

# Critical Care Nurses' Knowledge, Perception and Barriers Regarding Delirium in Adult Critical Care Units

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**Abstract Purpose/Aims:** the purpose of this study was to evaluate critical care nurses' knowledge, perception and barriers regarding delirium in adult critical care units. **Design:** A descriptive exploratory research design was used to conduct this study. **Methods:** the current study was conducted at Intensive care units located at Mansoura Emergency Hospital. A total of 40 nurses completed the study. Assessment of critical care nurses' perception, knowledge and barriers regarding delirium was done through direct interview method using study questionnaires. **Results:** nurses' experience in ICU has a positive impact on their knowledge and perception regarding delirium. The mean score of perception, general knowledge and knowledge related to risk factors were significantly higher among diploma degree nurses. The mean score of nurses' perception of delirium was  $27.4 \pm 6.4$ . The mean score of general knowledge was  $25.0 \pm 8.6$  which represents 69.4% of total possible score. The mean score of knowledge regarding risk factors of delirium was  $35.1 \pm 10.1$  which represents 73.1% of total possible score. Critical care nurses face many barriers regarding delirium assessment. The mean score regarding barriers to proper delirium assessment was  $25.1 \pm 4.8$ . **Conclusion:** In light of the results of our study, we can emphasize that there is a need to upgrade critical care nurses' knowledge and perception regarding delirium to help nurses to be more active in performing delirium assessment and management.

**Keywords:** delirium, critical care nursing, delirium monitoring

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## 1. Introduction

Delirium is disturbance in consciousness in which perceptual and cognitive abnormalities exist [1]. Delirium is among the serious Intensive Care Unit (ICU) complications [2]. Death and acquired dementia are seriously correlated with the onset of delirium is reported in 11-80% of the severely ill patients [3]. A study by Van den Boogaard and colleagues (doi:10.1136/bmj.e420) is considered the largest in determining risk factors for delirium among ICU patients [4].

Detection of the incidence of delirium in the ICU may be severely underestimated. Early recognition is associated with shorter hospital stay, reduced treatment cost, and improved treatment outcomes. Screening checklists for detecting delirium like Confusion Assessment Method for the ICU (CAM-ICU) and the Intensive Care Delirium Screening Checklist (ICDSC) do exist [5]. However, research evidence show that delirium is poorly detected by medical and nursing staff in the ICU although

educational programs for delirium detection improve the outcomes [6].

Under-recognition of delirium by ICU nurses could be attributed to their lack of knowledge about delirium as well as the presence of too complex and varied terminologies for cognitive impairment that adds to the complexity of recognizing delirium [7].

Qualitative studies reporting ICU nurses' experiences on delirium report that nurses report feelings of discomfort and incomprehension; nurses' revealed that delirious patients exhibit unpredictable reactions and seem to be in a separate world. Additionally, nurses on their qualitative reports described feelings of doubt, worry about their own safety, and ambivalence [8].

## 2. Methods

### 2.1. Design

A descriptive exploratory research design was used to conduct this study.

## 2.2. Setting and Sample

A convenience sample of 40 critical care nurses involved in providing direct care for critically ill patients and who were willing to participate in this study were recruited.

Data collection was carried out in three intensive care units located at Mansoura Emergency Hospital. ICU1 and ICU2 each includes 10 beds, 3 mechanical ventilators, 2 crash carts, 2 portable suction machines and 1 defibrillator machine. ICU3 includes 4 beds, 1 mechanical ventilator, 1 crash cart, 1 portable suction and 1 defibrillator machine. Each bed is equipped with advanced technologies such as cardiac monitor, central suction machine and oxygen outlets. The nurse patient ratio was nearly 1:3.

## 2.3. Measurement

Three tools were used to collect data of this study; Tool I; "Critical care nurses' perception questionnaire regarding delirium". This tool was developed by the researcher after reviewing the related literature [9] to evaluate critical care nurses' perception of delirium. It is divided into two sections; section one includes critical care nurses' socio-demographic data such as gender, nursing qualifications, years of experience in ICU. Section 2; critical care nurses' perception questionnaire regarding delirium, it consisted of eight statements with the answers ranged from strongly agree, agree, uncertain, disagree and strongly disagree. Statements about perception were on a five-point likert scale in which 1 denotes strongly disagree and 5 denotes strongly agree. Tool II; "Critical care nurses' knowledge questionnaire regarding delirium and its risk factors". This tool was adapted from [6]. Necessary modifications were done by the researcher. It aimed to assess ICU nurses' knowledge regarding delirium and its risk factors. This section required nurses to respond "Correct", "Uncertain" or "Incorrect" for 28 statements. Twelve of the statements were related to delirium; its presentation and management "knowledge questions", and sixteen statements related to risk factors for delirium "risk questions" where each correct answer takes a score of 3 and incorrect answer takes a score of 1.

Tool III; "Barriers to proper delirium assessment questionnaire". This tool was adopted after reviewing the related literature [9] to evaluate the barriers that facing the critical care nurses for proper delirium assessment. It is composed of 10 statements describing why nurses may not be able to assess patients with delirium where "yes" takes 3 points, "uncertain" takes 2 points and "no" takes 1 point.

An official permission to conduct the proposed study was obtained from the Ethical Committee of Faculty at Nursing, Mansoura University and the hospital director. Participation in a study was voluntary; each potential subject was informed about the purpose, procedure, benefits, and nature of the study. Participants were assured that they have the right to withdraw from the study at any time without any rationale then written consents were obtained. Confidentiality and anonymity of each participant were assured through coding of all data.

Preparation of the study's tools was conducted. Tools were tested for content validity by 5 experts in the field. A pilot study was carried out before starting data collection on 4 nurses (10%) to test clarity, feasibility, applicability

of the tools and time frame to answer the questionnaire, based on the findings necessary modifications were done accordingly, those nurses were excluded from the study.

Assessment of critical care nurses' perception, knowledge and barriers regarding delirium was done through direct interview method using self-administered tool I, II, and III questionnaires; the time average for completing the questionnaire ranged from 30- 35 minutes.

## 2.4. Data Analysis

Statistics for all variables were calculated using SPSS version 21. The empirical distribution of continuous data was described as means and standard deviation. Intergroup differences between variables were assessed using the independent sample t test. Comparison was made within a group using the dependent sample t test. The level of significance in this study was  $p < 0.05$ .

## 3. Results

**Table 1. Critical Care Nurses' Socio-demographic and Clinical Data**

Items	n	%
Gender		
Male	4	10
Female	36	90
Years of experience in ICU		
1 – 5 years (Bachelor degree)	6	15.0
6 – 10 years (Diploma degree)	20	50.0
11 – 15 years (Diploma degree)	14	35.0
Previous education regarding delirium	0	0.0

**Table 1:** shows critical care nurses' socio-demographic and clinical data. It can be noticed that 90% of the sample was female, 15% of the sample had from 1 to 5 years of experience in ICU and this category include all bachelor's degree nurses. Moreover, 50% of the sample worked from 6 to 10 years in ICU and this category represents nurses who had diploma degree. While, 35% of the sample had an ICU experience from 11 to 15 years and this category also represents nurses who had diploma degree. It can be noticed that 15% of the sample had bachelor degree while 85% had diploma degree. This table also revealed that no one had previous education regarding delirium.

**Table 2:** shows critical care nurses' perception of delirium. It can be seen that the mean score of nurses' perception of delirium was  $27.4 \pm 6.4$ . It can be noted that 42.5% of the nurses were strongly agree that delirium is associated with higher patient mortality. 50% were agree that delirium is an under diagnosed problem. Moreover, 30% of the nurses agreed that delirium required intervention from the caregiver and that ICU patients with delirium are rarely agitated.

**Table 3:** Illustrates critical care nurses' general knowledge of delirium. This table reveals that the mean score of general knowledge was  $25.0 \pm 8.6$  which represents 69.4% of total possible score. It can be noted that 57.5% of nurses answered incorrectly regarding the question exploring whether delirium lasts for more than few hours or not. Moreover, 42.5 % responded incorrectly regarding the question investigating whether treatment of

delirium always includes sedation or not. On the other hand, 80% of the nurses answered correctly the question which exploring whether patients with delirium often

experience perceptual disturbances or not. Furthermore, 47.5% answered correctly that patients with delirium are always physically and/or verbally aggressive.

**Table 2. Critical Care Nurses' Perception of Delirium**

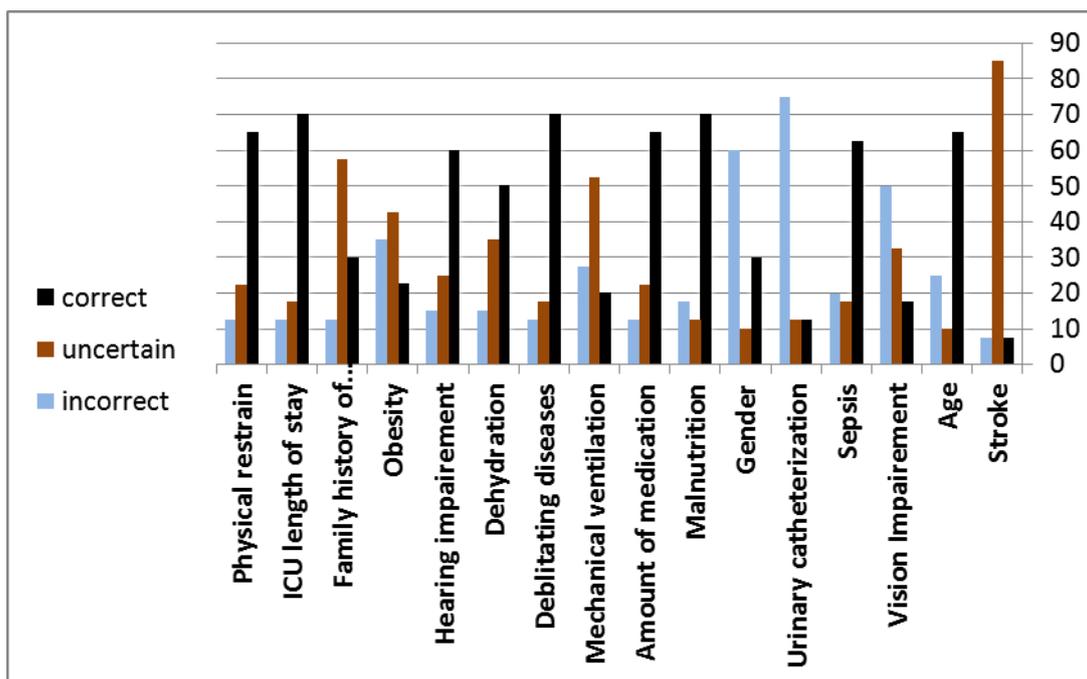
Items regarding perception	strongly agree		agree		uncertain		disagree		strongly disagree	
	n	%	n	%	n	%	n	%	n	%
1. Delirium is an under-diagnosed problem.	7	17.5	20	50.0	5	12.5	2	5.0	6	15.0
2. Delirium is a response to the ICU environment.	11	27.5	9	22.5	11	27.5	5	12.5	4	10.0
3. Delirium requires active interventions on the part of caregivers.	8	20.0	12	30.0	9	22.5	7	17.5	4	10.0
4. Delirium is associated with higher patient mortality.	17	42.5	12	30.0	5	12.5	2	5.0	4	10.0
5. ICU patients with delirium are rarely agitated.	8	20.0	12	30.0	10	25.0	4	10.0	6	15.0
6. Antipsychotics must be the initial intervention for all delirious patients.	6	15.0	8	20.0	17	42.5	2	5.0	7	17.5
7. Delirium is challenging to be assessed in ICU.	15	37.5	9	22.5	4	10.0	1	2.5	11	27.5
8. Patients with delirium usually had symptoms that continuously present during nursing shift.	11	27.5	9	22.5	11	27.5	5	12.5	4	10.0
Score of perception										
Range	15 – 37									
Mean ±SD	27.4 ±6.4									

Strongly agree = 5, Agree = 4, Uncertain = 3, Disagree = 2, strongly disagree = 1.

**Table 3. Critical Care Nurses' General Knowledge of Delirium**

Items regarding general knowledge	Correct		Uncertain		Incorrect	
	n	%	n	%	n	%
1. Fluctuation between orientation and disorientation is not typical of delirium.	15	37.5	17	42.5	8	20.0
2. Depression interferes with detection of delirium.	12	30.0	16	40.0	12	30.0
3. Management for delirium always includes sedation.	11	27.5	12	30.0	17	42.5
4. Patient never remembers episode of delirium.	9	22.5	20	50.0	11	27.5
5. A Mini Mental Status Examination is the best way to diagnose delirium.	14	35.0	13	32.5	13	32.5
6. Delirium never lasts for more than few hours.	8	20.0	9	22.5	23	57.5
7. A patient who is lethargic and difficult to arouse does not have a delirium.	16	40.0	14	35.0	10	25.0
8. Patients with delirium are always physically and/or verbally aggressive.	19	47.5	12	30.0	9	22.5
9. Behavioural changes in the course of the day are typical of delirium.	20	50.0	9	22.5	11	27.5
10. A delirious patient faces a difficulty in following conversations.	19	47.5	14	35.0	7	17.5
11. Patients with delirium will often experience perceptual disturbances.	32	80.0	5	12.5	3	7.5
12. Altered sleep/wake cycle may be a symptom of delirium.	9	22.5	15	37.5	16	40.0
Score of knowledge						
Range	12 – 36					
Mean ±SD	25.0 ±8.6					

Correct =3, Uncertain=2, Incorrect = 1.



**Figure 1. Critical Care Nurses' Knowledge Related to Risk Factors of Delirium**

Figure 1 illustrates critical care nurses' knowledge related to risk factors of delirium. The mean score of knowledge regarding risk factors of delirium was 35.1 ±10.1 which represents 73.1% of total possible score. It can be noted that 70% of nurses answered correctly on items examining if malnutrition increases the risk of delirium, if debilitating diseases as diabetes, renal failure and liver failure increase risk factor of delirium and if delirium is generally caused by increased length of ICU stay or not. 65% answered correctly that delirium increases with age and that delirium is generally caused by physical restraint. 50% answered correctly that dehydration is a risk factor of delirium and 60% answered correctly that hearing impairment increases the risk of delirium. On the other hand, 75% of nurses had incorrect answer regarding the question investigating if the presence of a urinary catheter reduces the risk of delirium or not. 50% of nurses had incorrect answer regarding the question investigating if a patient with impaired vision is at increased risk of delirium or not. Also, 60% answered incorrectly if gender has no effect on the development of delirium. However, 85% of nurses were uncertain if a patient with stroke has an increased risk of delirium or not and 52% were uncertain if mechanical ventilation increases risk of delirium or not.

Table 4 shows barriers to proper delirium assessment. It can be seen that 100% of nurses agreed to the following

items; they are unable to complete assessment in sedated patient, they are not required to screen for delirium in the ICU and physicians already complete delirium assessment. 50% agreed that delirium assessment tools are too complex to use and that they do not feel confident in their ability to use such tools. The mean score regarding barriers to proper delirium assessment was 25.1 ±4.8.

Table 5: Illustrates association between critical care nurses' qualification and total scores of knowledge and perception of delirium. It can be noted that there was a statistically significant relation between nurses' qualification and their total score of perception and general knowledge and knowledge related to risk factors (P= 0.03, 0.04, 0.03) respectively. The mean score of perception, general knowledge and knowledge related to risk factors were significantly higher among diploma nurses (28.9 ±6.2, 27.0 ±8.5, 37.3 ±9.8) respectively.

Table 6: Illustrates association between critical care nurses' experience and total scores of knowledge and perception of delirium. It can be noted that there was a statistically significant relation between nurses' experience in ICU and their total score of perception and knowledge. The mean score of perception, general knowledge and knowledge related to risk factors was significantly higher among nurses who had 11-15 years of experience in ICU (29.8 ±5.3, 27.4 ±6.9, 38.9 ±6.8) respectively.

**Table 4. Barriers to proper delirium assessment**

Items	Yes		Uncertain		No	
	n	%	n	%	n	%
1. Assessment tools of delirium are so difficult.	20	50.0	13	32.5	7	17.5
2. It is not easy to assess intubated patients.	19	47.5	14	35.0	7	17.5
3. Nurses are hesitating in using delirium assessment tools.	20	50.0	6	15.0	14	35.0
4. Using delirium assessment tools does not improve outcomes.	13	32.5	13	32.5	14	35
5. Nurses are unable to document delirium assessments.	19	47.5	14	35.0	7	17.5
6. It is not easy to assess sedated patients.	40	100.0	0	0.0	0	0.0
7. Delirium assessment consumes too much time.	21	52.5	18	45	1	2.5
8. Screening for delirious patients is not a nursing responsibility.	40	100.0	0	0.0	0	0.0
9. Doctors are the ones who complete delirium assessment.	40	100.0	0	0.0	0	0.0
10. Delirium assessment done by nurses is not used by physicians.	21	52.5	18	45.0	1	2.5
Score of knowledge						
Range						16 – 30
Mean ±SD						25.1 ±4.8

Yes =3, Uncertain=2, No = 1.

**Table 5. Association between critical care nurses' qualification and total scores of knowledge and perception of delirium**

Total score	Diploma	Bachelor	Student's t test	
	Mean ±SD	Mean ±SD	t	p
Perception	29.2 ±6.0	23.6 ±5.5	2.130	0.03*
General knowledge	27.4 ±8.1	20.0 ±6.8	2.103	0.04*
Knowledge related to risk factors	38.3 ±9.8	28.9 ±9.2	2.183	0.03*

\*Statistically significant P<0.05.

**Table 6. Association between critical care nurses' experience and total scores of knowledge and perception of delirium**

Total score	1 – 5 years	6 – 10 years	11 – 15 years	ANOVA test	
	Mean ±SD	Mean ±SD	Mean ±SD	F	p
Perception	20.8 ±6.2	27.8 ±6.1	29.8 ±5.3	2.001	0.01*
General knowledge	17.2 ±7.0	25.7 ±9.0	27.4 ±6.9	3.546	0.03*
Knowledge related to risk factors	25.8 ±9.9	35.1 ±10.8	38.9 ±6.8	4.014	0.02*

\*Statistically significant P<0.05.

## 4. Discussion

The attention paid to delirium in the intensive care environment is recent and therefore, data are still scarcely [10]. According to estimates, delirium will develop in up to 80% of critically ill patients. However, the condition goes undetected in up to 70% of cases when routine monitoring is not in place [11].

The results of this study revealed that the majority of the sample was female who held diploma degree and had more experience in ICU. While, only 15% of the sample held bachelor degree and had from one to five years' experience in ICU. No one had previous education regarding delirium. It was noted that increased length of time working in ICU had a statistically significant impact on nurses' knowledge and perception regarding delirium although the nurses who had more experience held diploma degree. This result was in contrast with Christensen, [7] who stated that there was a significant statistical difference between educational qualifications and the risk factors associated with delirium in favor of the degree educated participants. The result of the current study can be explained as diploma nurses had more experience in ICU than bachelor degree nurses. This means that experience improves knowledge of delirium but also there is a need for more delirium education.

Eight statements on perception about delirium were asked to critical care nurses. Half of the nurses agreed that delirium is an under-diagnosed problem. About half of the sample strongly agreed that delirium is associated with high mortality rate. Moreover, one third of the nurses agreed that delirium required intervention from the caregiver and that ICU patients with delirium are rarely agitated. These results were in line with [9] who stated that the majority of respondents strongly agreed that delirium is not diagnosed properly and it is associated with high patient mortality and they also strongly agree that caregivers should deal with their patients who suffer from delirium appropriately. Furthermore, Andrews 2015 stated that delirium is undetected in 72% of cases when routine monitoring is not in place. Moreover, it was stated that 3-66 % of cases of delirium are not diagnosed [12].

Regarding critical care nurses' general knowledge of delirium, the overall mean score was  $25.0 \pm 8.6$  which represent 69.4% of total possible score. This was in line with a study conducted by Hare et al, 2008 who stated that the mean score of knowledge questions was 64.9% which indicate that nurses at the study hospital had inadequate levels of general knowledge regarding delirium. In fact if the level of knowledge could not be improved, this will have an adverse impact on patients as the nurse is the primary care giver and the one who initially deal with the patient.

Since prevention is the most effective approach to deal with delirium, nurses should be aware of many risk factors that are considered as an alarm to immediately care for such cases. Many risk factors had been described in the literature. The typical environment of an ICU represents a risk factor due to the absence of natural illumination, the absence of clocks, disturbance of sleep pattern and patient isolation [10]. The results of this study stated that the majority of nurses knew that mal-nutrition; debilitating diseases, hearing impairment and increased length of ICU

stay have an impact on the patients and may lead to development of delirium. Also, half of the sample stated that dehydration is a risk factor of delirium and about two thirds indicated that age, physical restraint, and hearing impairment are risk factors for delirium. It is well known that old age >70 years, hearing impairment and malnutrition are considered as preexisting conditions that increase risk for delirium, however physical restraint is considered as an iatrogenic risk factor for delirium [10]. Also as noted in the literature review, delirium occurs frequently in elderly hospitalized patients [13,14].

On the other hand, more than half of the sample was uncertain if mechanical ventilation increases risk of delirium or not and if the presence of a urinary catheter reduces the risk of delirium or not. Tsuruta et al [15] demonstrated that mechanical ventilation is an independent factor for the development of delirium. Moreover, 85% of nurses were uncertain if a patient with stroke has an increased risk of delirium or not. Literature has revealed that stroke and epilepsy are preexisting conditions for delirium [10].

The results of the current study highlighted that it was difficult to perform delirium assessment in sedated patients and even they are not required to screen for delirium in the ICU. Half of them stated that delirium assessment tools are too complex to use and they do not feel confident in their ability to use such tools. These results were in line with Anbu, 2014 who stated that there are three major barriers to assess delirium including the difficulty to evaluate delirium in intubated patients and sedated patients and the use of delirium tools are so difficult. These results controversies a study showed that such tools are easy to use even in sedated patients [16].

## 5. Limitations

Only nurses from one hospital completed this survey. The results may therefore not be valid for nurses in other health contexts.

## 6. Conclusion

Delirium is common in patients admitted to the ICU. It is an under-detected problem. Nurses' position at the forefront of patient care does not always lead to successful delirium assessment and management. To prevent is better than to treat. For this reason, it is important to upgrade nurses' knowledge related to risk factors of delirium as well as general knowledge to help nurses to be more active in performing delirium assessment and management.

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