Recognizing Intensive Care Unit Delirium: Are Critical Care Nurses Ready?

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ABSTRACT

Background: Delirium remains significantly undetected in the intensive care unit (ICU). Little is known regarding the level of delirium care knowledge among critical care nurses in Taiwan. Purpose: This study was designed to investigate the level of knowledge about delirium care among critical care nurses using a multiple-choice question quiz. Methods: A descriptive, cross-sectional approach was used, and data were collected using a web-based survey. The demographic characteristics including age, years worked as critical care nurse, gender, advanced ICU training, educational level, and type of ICU, along with a delirium care knowledge quiz, were collected. The quiz consisted of 16 items measuring (a) symptoms, types, and outcomes; (b) high-risk groups; (c) predisposing and precipitating factors; and (d) assessment and detection of delirium. Data were collected between October 6 and November 16, 2020. Results: In total, 324 critical care nurses completed the survey. The rate of correct response on the delirium care quiz for each domain was measured: (a) symptoms, types, and outcomes: 67.1%; (b) high-risk groups: 76.2%; (c) predisposing and precipitating factors: 78.9%; and (d) assessment and detection: 41.5%. The item with the lowest correct response rate was related to the interpretation of delirium assessments. Conclusion/Implications for Practice: The findings of this study suggest that future studies and education should focus on the use and interpretation of the assessment using a valid delirium assessment tool to improve the ability of critical care nurses to detect delirium in ICU settings. Key Words: critical care nursing, delirium, intensive care units, knowledge, nurses.

Introduction

Delirium is a common diagnosis in the intensive care unit (ICU) that presents as an acute, fluctuating disturbance of consciousness in critically ill patients (Girard et al., 2008; Wilson et al., 2020). In 2020, the number of patients admitted to the ICU increased exponentially because of the novel coronavirus (COVID-19) global pandemic (Zhao et al., 2020). Several potential factors such as the neurobiology of COVID-19, typical delirium risk factors, social isolation, and distancing from family have been shown to have contributed interactively to the high occurrence of ICU delirium during this pandemic (Kotfis et al., 2020; Ticinesi et al., 2020). The incidence rate of delirium among mechanically ventilated patients has been estimated at around 70%–80% and has been found to be particularly high in patients with COVID-19 requiring intense respiratory support (Rood et al., 2018; Ticinesi et al., 2020). Thus, it is important for critical care nurses to apply delirium care knowledge in clinical practice to recognize and effectively handle ICU delirium. However, delirium remains a widely undetected condition in the ICU, and nurses have been widely shown to be unable to recognize delirium and be insufficiently familiar with using delirium assessment tools (Ho et al., 2020; Inouye et al., 2001). Moreover, delirium care and assessment efficacy have been shown to be unrelated to the level of delirium knowledge in critical nurses (Öztürk Birge et al., 2020). Given these facts, there is a growing demand to better understand the level of delirium care knowledge among critical care nurses. Therefore, the purpose of this study was to investigate the delirium care knowledge of critical care nurses in Taiwan using a multiple-choice question (MCQ) quiz.

Methods

A descriptive, cross-sectional study using a web-based survey was undertaken.

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Survey Tool
A two-part survey was implemented, with the first part collecting demographic information and the second using an MCQ quiz to assess knowledge of delirium care. The collected demographic information included the respondent’s age, years worked as critical care nurse, gender, educational level, type of ICU, and advanced ICU training status. The advanced ICU training was a hospital-based critical care nursing education program with over 100 hours of course work, with all course content and trainers approved and certified by the Taiwan Association of Critical Care Nurses (TACCN).

The MCQ quiz consisted of 16 items designed to measure (a) symptoms, types, and outcomes; (b) high-risk groups; (c) predisposing and precipitating factors; and (d) assessment and detection of delirium care knowledge. All of the questions followed a single-select, multiple-choice format. One point was awarded for each correct answer, giving a total possible score range of 0–16, with higher scores indicating better delirium care knowledge. This was the first validated MCQ quiz developed by the primary investigator (M.-H. Ho) to test delirium care knowledge among critical care nurses in Taiwan. This quiz was chosen because it demonstrated excellent reliability in a pilot test in the Taiwanese context (Kuder-Richardson Formula 20 for internal consistency = .85; intraclass correlation coefficient for test–retest reliability = .96) and validity (content validity index > 80% for content validity; 60.87% variance explained by exploratory factor analysis with eigenvalue > .4 in all item for construct validity; Ho et al., 2021).

Data Collection
Data were collected using a web-based survey tool (Qualtrics, Provo, UT, USA) from October 6 to November 16, 2020. The invitation to participate, including an electronic link with a Quick Response code, was posted in the forum of the TACCN official website, which was accessible via login to TACCN members only, most of whom were registered nurses currently working in the ICU. Nurses currently working in the neonatal ICU were excluded.

Ethical Approval
The first page of the online survey was an information sheet that outlined the study purpose and the use of the collected data. Completion of the survey was considered to imply consent. Participants were all volunteers, and all data were anonymized. This study was approved by the institutional review board of Taipei Medical University (Approval No. N202009052).

Data Analysis
IBM SPSS Statistics for Windows Version 25.0 (IBM, Inc., Armonk, NY, USA) was used for all analyses. Frequency, percentage, mean, and standard deviation were presented to describe the distribution of the variables and the correct response rate of the quiz. Pearson’s correlation coefficient was adopted to examine the relationship between the continuous characteristic variables and delirium care knowledge. Independent t test and one-way analysis of variance were performed to test the differences between the categorical characteristic variables and delirium care knowledge.

Results
Three hundred fifty nurses completed the online survey. Of these, 26 were excluded by the primary investigator because the missing response rate was > 60%. Thus, data from 324 completed surveys were included in the subsequent analyses.

Demographic Characteristics
The mean age of the participants was 26.35 years (SD = 5.16), with 87.0% (n = 281) between 20 and 30 years old, average work experience as a critical care nurse was 4 years (SD = 4.08), most (74.4%) were women and were working in a medical ICU ward (58.0%), and over half (n = 205, 66.3%) had received advanced ICU training in Taiwan.

Delirium Care Knowledge
The mean score on the delirium care quiz was 10.46 (SD = 3.57). As shown in Figure 1, the rates of correct response for the grouping domains were as follows: (a) symptoms, types, and outcomes, 67.1%; (b) high-risk groups, 76.1%; (c) predisposing and precipitating factors, 78.9%; and (d) assessment and detection, 41.5%. Duration working as a critical care nurse was found to correlate positively with delirium care knowledge (r = .178, p < .001). The mean scores compared by characteristic variables are summarized in Table 1.

Discussion
This was the first study to explore the level of delirium care knowledge among critical care nurses in Taiwan using an MCQ quiz. The findings revealed that this cohort of critical care nurses had a relatively low level of knowledge regarding delirium assessment and detection (mean correct response rate = 41.5%). However, more years of experience in the ICU was associated with a higher delirium care knowledge score. Similar results were highlighted in previous studies calling for future research focused on improving the assessment and detection of delirium (Elliott, 2014; Öztürk Birge et al., 2020; Trogrlić et al., 2017). Surprisingly, one item (Item 14) on the quiz addressing the interpretation of the Confusion Assessment Method for the ICU (CAM-ICU) was answered incorrectly by over two thirds (69.1%) of the participants. This highlights an issue that should be addressed urgently. The clinical practice guidelines for the prevention and management of pain, agitation/ sedation, delirium, immobility, and sleep disruption (PADIS) published by the Society of Critical Care Medicine (SCCM) calls for critically ill patients to be assessed for delirium regularly using a valid tool (Devlin et al., 2018). However, the issue of incorrect interpretation may reduce the power of assessments, leading to high false-positive rates and high rates of incomplete assessments, as if delirium...
is considered by critical care nurses to be positively presented based on a positive outcome for only one of the four features in the CAM-ICU (Item 14 of the quiz), they will not continue the assessment. In addition, this result highlighted the importance of further education interventions and delirium assessment training. The CAM-ICU is considered to be a valid tool with high diagnostic accuracy (Ho et al., 2020) and has been adopted in most Taiwanese hospitals (Tay et al., 2016). Accordingly, further education and training programs are warranted to improve knowledge related to delirium assessment. This issue was identified in a Taiwanese context, and future research may adapt the MCQ delirium care knowledge quiz to explore this issue in other countries. Instead of exploring attitudes toward and barriers to delirium assessment, identifying the actual gaps in knowledge using an MCQ knowledge quiz is a good option that also may be used as an outcome measure after the completion of related education program and training interventions.

As knowledge is a significant factor affecting confidence and competence toward delirium care, more effort will be needed to improve the quality of delirium care education. Further research is necessary to analyze the content of delirium care education in Taiwan. Delirium care education may be improved by following recommendations provided in SCCM PADIS guidelines. However, some modifications or alternative delirium education models tailored to healthcare systems and to societal and cultural needs in Taiwan may be more important. Taiwan is a small but densely populated nation in which national health insurance covers most of the medical costs for all citizens. A predictable downside of this situation is that hospitals get crowded in Taiwan, limiting the ability of healthcare providers to attend to everyone in need. To ensure the quality of delirium care education being delivered in busy hospital settings, the development of online education modules may be helpful, and train-the-trainer programs are recommended.

This study offers preliminary findings on the level of delirium care knowledge among critical care nurses in Taiwan.

Figure 1
Correct response rates of all items and the grouping domains

| Item | Symptom, type & outcomes | High risk groups | Predisposing and precipitating factors | Assessment and detection |
|------|-------------------------|------------------|----------------------------------------|-------------------------|
| 1    | Delirium develops....   |                  |                                        |                         |
| 2    | Signs and symptoms....  |                  |                                        |                         |
| 3    | Can be reversed....     |                  |                                        |                         |
| 4    | Sub-type of delirium...|                  |                                        |                         |
| 5    | Worsen dementia....    |                  |                                        |                         |

Table 1
Summary Results of Descriptive Statistics and Differences Between Delirium Care Knowledge and Characteristics (N = 324)

| Characteristic                      | Descriptive Statistics | Delirium Care Knowledge | r/t/F       |
|-------------------------------------|------------------------|-------------------------|-------------|
|                                     | n         | %       | Mean | SD  |          |           |
| Age (M and SD)                      | 26.35     | 5.16    | 10.26| 3.73| -.011    |            |
| 20–30 years                         | 282       | 87.0    | 10.26| 3.73|          |            |
| 31–40 years                         | 31        | 9.6     | 11.74| 1.79|          |            |
| > 40 years                          | 11        | 3.4     | 11.73| 2.20|          |            |
| Years worked as critical care nurse (M and SD) | 4.00     | 4.08    | 10.11| 4.51| .178***  |            |
| < 3                                 | 151       | 46.6    | 10.11| 4.51|          |            |
| 3–5                                 | 106       | 32.7    | 10.30| 2.59|          |            |
| 6–10                                | 49        | 15.1    | 11.04| 2.01|          |            |
| > 10                                | 18        | 15.6    | 12.78| 1.48|          |            |
| Gender                              | 83        | 25.6    | 10.42| 3.73|          | 0.113      |
| Male                                | 188       | 58.0    | 10.42| 3.73|          |            |
| Had advanced ICU training (n = 309) | 205       | 66.3    | 10.40| 3.71|          | 0.390      |
| No                                  | 104       | 33.7    | 10.58| 3.58|          |            |
| Yes                                 | 205       | 66.3    | 10.40| 3.71|          |            |
| Educational level                   | -0.332    |        |      |     |          |            |
| Undergraduate                       | 254       | 78.4    | 10.43| 3.57|          |            |
| Postgraduate                        | 70        | 21.6    | 10.59| 3.61|          |            |
| Type of ICU ward                    | 2.619     |        |      |     |          |            |
| Surgical                            | 188       | 58.0    | 10.24| 3.65|          |            |
| Medical                             | 97        | 29.9    | 10.40| 3.60|          |            |
| Mixed                               | 39        | 12.1    | 11.67| 2.95|          |            |

Note. ICU = intensive care unit.

***p < .001.
The use of a self-report online survey may limit the findings because of social desirability bias. For example, respondents may search the correct answer before responding to the survey. Nevertheless, a reliable and valid quiz that could provide the information and evidence contributing to identify the weakness of delirium care knowledge was selected for this study. Thus, the findings are important and are relevant to other developed countries in Asia and elsewhere with similar sociocultural contexts.

Conclusions
This article investigated the level of delirium care knowledge among critical care nurses in Taiwan and highlighted the aspects of this knowledge that require priority attention and improvement. Future studies and education training should apply and interpret the results of valid delirium assessment tools to enhance the ability of critical care nurses to accurately detect and assess delirium.

Author Contributions
Study conception and design: MHH, HCC, KHC, VT
Data collection: MHH, MFL, STSH
Data analysis and interpretation: MHH, MFL
Drafting of the article: MHH
Critical revision of the article: MHH, VT

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