facility.

There was no significant increase in the frequency of nursing documentation of the use of non-pharmacological management following the documentation of keywords associated with delirium after participation in the educational program.

A lack of knowledge about documentation per se may have influenced South Korean nurses' documentation of delirium care, although learning documentation skills was outside the scope of the educational program in this study. In South Korea, nurses often do not document the care they provide in accordance with the nursing process, although other factors (e.g., time constraints) contribute to poor nursing documentation [38]. This is because they lack knowledge about nursing process documentation

[38]. Thus, in order to improve nursing documentation of delirium care, education and training should be provided on the importance of nursing documentation based on the nursing process.

Due to the use of paper-based data, the findings of this study were limited to what nurses documented about delirium assessment and management rather than what they actually did in practice. Nurses may have not documented what they actually did in practice because they felt no one reads or uses the information they wrote. Hripcsak, Vawdrey [39] found that more than one third of nurses' notes are not read. Thus, health information technology, including the electronic health records, is needed to support nurses in assessing, managing and documenting delirium in hospitalized older adults with dementia and at risk of delirium. Fick, Steis [40] found 100% and 75% adherence on the delirium assessment decision support screens and the management screens, respectively after the implementation of an electronic health record with delirium assessment and management decision support screens. Clinical decision support systems are designed to assist healthcare professionals in making clinical decisions and dealing with clinical data to make recommendations for appropriate care [41]. Thus, these systems can help nurses improve the clinical practice of delirium care.

In the current study, there was a significant increase in South Korean nurses' comprehensiveness of documenting delirium care following an educational program. Although statistically significant, the mean scores of the comprehensiveness of documenting delirium care at pre-intervention were 3.30, which indicates the minimum score for satisfactory documentation, including problem description, intervention, and outcome [30]. In the current study, regardless of the type of care, nurses may have recognized the importance of documentation as an important indicator of their care practices and organizational processes may have also assisted.

This study had several limitations. First, the findings of this study may not be generalizable to all hospital settings in South Korea as the study involved one regional general hospital in South Korea. Second, this study was a pre-post study and therefore assessed two different patient populations. While the groups were largely comparable in demographics, we can not rule out the effect of other factors such as ward culture, which were not related to the program. Third, a randomized clinical trial could not be conducted to evaluate the educational program as the study took place in a small general hospital, where the potential for contamination of aspects of the program to usual-care patients would be high. It is also not practical to allocate patients to intervention or control wards where patient allocation is generally made on the basis of bed availability. Furthermore, research assessment were not blinded to stage of the study (i.e. pre- or post-intervention), which could potentially have biased data collection.

## 5. CONCLUSION

Although the educational program positively changed nurses' knowledge and attitudes in this study [24], these positive effects did not translate to improvements in the documentation of delirium care. Future studies in South Korea should need to determine which education and training is most effective for nurses to introduce and use a standardized assessment tool for recognizing delirium in clinical practice. In order to improve nursing documentation of delirium care, a systematic risk assessment for delirium and management of existing delirium based on evidence-based guidelines need to be implemented and recorded in clinical practice. Health information technology, including the electronic health record with decision support, has shown promising results to facilitate and improve documentation of delirium care.

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