



## Assessment of Nurse's Knowledge Regarding Delirium in Adult Critical Care Units in Baqubah

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#### Abstract

**Research Question:** What is the knowledge level of nurses in assessing patients with delirium in critical care units in Baqubah?

**Aim:** The study evaluated nurses' knowledge of assessing and managing delirium in adult critical care units.

**Methodology:** A quantitative descriptive survey was conducted among 36 registered nurses in critical care units at Baqubah Teaching Hospital. Data were collected using a self-report questionnaire adapted from previously validated tools. The study targeted all eligible nursing staff who met the inclusion criteria, resulting in a response rate of 80% (n = 36).

**Sample:** The sample included nurses who had worked in the critical care unit for at least six months. The exclusion criteria involved nurses on extended leave or those not working in critical care.

**Findings:** The survey revealed that more than half of the nurses did not use validated tools for delirium assessment. Furthermore, no established protocols for delirium screening were in place, contributing to non-compliance with clinical practice guidelines. The study identified poor perceptions and significant barriers to effective delirium screening. These insights can inform future interventions to improve care quality in critical care units.

**Conclusion:** Nurses' knowledge of delirium assessment was found to be moderate. The lack of proper protocols and education in this area highlights the need for improved training and the incorporation of delirium screening into standard clinical practice.

**What is already known about the topic?** Nurses should know that delirium is a common, serious condition in ICU patients, marked by sudden confusion and fluctuating symptoms. Effective management includes using assessment tools like CAM-ICU, applying non-drug interventions, and understanding when pharmacological treatments are needed. Ongoing training is essential for proper care.

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## Introduction

Delirium is a sudden onset of mental confusion that can affect adults, elderly individuals, and, occasionally, adolescents (Pisani et al., 2008). Historically viewed as a medical disorder, delirium has gained significant attention, particularly over the past two decades, due to its frequent occurrence among chronically ill patients. It is now widely recognized across all age groups in critical care settings as a form of acute brain dysfunction or coordinated brain syndrome (Barr et al., 2013). Delirium is considered a medical emergency, especially in critically ill patients, as it indicates brain dysfunction and is linked to various adverse clinical outcomes (Gesin et al., 2012). The short- and long-term effects of delirium in critically ill patients are well-documented, with outcomes such as extended hospital stays, increased ventilator days, and heightened mortality risks (Salluh, 2015; Barr et al., 2013).

Delirium is a severe complication in critical care units, posing psychological challenges for patients, families, and healthcare providers. Studies have shown that delirium is a predictor of long-term cognitive impairment, significantly affecting patients post-critical care (Pandharipande et al., 2013; Macullulich et al., 2013). Over the past decade, delirium has been increasingly recognized as a significant healthcare issue by researchers, international organizations, policymakers, and clinical educators (Teodorczuk et al., 2012; Macullulich et al., 2013).

## Approach to the Study

A quantitative descriptive survey was conducted with a convenience sample of 34 critical care nurses in Baqubah to address the research question. Data was collected using a previously validated self-administered questionnaire developed by Devlin et al. (2008).

## Literature Review

**Definition of Delirium:** The recognition of delirium as a medical condition dates back to the 1950s when intensive care personnel first identified significant psychological and emotional issues in critically ill patients (Anbu, 2014). McKegny highlighted that patient sensitivity to stress impacts outcomes and contributes to the development of ICU syndrome. Intensive care units (ICUs) are inherently stressful environments due to the nature of life-saving procedures, increasing the risk of delirium (Rawal, Yadav & Kumar, 2017). Various terms, such as acute confusional state, acute brain dysfunction, and ICU psychosis, have been used to describe delirium (Salluh et al., 2015). This diverse terminology can hinder the diagnosis of delirium, as different settings may apply these terms inconsistently (Macullulich et al., 2013).

Lipowski (1990) defined delirium as a psychiatric condition characterized by a sudden onset, fluctuating consciousness, and disturbances in perception, memory, thinking, and behavior (Anbu, 2014). According to the American Psychiatric Association, delirium is "a disorder that occurs within a short period (usually hours to days) and tends to fluctuate throughout the day" (Bakri, Ismail & Ibrahim, 2015).

## Types of Delirium

Delirium can be classified into three subtypes based on psychomotor activity, behavior, and attention (Holly et al., 2012): hyperactive, hypoactive, and mixed. Hyperactive delirium often presents with aggressive behaviors, such as self-extubation, invasive line removal, and combativeness (Ehwarieme, 2015). Conversely, hypoactive delirium manifests as withdrawal, apathy, and anxiety, making early detection challenging. Complications related to hypoactive delirium include prolonged mechanical ventilation, pneumonia, and pressure ulcers (Holly et al.,

2012). Mixed delirium combines features of both hyperactive and hypoactive delirium, further complicating diagnosis and management (Godfrey et al., 2010). If hypoactive delirium is not detected early, it can progress to hyperactive or mixed forms, both of which are associated with worse outcomes, including prolonged treatment and increased mortality (NIHCE, 2013).

#### **Risk Factors for Delirium**

ICUs are high-risk environments for delirium due to their impact on brain function (Mantz et al., 2012). Conditions such as stroke, septic encephalopathy, epilepsy, anoxia, and metabolic disturbances can alter brain function in critically ill patients. Environmental factors also play a significant role in developing delirium (Mantz et al., 2012). Studies have identified predisposing factors such as cognitive or sensory impairments, dehydration, psychoactive medications, advanced age, sleep deprivation, and underlying health conditions (Evensen et al., 2018). Additionally, the use of sedative medications, multiple invasive devices, and uncomfortable interventions in ICUs are known triggers for delirium (Arumugam et al., 2017). Exposure to sedatives, such as benzodiazepines and hypnotics, is one of the most modifiable risk factors, and targeted interventions can reduce delirium incidence by approximately one-third in hospital settings (Godfrey et al., 2013).

#### **Delirium and Clinical Outcomes**

**Short-term Complications:** Delirium leads to several short-term adverse outcomes, including prolonged ICU stays, extended hospitalizations, increased ventilator days, and higher mortality risks (Barr et al., 2013). Patients with delirium, particularly those with pre-existing cognitive or physical impairments, are at a higher risk of death. Other short-term complications include cognitive deficits, loss of independence,

reduced mobility, and increased healthcare costs (Macullulich et al., 2013). Each additional day spent in delirium increases the risk of long-term care admission by 20% and mortality by 10% (ICU Delirium UK, 2014). Delirium also raises healthcare costs by 40%, mainly due to complications like failed extubations and reintubations in critically ill patients (Ely et al., 2012).

**Long-term Complications:** Although delirium is often viewed as a short-term condition, its long-term consequences are increasingly recognized. Delirium is a strong predictor of future dementia and accelerates existing dementia (Kukreja et al., 2015). Long-term adverse effects of delirium include sleep disturbances, anxiety disorders, post-traumatic stress disorder, depression, and significant cognitive impairment (Holly et al., 2012). These neurocognitive impairments often extend beyond the patient, affecting caregivers and families for years after hospital discharge (Kukreja et al., 2015).

#### **Nurses' Knowledge of Delirium Assessment**

Nurses play a crucial role in detecting delirium in ICU settings, as they are in continuous contact with patients and are often the first to notice psychological changes. Proper delirium assessment requires collaboration among all healthcare professionals, including physicians, nurses, pharmacists, and allied health workers (Pun & Devlin, 2013). However, a multi-center study involving 784 junior medical practitioners in the UK revealed a significant lack of knowledge regarding delirium diagnosis and management. The literature indicates that physicians and nurses often fail to adequately assess ICU patients for delirium (Schadewaldt, 2013).

A survey conducted by Ely et al. with 912 healthcare professionals, including doctors, nurses, and pharmacists, found that only 40% of respondents routinely screened for

delirium, and just 16% used validated delirium screening tools (Anbu, 2014). This highlights the need for improved education and training on delirium assessment in critical care settings.

### **Methodology**

#### **Study Design**

A non-experimental, quantitative descriptive study was conducted between September 1, 2019, and February 25, 2020, to evaluate nurses' knowledge of delirium in critical care units.

#### **Study Setting**

The study was conducted in Baqubah Teaching Hospital, specifically within its Intensive Care Unit (ICU), High Dependency Unit (HDU), Cardiac ICU, and other mixed-type ICUs. The setting was chosen due to its critical care services and the need for delirium knowledge assessment among nurses.

#### **Study Sample**

The sample comprised registered nurses working in the selected critical care units for at least six months. Nurses on extended leave, such as career breaks, maternity leave, or long-term illness, were excluded from the study. A total of 36 nurses participated, with an 80% response rate.

#### **Study Instruments**

Data were collected using a self-administered questionnaire consisting of two parts:

1. **Demographic Information:** Details about the participants, such as age, gender, qualification, and years of experience.
2. **Delirium Knowledge and Risk Factors:** This section contained 36 delirium-related statements. Eighteen statements focused on knowledge about delirium, while 16 addressed the risk factors. Respondents were asked to mark their answers as "agree," "disagree," or "unsure."

The questionnaire was adapted from a previously validated tool by Devlin et al. (2008).

#### **Data Collection**

The questionnaires were distributed to nursing staff in the critical care units with the assistance of nursing managers. Participants were given a cover letter explaining the purpose of the study, and the researcher collected the questionnaires after they were completed. Responses for each delirium statement were coded as "correct," "incorrect," "uncertain," or "blank."

#### **Data Analysis**

Collected data were analyzed using the Statistical Package for Social Sciences (SPSS) version 20.0. Frequency tables were generated, and standard deviation calculations were performed to assess the response variation.

### **Results**

#### **Demographic Characteristics of Nurses**

A total of 36 nurses participated in the study, with an 80% response rate. The demographic data revealed the following key characteristics:

- **Age:** Most participants (47%) were between the ages of 21 and 24, 41.2% were between 25 and 29, and 11.8% were over 30.
- **Qualification:** Most nurses (67.6%) held a bachelor's degree, followed by those with a diploma (23.5%) and a small percentage (8.8%) with a school nursing certificate. No participants held a master's degree.
- **Gender:** The sample was predominantly female (73.5%), with males making up 26.5% of the participants.
- **Years of Experience:** Most nurses had between 1 and 3 years of experience (76.5%), followed by 4-7 years (14.7%) and 8-10 years (8.8%).
- **Training on Delirium:** A notable 88.2% of the participants had not attended formal training, and 94.1% reported not using delirium assessment scales in their practice.

#### **Knowledge of Delirium**

Table 1 presents the nurses' responses to questions assessing their knowledge of delirium. Key findings include:

- **Delirium Symptoms:** Only 38.2% of nurses correctly identified that fluctuation between orientation and disorientation is typical of delirium.
- **Assessment Tools:** A mere 11.8% correctly answered that the Mini-Mental Status Examination (MMSE) is not the best tool for diagnosing delirium, indicating a significant gap in knowledge regarding validated assessment tools.
- **Delirium Episodes:** A significant portion (58.8%) incorrectly believed that patients never remember episodes of delirium, showing a misunderstanding of delirium symptoms.
- **Misconceptions:** 52.9% of participants incorrectly believed that delirium never lasts more than a few hours, suggesting a misconception about the duration of the condition.

#### **Knowledge of Risk Factors for Delirium**

Table 2 summarizes the responses to questions related to delirium risk factors:

- **Risk with Age:** 76.5% of nurses correctly identified that the risk of delirium increases with age.
- **Multiple Medications:** Only 32.4% correctly answered that the risk of delirium increases with the number of medications a patient takes, indicating a need for better awareness of pharmacological risk factors.

- **Dehydration and Delirium:** 38.2% of nurses correctly identified dehydration as a risk factor for delirium.
- **Sedation and Delirium:** While 44.1% of participants correctly identified the role of anesthesia and narcotics in delirium development, a significant percentage (14.7%) remained unsure.

#### **Overall Knowledge Levels**

The nurses' overall knowledge of delirium was assessed as moderate. As shown in Table 3, 91.2% of nurses demonstrated moderate knowledge (score range: 45-24), while 8.8% demonstrated low knowledge (score range: 23-0). No participants scored within the high knowledge range (68-46).

#### **Key Findings**

- The results indicate that more than half of the nurses were unfamiliar with validated delirium screening tools.
- There is a general lack of training on delirium, with only a small percentage of nurses receiving formal education on the topic.
- Misconceptions about the symptoms, duration, and appropriate interventions for delirium were prevalent among the nurses surveyed.
- Nurses were more knowledgeable about specific risk factors, such as age and dehydration, but less informed about the impact of medications and environmental factors.

Table 1. Nurses' demographic data

NO.	Characteristics	f	%	
1.	Age	21-24	<b>16</b>	<b>47</b>
		25-29	14	41.2
		30<	4	11.8
		Total	34	100.0
2.	Qualification	School Nurse	3	8.8
		Diploma	8	23.5
		Bachelorette	<b>23</b>	<b>67.6</b>
		Master	0	0
		Total	34	100.0
3.	Gender	Male	9	26.5
		Female	<b>25</b>	<b>73.5</b>
		Total	34	100.0
4.	Years of experiences	1-3 years	26	76.5
		4-7 years	5	14.7
		8-10 years	3	8.8
		Total	34	100.0
5.	Courses for delirium	Yes	30	88.2
		No	4	11.8
		Total	34	100.0
6.	Use of delirium scale	Yes	32	94.1
		No	2	5.9
		Total	34	100.0

F= frequency, %=percentage

**Table 2. Results for questions relating to knowledge of delirium**

NO.	Question	Correct answer n (%)	Incorrect answer n (%)	Unsure n (%)
1.	Fluctuation between orientation and disorientation is not typical of delirium (False)	13(38.2)	10(29.4)	11(32.4)
2.	Symptoms of depression may mimic delirium (True)	20(58.8)	6(17.6)	8(23.5)
3.	Treatment for delirium always includes sedation (False)	14(41.2)	13(38.2)	7(20.6)
4.	Patients never remember delirium episodes (True)	6(17.6)	<b>20(58.8)</b>	8(23.6)
5.	Delirium is a difficult case to assess (True)	13(38.2)	10(29.4)	11(32.4)
6.	A Mini-Mental Status Examination (MMSE) is the best way to diagnose delirium (False)	4(11.8)	3(8.8)	27(79.4)
7.	Delirium never lasts for more than a few hours (False)	11(32.4)	<b>18(52.9)</b>	5(14.7)
8.	A patient who is lethargic and difficult to rouse does not have delirium (False)	13(38.2)	6(17.6)	15(44.1)
9.	Starting treatment with antipsychotics (for example, haloperidol) should be the primary intervention for all patients with delirium (True)	12(35.3)	15(44.1)	7(20.6)
10.	Patients with delirium are always physically and verbally aggressive (False)	9(26.5)	15(44.1)	10(29.4)
11.	Delirium is generally caused by alcohol withdrawal (False)	9(26.5)	13(38.2)	12(35.3)
12.	Patients with delirium have a higher mortality rate (True)	7(20.6)	14(41.3)	13(38.2)
13.	Behavioral changes in the day are typical of delirium (True)	19(55.9)	6(17.6)	9(26.5)
14.	A patient with delirium is likely to be easily distracted and have difficulty following a conversation (True)	17(50.0)	7(20.6)	10(29.4)
15.	Patients with delirium will often experience perceptual disturbances (True)	<b>22(64.7)</b>	4(11.8)	8(23.5)
16.	Altered sleep/wake cycle may be a symptom of delirium (True)	16(47.1)	9(26.5)	9(26.5)
17.	The most delusional age group is the youth group (False)	18(52.9)	3(8.8)	13(38.2)
18.	Poor focus often presents delirium (True)	15(44.1)	7(20.6)	12(35.3)

**n=number, %=percentage.**

Table 3. Results for questions relating to risk for delirium

NO.	Question	Correct answer n (%)	Incorrect answer n (%)	Unsure n (%)
1.	A patient having a repair of a fractured neck or femur has the same risk for delirium as a patient having an elective hip replacement (False)	11(32.4)	5(14.7)	18(52.9)
2.	The risk for delirium increases with age (True)	26(76.5)	3(8.8)	5(14.7)
3.	A patient with impaired vision is at increased risk of delirium (True)	10(29.4)	10(29.4)	14(41.2)
4.	The greater the number of medications a patient is taking, the greater their risk of delirium (True)	11(32.4)	5(14.7)	18(52.9)
5.	A urinary catheter in situ reduces the risk of delirium (False)	15(44.1)	4(11.8)	15(44.1)
6.	Gender does not affect the development of delirium (False)	6(17.6)	15(44.1)	13(38.2)
7.	Poor nutrition increases the risk of delirium (True)	15(44.1)	9(26.5)	10(29.4)
8.	Dementia is the greatest risk factor for delirium (True)	23(67.6)	5(14.7)	6(17.6)
9.	Males are more at risk for delirium than females (True)	3(8.8)	12(35.3)	19(55.9)
10.	Diabetes is a high-risk factor for delirium (False)	8(23.5)	11(32.4)	15(44.1)
11.	Dehydration can be a risk factor for delirium (True)	13(38.2)	8(23.5)	13(38.2)
12.	Hearing impairment increases the risk of delirium (True)	13(38.2)	9(26.5)	12(35.3)
13.	Obesity is a risk factor for delirium (False)	11(32.4)	14(41.2)	9(26.5)
14.	A family history of dementia predisposes a patient to delirium (False)	8(23.5)	<b>19 (55.9)</b>	7(20.6)
15.	Patients who have mechanical ventilation are more likely to have delirium (True)	15(44.1)	9(26.5)	10(29.4)
16.	Anesthesia and narcotics are not related to delirium (False)	14(41.2)	15(44.1)	5(14.7)

n=number, %=percentage.



**Table 4. Nurse's total knowledge towered delirium**

<b>Knowledge</b>	<b>f</b>	<b>%</b>	<b>Mean</b>	<b>Std. Deviation</b>
High (68-46)	0	0.0	1.91	0.288
Moderate (45-24)	31	91.2		
Low (23-0)	3	8.8		

F= frequency, %=percentage

**Discussion**

The findings of this study indicate that nurses working in the selected hospital have insufficient knowledge regarding delirium, particularly its risk factors. Although some in-service education was provided to nurses, it did not adequately cover delirium, highlighting a significant gap in their clinical knowledge. This underscores the need for more comprehensive education focused on delirium, as improving nurses' knowledge in this area could lead to better prevention, diagnosis, and management of delirium in critical care settings.

The demographic data revealed that most nurses in this study were relatively young, with 47% in their twenties and the majority (67.6%) holding a bachelor's degree. Compared to previous studies (Anbu, 2014), where nurses in intensive care settings often had higher qualifications (such as a high diploma or master's degree), the current sample demonstrated a lower educational attainment level. Furthermore, 76.5% of the participants had only 1-3 years of experience, suggesting that their limited clinical exposure may have contributed to the gaps in knowledge regarding delirium.

The study also revealed that most nurses had not received formal training on delirium, and 94.1% did not use validated delirium assessment tools. This is a critical finding, as the early detection and management of delirium are vital in improving patient outcomes. The lack of familiarity with

screening tools and assessment methods reflects a broader issue of inadequate preparation for handling delirium in the ICU setting.

The ability to distinguish between delirium and other cognitive disturbances, particularly in elderly patients, remains challenging for nurses and other healthcare professionals. As the population ages, the incidence of delirium will likely increase, requiring healthcare providers to develop more effective early detection and prevention strategies. This requires nurses to be well-versed in assessing cognitive performance and differentiating between delirium and other conditions, such as dementia or acute confusion (Powers, 2013).

As Dwight (2014) emphasizes, prevention is the most effective approach to managing delirium. However, for prevention strategies to be successful, nurses must clearly understand the risk factors and contributing causes of delirium. Better knowledge and awareness of these risk factors will lead to more effective prevention strategies, early diagnosis, and better patient outcomes. By addressing delirium proactively, healthcare providers can reduce complications, improve recovery times, and minimize healthcare costs, especially as the population ages (NICE, 2013).

Additionally, delirium has significant long-term consequences, including increased morbidity, loss of independence, and elevated mortality rates. It also burdens

healthcare systems financially due to longer hospital stays and the need for extended care post-discharge (Inderpal, 2016). Therefore, equipping nurses with the skills and confidence to assess and manage delirium will improve patient outcomes and enhance job satisfaction and retention rates among healthcare staff. Reducing the need for constant monitoring of delirious patients will also lower nursing costs, benefiting both healthcare systems and patients (Powers, 2013).

### **Educational Needs**

This study highlights the urgent need to improve nurses' knowledge of delirium and its associated risk factors, particularly in elderly patients. Delirium education should be incorporated into both undergraduate and postgraduate nursing curricula. This education should include comprehensive training on cognitive assessment, enabling nurses to accurately assess a patient's cognitive function and differentiate between delirium and other similar conditions. Moreover, these programs should focus on helping nurses understand the causes and contributing factors of delirium so they can provide more targeted interventions.

### **Conclusion and Recommendations**

In conclusion, this study demonstrates that nurses in the selected hospital have moderate knowledge of delirium despite having educational qualifications ranging from a diploma to a bachelor's degree. The findings suggest that limited experience and a lack of specific delirium training may be contributing factors to the gaps in knowledge. To address these issues, university education should be supplemented with in-service training programs, especially for nurses working in critical care settings. These programs should focus on the use of formal

delirium assessment tools, as well as the identification of risk factors and management strategies. Furthermore, collaboration between healthcare institutions, government bodies, and educational providers is necessary to standardize delirium assessment protocols across the healthcare system, ensuring consistency and high standards of care.

### **Ethical Considerations**

Ethical approval for the study was obtained from the Technical Institute in Baquba. Subsequent approvals were secured from the Diyala Health Department and Baquba Teaching Hospital administration. Participants were fully informed of the study's aims, and their consent was obtained before participation. Confidentiality and anonymity were maintained throughout the study.

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### **Conflict of Interest**

The authors declare that they have no conflict of interest.

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### **Data Availability**

Data are available by contacting the corresponding author by email.

### **Authors contribution**

MA and IA designed the study and collected data. MA contributed to the study design, provided critical feedback on the study and analysis, and inputted the draft of this manuscript. MA and IA wrote the manuscript. All authors have read and approved the final manuscript.

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