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Self-efficacy of ICU nurses in delirium care: an analysis of the current status and influencing factors

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Abstract

Objective The aim of this study was to assess the current status of delirium care self-efficacy among nurses in the intensive care unit (ICU) and the level of their knowledge about delirium in the ICU, more importantly, to analyze factors influencing the delirium care self-efficacy of ICU nurses and to provide a theoretical basis for ICU nursing managers to develop strategies for effective delirium care and management.

Methods The study was based on a sample of 283 ICU nurses from eight hospitals in Chongqing selected using a convenience sampling method between July 2023 and September 2023. The tools used included a general information questionnaire, the Chinese version of the Delirium Care Self-Efficacy of ICU Nurses Scale, and the Chinese version of the ICU Delirium Knowledge Level Questionnaire.

Results The self-efficacy score (47.84 ± 9.93) of ICU nurses was positively correlated with the delirium knowledge level score (12.32 ± 3.47 , $r = 0.591$, $P < 0.001$). Multivariate linear regression analysis identified the gender of the nurse, hospital level (tier), duration of ICU work experience, whether the nurse was a specialized ICU nurse, whether the nurse received delirium-related training, and the level of knowledge about delirium (all $P < 0.05$) as the influencing factors for the delirium care self-efficacy of ICU nurses.

Conclusion It is recommended that ICU nursing managers offer targeted interventions based on the influencing factors to improve the delirium care self-efficacy of ICU nurses and their delirium knowledge levels, thereby reducing the incidence of delirium and improving the quality of care provided for patients with delirium in the ICU.

Keywords Delirium, ICU nurses, Knowledge level of delirium, Questionnaire research, Self-efficacy

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Background

Intensive Care Unit delirium (ICU delirium) refers to an acute cognitive dysfunction syndrome that occurs in patients in the ICU, manifesting as acute changes or recurrent fluctuations of consciousness, inattention, disorientation, and confusion [1, 2]. Delirium not only increases the incidence of in-hospital complications, but also results in a heightened risk of long-term consequences, including dementia, declined cognitive function, impaired functional daily living abilities, increased rates of readmission, and higher long-term mortality [3, 4]. As primary caregivers of patients in the ICU, nurses who work in the ICU play a crucial role in the prevention of delirium and patient prognosis [5]. To effectively address delirium in the ICU setting, nurses must be able to confidently assess symptoms of delirium, identify risk factors for delirium, implement relevant preventive measures, and intervene as early as possible to minimize potential complications.

The self-efficacy of nurses denotes their degree of confidence in theoretical knowledge, practical skills, and overall nursing abilities. Specifically, nurses with high self-efficacy firmly believe in their capacity to resolve nursing challenges that they encounter in caring for patients based on their own knowledge and abilities [6, 7]. The delirium care self-efficacy of nurses is an important indicator of their proficiency in managing patients with delirium [8]. Currently, research on self-efficacy in China and internationally in the context of delirium management among patients in the ICU is limited [9], with a notable gap in studies examining the concurrent relationship between delirium care self-efficacy among nurses and their levels of knowledge about delirium.

Therefore, our objective in this study was to explore the current status of delirium care self-efficacy among nurses who worked in the ICU and the levels of their knowledge about delirium, as well as analyze the factors influencing nurses' delirium care self-efficacy to provide a theoretical basis for ICU nursing managers to develop strategies for effective delirium care and management.

Materials and methods

Study participants

ICU nurses were selected for this study between July 2023 and September 2023 from eight hospitals in Chongqing using a convenience sampling method, non-probability sampling. The inclusion criteria for nurses were as follows: (1) nurses who held a nursing qualification certificate; (2) nurses who worked in general ICUs for at least one year; and (3) nurses who voluntarily participated in this study. The exclusion criteria were: (1) nurses from other hospitals who come to our hospital for further study; and (2) nurses undergoing practical training; (3) nurses from pediatric ICU.

Based on the sample size estimation method for Kendall correlations [10], the sample size was estimated to

be at least 5 to 10 times the number of observed variables. To account for potential sample loss and invalid cases, a 10% attrition rate was added. Given that the study included 33 variables, the sample size ranged from 182 to 363 cases. The anticipated data enrolment was 300, whereas 283 nurses were finally enrolled. The study protocol was reviewed and approved by the XXX Ethics Committee, and the study was registered under ethical approval number CZLS2022254-A.

Study Tools

General Information Questionnaire

The general information questionnaire included details pertaining to the details of nurses, such as their gender, age, title, educational qualifications, overall work experience, duration of work experience in the ICU, hospital level (tier), and designation.

Chinese version of the Delirium Care Self-Efficacy Scale for ICU nurses (DCSE-I)

The Traditional Chinese version of the Delirium Care Self-Efficacy Scale-I (DCSE-I) was developed by Zhang et al. [9] in 2021 based on the concept of self-efficacy proposed by the American psychologist Albert Bandura [11]. This scale was revised and adapted by our group in 2023 to assess levels of self-efficacy in delirium assessment and symptom management among nurses working in the ICU. The scale (refers to Supplementary Table S1) consists of a total of 13 items across 2 dimensions, including 7 items on the confidence of nurses in delirium assessment and 6 items on their confidence in the management of delirium in patients, respectively, and total score ranges of 7–35, and 6–30. The DCSE-I was scored using a Likert's 5-point rating scale, divided into five levels to indicate the degree of self-efficacy in delirium care, with 1 indicating "not confident," 2 "have a little faith," 3 "moderate confidence," 4 "more confident," and 5 "very confident." With scores ranging from 1 to 5, respectively. Higher scores indicated better self-efficacy in delirium care. The Cronbach's α coefficient of the DCSE-I was 0.969, and the Cronbach's α coefficients of the two dimensions ranged from 0.944 to 0.952, with a split-half reliability of 0.861 and a retest reliability of 0.954, indicating good reliability and validity.

Chinese version of the ICU delirium knowledge questionnaire (IDKQ)

The Chinese version of the ICU Delirium Knowledge Questionnaire (IDKQ) was developed by Zhang Shan [12] in 2019. It consists of a section on general information of the study respondents, such as their gender, age, literacy, and so on. The second part of the IDKQ is the knowledge questionnaire, which consists of 20 single-choice questions, where the correct answer counts as "1" point and the wrong answer counts as a "0". Total score of 20. A higher score

indicates a better level of ICU delirium knowledge. The IDKQ exhibited good reliability and validity with a content validity index of questionnaire items ranging from 0.83 to 1.00; the scale's content validity index of 0.96; Cronbach's α coefficient of 0.82; the item difficulty index ranging from 0.17 to 0.80; and an average discrimination index of 0.46.

Method of data collection

The questionnaire survey was carried out by using the questionnaire star, which was approved by the director of nursing department of 8 hospitals and sent to the head nurse before the survey. The head nurse sent the questionnaire link, research purpose and criteria of included subjects to the department's wechat group, and nurses filled the questionnaire voluntarily. A unified guideline was set at the beginning of the questionnaire to inform the survey purpose, filling method and notes for filling in the questionnaire. All nurses filled in the questionnaire anonymously and independently. To avoid repeated filling, the questionnaire can be filled only once from the same account and device. In order to ensure the complete collection of questionnaires, each question was set as a mandatory field. A total of 300 questionnaires were collected within the specified time, excluding those that took less than 100 s in answering, and 283 questionnaires were finally collected, with an effective recovery rate of 94.33%.

Statistical analysis

SPSS 26.0 was utilized for data interpretation and statistical analysis. Quantitative data in normal distribution were expressed as $\bar{x} \pm s$. Comparisons between groups were done using analysis of variance (ANOVA) and independent samples t-test with pairwise comparisons was conducted using the SNK-q test. Categorical data were expressed as frequencies and proportions, with correlation described using the Pearson correlation coefficient. Single-factor variables with a significance level of $P < 0.05$ were included in a multivariate linear regression model, and variable selection was performed utilizing a stepwise method. A statistical significance level of $\alpha = 0.05$ was used throughout the statistical analysis.

Results

General information of ICU nurses

There were statistically significant differences in the delirium care self-efficacy scores of ICU nurses based on their gender, age, designation, overall work experience, work experience in the ICU, whether they were specialized ICU nurses, hospital level (tier), type of hospital, and whether they had undergone delirium-related training ($p < 0.05$) (Table 1).

Scores of delirium care self-efficacy of ICU nurses and their delirium knowledge level

The mean delirium care self-efficacy score of ICU nurses was 47.84 ± 9.93 , the average score of the articles was 3.68 ± 0.76 . In Confidence in delirium assessment, itme4, itme5 and itme3 are the top 3 entries in terms of average score. In Confidence in delirium management, the top 3 entries in terms of average score are itme12, itme8 and itme9, as detailed in Table 2. While the mean delirium knowledge score of ICU nurse was 12.32 ± 3.47 . The correct rate of delirium knowledge is above 80% only for item5 and item1, while the correct rate of item13 and item4 is only 33.22% and 12.01, as shown in Table 3. Pearson's correlation analysis revealed a positive correlation between delirium assessment confidence, delirium management confidence and nursing self-efficacy of ICU nurses and their delirium knowledge level scores ($r = 0.576, 0.570$ and 0.591 , respectively, $p < 0.001$), as shown in Table 4.

Multivariable linear regression of delirium care self-efficacy of ICU nurses

Multivariable linear regression analysis was performed with the total score of delirium nursing self-efficacy of ICU nurses as the dependent variable, the items with $p < 0.05$ and the total score of delirium knowledge level as the independent variable, and variables were screened by stepwise method. The inclusion criteria were $p < 0.05$ and the exclusion criteria were $p > 0.05$. The configuration method of the argument variable is shown in Table 5. The analysis showed that male, hospital grade 3, years of service ≥ 6 years, years of work in ICU ≥ 6 years, ICU specialist nurses, receiving delirium-related knowledge training and delirium knowledge level were positive influencing factors of self-efficacy, among which delirium knowledge level had the greatest influence, as shown in Table 6.

Discussion

Overall delirium care self-efficacy of ICU nurses was above-average

The overall total score of delirium care self-efficacy of ICU nurses was (47.84 ± 9.93), which was above-average compared with the median of 33 for the total scale score and higher than those reported by Lien et al. [13] and Lin et al. [14] Given the specialized nature of ICUs as critical environments for surgical and critical illness emergency care, the quality of ICU nursing, particularly in delirium assessment, is of paramount importance [15]. Consequently, ICU nurses devote specific attention to the management of delirium.

In our study, the average scores for each dimension of delirium nursing self-efficacy, in descending order, were the highest for confidence in delirium management and confidence in delirium assessment. However, certain items obtained lower average scores, including the following: "Item 11: I can discuss with doctors about medications for

Table 1 Single factor analysis of general information and self-efficacy scores of ICU nurses (n = 283)

Items	Number of cases (%)	Score	F/t value	p value
Gender			t = 2.651	0.008
Male	49 (17.31)	51.22 ± 8.56		
Female	234(82.69)	47.14 ± 10.06		
Age group (years)			F = 5.015	0.007
≤ 25	30(10.60)	43.23 ± 11.69		
26 ~ 35	181(63.96)	47.76 ± 9.07a		
≥ 36	72(25.44)	49.96 ± 10.66a		
Educational qualification			t = -1.320	0.188
Specialized	41(14.49)	45.95 ± 11.24		
Bachelor's degree and above	242(85.51)	48.16 ± 9.68		
Title			F = 0.566	0.568
Nurse	61(21.55)	46.74 ± 11.74		
Senior nurse	123(43.46)	47.9 ± 9.3		
Supervisory Nurse and above	99(34.98)	48.45 ± 9.51		
Designation			t = -2.394	0.017
Nurse	237(83.75)	47.23 ± 9.9		
Charge nurse	46(16.25)	51.02 ± 9.56		
Duration of overall work experience(years)			t = -2.720	0.007
≤ 5	88(31.10)	45.48 ± 10.01		
≥ 6	195(68.90)	48.9 ± 9.73		
Duration of ICU work experience(years)			t = -5.619	< 0.001
≤ 5	116(40.99)	44.09 ± 8.9		
≥ 6	167(59.01)	50.47 ± 9.78		
Type of employment			t = 1.397	0.163
Authorized	54(19.08)	49.54 ± 8.99		
Contractual	229(80.92)	47.44 ± 10.11		
Whether a specialized ICU nurse			t = 5.199	< 0.001
Yes	139(49.12)	50.83 ± 9.23		
No	144(50.88)	44.97 ± 9.74		
Hospital level (tier)			t = 3.999	< 0.001
Tertiary	249(87.99)	48.69 ± 9.56		
Secondary	34(12.01)	41.62 ± 10.45		
Hospital type			t = -3.852	< 0.001
General Hospital	104(36.75)	44.76 ± 11		
Specialized Hospital	179(63.25)	49.62 ± 8.8		
ICU type			t = 0.113	0.910
Comprehensive ICU	263(92.93)	47.86 ± 10.09		
Specialized ICU	20(7.07)	47.6 ± 7.54		
Whether underwent training on delirium			t = 6.659	< 0.001
Yes	210(74.20)	50.01 ± 9.14		
No	73(25.80)	41.69 ± 9.53		

Note t: two independent samples t-test, F: one-way ANOVA; Duration of work experience was rounded up to integers

maintaining the sleep quality of patients suffering from sleep disorders.“; “Item 1: I can differentiate between hypoactive delirium and depression.“; and “Item 6: I can recognize the symptoms of hypoactive delirium in patients.“. A probable explanation for this is the collaborative nature of work between doctors and nurses, as well as specialized nurses being granted prescribing authority only in some provinces or cities in recent years [16].

Hypoactive delirium is often underdiagnosed or misdiagnosed as depression or dementia due to patients' reduced

responsiveness and is commonly overlooked by medical professionals [17]. Delirium assessment serves as the initial step in delirium management, facilitating a focused approach to delirium subtypes and clinical manifestations. Recognizing the significance of accurate assessment, ICU nursing managers can develop training programs tailored to address the challenges associated with identifying hypoactive delirium. Objective assessment methods, such as electroencephalography (EEG) monitoring [18], can assist ICU nurses in accurately classifying delirium and making an

Table 2 Ranking of delirium care self-efficacy scores of ICU nurses ($n = 283$, $\bar{x} \pm s$)

Items related to delirium care self-efficacy	Rank	Score
Total		3.68 ± 0.76
Confidence in delirium assessment		
4. I can assess whether a patient has a thought disorder.	1	3.80 ± 0.90
5. I can assess disorientation in patients.	2	3.76 ± 0.86
3. I can recognize when a patient has had a sedative overdose.	3	3.71 ± 0.90
7. I know when to assess the state of consciousness of sedated patients.	4	3.71 ± 0.89
2. I am able to assess patients for attention disorders.	5	3.68 ± 0.87
1. I can differentiate between hypoactive delirium and depression.	6	3.49 ± 0.95
6. I can recognize the symptoms of hypoactive delirium in patients.	7	3.40 ± 0.95
Confidence in delirium management		
12. I can communicate with patients and explain to them before performing nursing procedures.	1	3.89 ± 0.88
8. I can provide patients with an orientation of the time and environment during nursing care.	2	3.75 ± 0.89
9. I am confident of minimizing patients' physical discomfort.	3	3.71 ± 0.89
13. I can proactively search for relevant information about therapeutic care of delirium.	4	3.67 ± 0.90
10. I am confident of keeping patients in a comfortable and quiet environment as much as possible.	5	3.66 ± 0.89
11. I can discuss with doctors about medications for maintaining the sleep quality of patients suffering from sleep disorders.	6	3.60 ± 0.88

Table 3 Accuracy ranking of delirium knowledge level of ICU nurses

Items of delirium knowledge level	Rank	Number of correct cases	Correct rate
5. Characteristics of hyperactive delirium:	1	251	88.69
1. Definition of ICU delirium:	2	242	85.51
11. Environmental risk factors for ICU delirium:	3	219	77.39
7. Which of the following patients exhibit the highest incidence of delirium?	4	214	75.62
14. The initial step in assessing delirium is to assess consciousness. In which of following states of consciousness do we not assess delirium?	5	210	74.20
19. Which of following practices do not reduce the occurrence of delirium?	6	209	73.85
9. Disease risk factors that contribute to the occurrence of ICU delirium do not include:	7	204	72.08
20. Correct measures for managing patients with delirium are:	8	199	70.32
15. The most effective and reliable tool for routinely monitoring delirium in adult patients in the ICU Recommended by Clinical Guidelines for the Management of Pain, Agitation, and Delirium in Adults in ICU 2013, developed by the American Society of Critical Care Medicine.	9	194	68.55
16. During hospitalization in ICU, delirium increases the risk for following outcomes except:	10	188	66.43
18. Strategies to prevent and minimize the occurrence of ICU delirium do not include:	11	180	63.60
10. Therapeutic risk factors for patients developing ICU delirium do not include:	12	179	63.25
2. Which of the following symptoms are primary clinical manifestations of delirium:	13	166	58.66
8. Risk factors of patients for developing ICU delirium do not include:	14	161	56.89
12. Which of following items is incorrect with respect to differences between ICU delirium and dementia?	15	159	56.18
17. After discharge, delirium leads to an increased risk of all of the following outcomes except:	16	140	49.47
6. Which of following is not a primary pathophysiological mechanism (theory) for patients in the ICU developing delirium?	17	135	47.70
3. The time range for determining acute onset or fluctuation of the course of ICU delirium is:	18	122	43.11
13. Which of the following is not an assessment feature for the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU), the delirium assessment tool?	19	94	33.22
4. The three subtypes of ICU delirium in order of ranking as per the most common are:	20	34	12.01

effective clinical assessment of the occurrence of hypoactive delirium in patients.

Delirium knowledge level of ICU nurses was moderate and positively correlated with delirium care self-efficacy

Our study demonstrated a moderate level of knowledge about delirium among ICU nurses, which is similar to the

findings of Yu et al. [8] but higher than that reported by Long et al. [19] among orthopedic nurses. This disparity may be attributed to the extensive nursing experience with delirium among ICU nurses, given the high incidence of delirium in ICU patients. Notably, all our respondents were ICU nurses.

Table 4 Pearson's correlation analysis of delirium knowledge level, assessment confidence, management confidence and nursing self-efficacy of the study subjects

Scale	Delirium Assessment Confidence	Delirium Management Confidence	Total score of nursing self-efficacy of ICU nurses with delirium	Level of delirium knowledge
Delirium Assessment Confidence	1			
Delirium Management Confidence	0.877***	1		
Total score of nursing self-efficacy of ICU nurses with delirium	0.973***	0.964***	1	
Level of delirium knowledge	0.576***	0.570***	0.591***	1

Table 5 Allocation method of independent variables

Items	Allocation method
Gender	Female=0; Male=1
Age group (years)	Dummy variable set with "≤ 25" as reference, 26~35 = (Z1=1, Z2=0); ≥ 36 = (Z1=0, Z2=1)
Title	Nurse=0; Charge nurse=1
Duration of overall work experience	≤ 5=0; ≥ 6=1
Duration of ICU work experience	≤ 5=0; ≥ 6=1
Whether a specialized ICU nurse	No=0; Yes=1
Hospital level (tier)	Secondary=0; Tertiary=1
Hospital type	General hospital=0; Specialized hospital=1
Whether underwent training on delirium	No=0; Yes=1
Delirium knowledge level	Original value substituted

Table 6 Multivariate linear regression analysis of influencing factors for delirium care self-efficacy among ICU nurses (n=283)

Items	B Value	Standard error	β	t value	P value	VIF
Constant	—	1.864	18.550	9.952	< 0.001	
Male (reference: female)	0.135	1.127	3.553	3.151	0.002	1.110
Tertiary (reference: secondary)	0.085	1.299	2.593	1.996	0.047	1.088
Duration of ICU work experience ≥ 6 (reference: ≤ 5)	0.153	0.872	3.087	3.538	< 0.001	1.156
ICU specialist nurse Yes (reference: No)	0.216	0.833	4.274	5.131	< 0.001	1.129
Whether underwent delirium-related knowledge training Yes (reference: No)	0.221	1.000	4.985	4.984	< 0.001	1.061
Delirium Knowledge level	0.488	0.122	1.396	11.440	< 0.001	1.093

Notes F=151.659, $P < 0.001$, $R^2 = 0.5406$, adjusted $R^2 = 0.5289$

VIF: Variance inflation factor

An item-wise analysis of responses revealed that the lowest accuracy rates were for the following items: "Item 3: The time range for determining acute onset or fluctuation in the course of ICU delirium is:"; Item 13: Which of the following is not an assessment feature for the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU), the delirium assessment tool?"; and "Item 4: The three subtypes of ICU delirium in order of ranking as per the most common are: " These items primarily pertained to delirium diagnosis, assessment, and classification, mirroring the results of previous studies [20].

The relative insufficiency of ICU nurses on knowledge regarding delirium screening and assessment may stem from the demanding nature of their daily work responsibilities, with most patients struggling with critical and complex illnesses that necessitated greater attention to life-threatening conditions, while overshadowing the importance of knowledge about delirium in the ICU. Therefore, it is crucial

for nursing managers to take up targeted training measures to improve nurses' competence in this area.

In this study, we also found a positive correlation between the level of delirium knowledge among ICU nurses and their delirium care self-efficacy scores ($r = 0.591$, $P < 0.001$), highlighting the role of delirium knowledge in influencing nurses' delirium nursing self-efficacy and that the higher the delirium knowledge level of ICU nurses, the stronger was their delirium care self-efficacy. This result is consistent with the findings of the study by Kim et al. [21, 22] Nurses with high self-efficacy tend to be confident in their ability to work and are able to rise to work-related challenges independently. On the contrary, nurses with low self-efficacy are less competent and tend to rely more on help from their colleagues.

Hence, the level of knowledge about delirium emerges as an important factor in determining the delirium care self-efficacy of ICU nurses. Accordingly, nursing managers

should prioritize efforts to enhance both delirium knowledge and delirium care self-efficacy among nurses. This necessitates strengthening delirium training programs for ICU nurses and ensuring that knowledge is regularly updated in alignment with expert consensus and relevant guidelines, among other measures aimed at enhancing clinical application. Additionally, attention should be directed towards fostering ICU nurses' understanding and application of delirium knowledge, along with improving their proactive screening abilities and clinical practice skills.

Analysis of factors influencing the delirium care self-efficacy of ICU nurses

ICU nurses in tertiary hospitals had higher self-efficacy scores than those in secondary hospitals

Multivariate linear regression analysis identified the hospital level (tier) as an influencing factor for the delirium care self-efficacy of ICU nurses ($P < 0.05$). The delirium care self-efficacy scores of ICU nurses in tertiary hospitals were significantly higher than those in secondary hospitals. This disparity suggests a positive correlation between hospital level and delirium care self-efficacy among ICU nurses, potentially attributable to the plentiful learning resources and educational opportunities provided to nurses in higher-level hospitals. Consequently, it is recommended that ICU nursing managers facilitate more opportunities for nurses to pursue academic pursuits and participate in training and further education to keep abreast of innovative developments in the field of nursing. In China, hospitals are classified into three levels from small to large based on their scale (staffing, hardware facilities, research capabilities, etc.) [23, 24]. Among them, the third-level hospitals are representative of the large comprehensive hospitals in our country, often possessing more advanced large medical equipment and medical technology, and are responsible for important tasks such as the treatment of critical illnesses and specialized diagnosis and treatment [23]. Therefore, nurses working in the ICU of a Tier 3 hospital may have more experience caring for delirious patients.

ICU nurses who had undergone delirium-related training had better delirium care self-efficacy

Receiving delirium-related training emerged as a factor influencing the delirium care self-efficacy of ICU nurses ($P < 0.05$), as revealed by the multivariate linear regression analysis. The delirium care self-efficacy score of ICU nurses who did not undergo delirium-related knowledge training was (41.69 ± 9.53), in comparison to the score of (50.01 ± 9.14) among ICU nurses who participated in such trainings. This significant difference underscores the positive association between delirium-related training and higher delirium care self-efficacy among ICU nurses. The observed improvement can be attributed to the improvement of both theoretical understanding and practical skills

of nurses in delirium care, facilitated by their participation in structured training programs. Hence, it is imperative for hospital managers to prioritize the implementation of delirium-related knowledge training efforts. Moreover, optimizing training formats, designing scientific and relevant training content, and incorporating comprehensive evaluation mechanisms are essential strategies that ICU nursing managers can adopt to cultivate a culture of continuous learning and enthusiasm among ICU nurses regarding delirium care. At present, delirium management is not taken as a formal course in most school nursing education courses in China, and delirium is a neglected content. It is suggested to set up an elective course on delirium management, the content of which should be comprehensive and standardized, so that nursing students can learn basic and systematic knowledge about delirium theory. Secondly, some teaching strategies should be used in teaching to improve nursing students' knowledge, attitude and skills on delirium management, such as role playing, case analysis, drama teaching, scenario analysis [25, 26], digital teaching, problem-based learning [27], interactive learning [28], group discussion, and encouraging delirium management teaching in clinical practice [29].

Gender, ICU work experience, and being ICU specialized nurses were other factors influencing the self-efficacy of ICU nurses

Our analysis revealed that the nurse's gender was a significant factor influencing the delirium self-efficacy of ICU nurses. Female ICU nurses had lower delirium nursing self-efficacy scores (47.14 ± 10.06) compared to male ICU nurses (51.22 ± 8.56). However, it must be noted that a relatively small number of male nurses were enrolled in this study, potentially limiting the representativeness of our findings. Thus, future studies with a more balanced gender distribution are warranted to validate these results.

With respect to duration of ICU work experience, the scores of ICU nurses with ≤ 5 years were (45.48 ± 10.01), while those of nurses with ICU work experience of ≥ 6 years were (50.47 ± 9.78). A probable reason for this trend is that junior nurses might be more inclined to prioritize relevant treatments and nursing measures for severe diseases that are commonly encountered in the ICU, potentially overlooking knowing about delirium. Conversely, nurses with greater seniority possess increased experience and confidence, likely contributing to their higher self-efficacy scores in delirium nursing.

Regarding the influence of being a specialized ICU nurse on their self-efficacy, compared to non-ICU nurses, ICU nurses had higher delirium knowledge scores. This can be attributable to the increased opportunities for ICU nurses to receive specialized training, access more detailed and systematic knowledge, and accumulate significant experience in relevant areas of ICU nursing care.

Collectively, these factors contribute to higher delirium self-efficacy among ICU nurses.

Nurses play a leading role in the management of delirium patients and participate in all stages of delirium management

Chinese scholars [30] have explored the related influencing factors of the occurrence of subdelirium syndrome in severe tumor patients, and constructed non-drug treatment programs to analyze their application value. It was found that opioids, sleep disorders, infection, PPI score and APACHE II score were independent predictors of subdelirium syndrome in severe tumor patients. Non-drug treatment regimen constructed according to the risk analysis results could significantly improve the cognitive function, sleep quality, VAS score, PPI score and APACHE II score of patients, and shorten the length of hospital stay. It can reduce the incidence of subdelirium and has high clinical application value. He Bin [31] et al. divided 80 patients with mechanical ventilation in ICU into a control group (41 cases) and an observation group (39 cases) according to check-in time. The control group was given routine nursing plan, and the observation group was given family participation multi-sensory stimulation prevention and treatment plan. Results Family participation multi-sensory stimulation can effectively reduce the incidence of delirium in ICU patients with mechanical ventilation, shorten the time of mechanical ventilation, and improve the satisfaction of patients' families. The nurses' effective management of delirium patients in ICU has achieved some results. According to the results of this study, it is still necessary to continue to improve the self-efficacy and delirium knowledge of nurses in ICU.

Limitations

However, there are certain limitations of this study. The participants enrolled were primarily from tertiary hospitals, as a result of which we could not explore the current status and influencing factors of delirium care self-efficacy among ICU nurses in secondary hospitals. Moreover, our study focused on ICU nurses in Chongqing; further research should be based on broader and more representative sample sources to mitigate potential selection biases that could impact results. This study includes comprehensive ICU and some specialized ICU, and other specialized ICU studies can be conducted in the future, such as pediatric ICU, respiratory ICU, and medical ICU.

Conclusions

ICU nurses had above-average delirium care self-efficacy scores despite relatively low scores on the assessment dimensions and had moderate levels of knowledge about delirium. A positive correlation was observed between ICU nurses' self-efficacy and the level of their delirium knowledge, indicating that higher delirium knowledge levels

among ICU nurses corresponded to stronger self-efficacy in delirium nursing. Additionally, nurses' self-efficacy was also influenced by their gender, hospital level (tier), duration of ICU work experience, whether they were specialized ICU nurses, whether they received training related to delirium, and their level of knowledge about delirium. ICU nurses can improve the level of knowledge related to delirium and increase their proactive thinking in the management of delirium by participating in the systematic training of knowledge related to delirium, and frequently acquiring knowledge from academic journals. This underscores the importance for hospital managers to prioritize increasing the self-efficacy of ICU nurses in delirium care and develop tailored intervention programs to effectively improve their delirium knowledge and delirium care self-efficacy, thereby ultimately reducing the incidence of delirium.

Abbreviations

ICU	Intensive Care Unit
ICU	Intensive Care Unit delirium, ICU delirium
DCSE-I	Delirium Care Self-Efficacy Scale for ICU nurses
IDKQ	ICU Delirium Knowledge Questionnaire
CAM-ICU	Confusion Assessment Method for the Intensive Care Unit

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12912-024-02379-w>.

Supplementary Material 1

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Author contributions

Conception and design of the research: Jing Nie; Acquisition of data: Jing Nie, Wen-Jun Li; Analysis and interpretation of the data: Wen-Jun Li; Statistical analysis: Zheng-Ying Jiang; Obtaining financing: Jing Nie; Writing of the manuscript: Jing Nie; Critical revision of the manuscript for intellectual content: Zheng-Ying Jiang. All authors read and approved the final draft.

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Data availability

The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate

This study was conducted with approval from the Ethics Committee of Chongqing University Cancer Hospital (No. CZLS2022254-A). This study was conducted in accordance with the declaration of Helsinki. Written informed consent was obtained from all participants.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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