ORIGINAL RESEARCH

ICU nurses' perception, knowledge, and barriers on delirium assessment

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ABSTRACT

Background and objective: Despite the availability of assessment tools for identifying and managing delirium in clinical settings, most cases remain undiagnosed, which demands the importance of conducting educational sessions. There is a necessity to understand why ICU nurses are unable to assess delirium in ICU patients, and there is a need to establish the best practice to promote patient safety. The descriptive cross-sectional research design aimed to assess the ICU nurses' perception, knowledge, and Perceived barriers to delirium assessment, assess the association between qualifications and previous education regarding delirium to their knowledge and perception, and evaluate the association between ICU nurses' experience and total scores of knowledge and perception.

Methods: A total 105 ICU nurses were selected from one of the tertiary hospitals in the Sultanate of Oman. Socio-demographics about ICU nurses' knowledge, perception of delirium, and barriers to proper delirium assessment were collected by using an online self-administrative survey after obtaining consent. Data were statistically analyzed for central tendencies and level of dispersion (mean, range, and standard deviation).

Results: The result of this study illustrated that 60.2% of ICU staff nurses have a moderate perception of the importance of delirium assessment in ICU. The majority of the nurses are females who held bachelor's degrees with experience of six to ten years in the critical care field.

Conclusions: The finding in this study illustrated that most of the staff nurses have previous training regarding delirium. However, there are gaps in delirium assessment, perception, and knowledge in ICU. Therefore, appropriate education is required to increase delirium identification, skill, and knowledge.

Key Words: Delirium, CAM-ICU, ICU acquired delirium

1. INTRODUCTION

Delirium is described by disruption of consciousness level with consequent alteration in cognition.[1] Delirium incidences differ all-around hospital settings.[2] Generally, in ICU, the prevalence of delirium is around 32.3% and these percentages rise to 77% in critically ill ventilated patients.[3,4] There are numerous negative outcomes for delirium such as high rates of falls, self-extubation, increased length of stay (LOS), high mortality rate, removal of the invasive line, and increased self-harm. Additionally, ICU delirium is linked with long-term complications of cognitive function even after discharge from the hospital.[5,6] Therefore, identifying the possible causes of delirium and its management is crucial.[7] Delirium is commonly unrecognized unless a particular diagnostic instrument is been used.[8] The confusion assessment method for the intensive Care Unit (CAM-ICU) is a reliable

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and recommended tool used to evaluate a patient with delirium.[9] CAM-ICU is an instrument that assesses four characteristics of delirium which are disorganized thinking, acute change in mental status, altered level of consciousness, and inattention.[10] Despite the availability of assessment tools for identifying and managing delirium in clinical settings, most of the cases remain undiagnosed, which demands the importance of conducting educational sessions and continuous in-service training. Having a lack of skill and knowledge can have a desirable negative outcome on the patient, increase the nurse's workload, and hospital cost, and reduce the quality of life. Nurses deliver top-of-the-line care for patients and require to take an active role in the prevention, early recognition, and management of ICU delirium. ICU nurses are struggling in handling and managing delirious patients which makes them in a stressful situation and increases their anxiety level, however, there is little research discussing barriers, risks and coping techniques nurses can use in handling delirious patients.[11] Taking into account, there is a necessity to understand why ICU nurses are unable to assess delirium in ICU patients and there is a need to establish the best evidence-based practice to promote patient safety and high excellence of care. Therefore, the present study aims to assess the ICU nurses' perception, knowledge, and Perceived barriers to delirium assessment, assess the association between qualifications and previous education regarding delirium to their knowledge and perception and evaluate the association between critical care nurses' experience and total scores of knowledge and perception.

2. RESEARCH METHODOLOGY

2.1 Study design and population

The descriptive cross-sectional research design with an online self-administrative survey was used. A Convenience sample of One hundred and five critical care nurses was selected from one of the tertiary hospitals in the Sultanate of Oman. The inclusion criteria included all the bedside ICU nurses working in adult critical care units who are voluntarily willing to participate and the exclusion criteria were the ICU nurses who were on annual leave, maternity leave, ward nurses, and unit nurses. Data collection was conducted in two intensive care units. ICU1 and ICU2 each include 8 beds. Both ICUs deals with the care of patients with medical and surgical illness. Data collection started from the 1st of March 2020 to April 2020. A total of 93 surveys were completely answered with a response rate of 89% within two weeks period. This study adopted GPower version 3.1.9.4 software to calculate how many participants are needed for the effect of the study. The result of the calculation tool reported that 77 participants were required for the survey. To ensure fulfillment of sample size requirements, an additional 8 (10%) participants needed to reach a size of 85 participants.

2.2 Data collection

The online self-administrative survey was used as a data collection method. The survey consisted of four elements, which were socio-demographic of ICU nurses' knowledge, perception, and barriers to proper delirium assessment. four parts were adopted after reviewing the related literature and permission was obtained from the researchers.[12,13] The validity of the tool is based on Jury judgment while the reliability is based on 86% test-retest agreement as stated by Hamood A. Alharbi.[13]

Part 1: The socioeconomic characteristic contains gender, ICU experience, and previous education about delirium.
Part 2: Statements about the perception of critical care nurses regarding delirium were on a five-point Likert scale in which 1 signifies "strongly agree", 2 signifies "agree", 3 signifies "uncertain", 4 "disagree" and 5 signifies "strongly disagree". It contained eight sentences. This tool requires the critical care nurse to respond regarding items related to delirium perception.
Part 3 is about Critical care nurses' knowledge of delirium. It contained 11 statements and its targets to evaluate ICU nurses' knowledge about delirium. This part required the critical nurses to respond with 1 "strongly agree", 2 "agree," 3 "uncertain", 4 "disagree" and 5 "strongly disagree".
Part 4: Barriers of ICU delirium questionnaires. It contains seven items illustrating why the critical care nurse was unable to perform a proper delirium assessment. This part required the ICU nurses to answer "Correct", "Uncertain" or "Incorrect" for seven items.

This data collection tool was used in published research in GCC countries like Saudi Arabia, and Middle East countries like Egypt and applies to the current practice.[12,13] A pilot study was carried out on 10% of the sample size to determine whether the tool is clear and achieved the aim of the proposed study before collecting the data the staff who took a part in the pilot study were excluded and no modifications were done as participants stated this tool is achieving the aim of the study and clear. After the ethical permission to carry out the proposed study from the research committee at the tertiary hospital, the researcher obtained the nurse's contact list from the unit nurse to send the web link through WhatsApp. The participants signed the informed consent after a detailed explanation of the purpose of the study, the benefit, and the risks of the study before data collection. All participants were assured that there were no staff identifiers and all information is anonymous. Weekly reminders were sent through WhatsApp to achieve the target number of participants.

2.3 Ethical consideration

The establishment of research, ethics review and approval committee (RERAC), and the Royal hospital research committee were given the ethical consent with approval no (SCR#22/202).

2.4 Data analysis

SPSS version 26 was used to analyze the statistics for all research variables. Data were statistically analyzed for central tendencies and level of dispersion (mean, range, and standard deviation). The correlation between the two variables was obtained by the t-test and ANOVA test. A p-value of $< .05$ represents the significance level.

3. Result

3.1 Description of sample characteristics

The data presented in Table 1 illustrates that most of the staff nurses, 88 (94.6%), are females. The majority, 39(41.9%), have six to ten years of experience in ICU and with bachelor's degrees whereas 21 (22.5%) have 11-15 years of experience and a diploma in nursing. The majority of the staff nurses, 64 (68.8%), have previous education regarding delirium and 29 (31.2%) do not have previous education regarding delirium. For further references refer to Table 1.

3.2 Perception of critical care nurses regarding delirium

Figure 1 shows critical care nurses' perception of delirium and 56 (60.2%) of staff nurses have a moderate perception of the importance of delirium to be assessed in ICU, whereas 36 (38.7%) have a good perception regarding the importance of assessing delirium in ICU.

Table 1. ICU nurse's socio-demographic data

	Variables	N (%)
Gender	Female	88 (94.6)
	Male	5 (5.4)
ICU experience	Bachelor degree (1-5yrs)	20 (21.5)
	Bachelor degree (6-10yrs)	39 (41.9)
	Diploma degree (6-10yrs)	13 (13.9)
	Diploma degree (11-15yrs)	21 (22.5)
Pervious education about delirium	Yes	64 (68.8)
	No	29 (31.2)

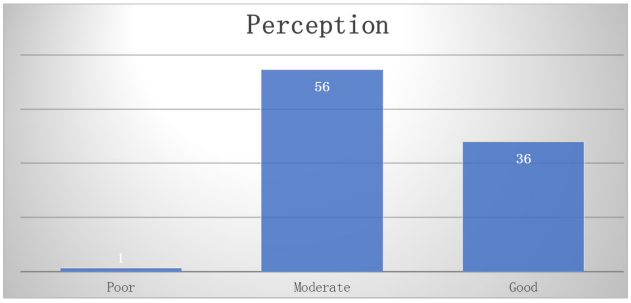

Figure 1. Critical nurses' perception of delirium

Table 2 shows sub-domains regarding the perception of delirium among ICU nurses. The result revealed that the mean score of nurses' perceptions of delirium was 19.27 ± 3.21. It can be seen that 48.4% of the ICU nurses disagree that delirium is linked with a high mortality rate. 66.7% were agreed that delirium is an under-determined problem. In addition, around 38.7% of the ICU nurses strongly agreed the ICU environment can lead to delirium.

Table 2. Perception of delirium among ICU nurses

Questions about perception	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
	N (%)	N (%)	N (%)	N (%)	N (%)
Delirium is an undiagnosed problem	16 (17.2)	62 (66.7)	10 (10.8)	5 (5.4)	0
Delirium is a response to the ICU environment	36 (38.7)	56 (60.2)	1 (1.1)	0	0
Delirium requires active interventions on the part of caregiver	6 (6.5)	35 (37.6)	29 (31)	23 (24)	0
Delirium is associated with higher patient mortality	8 (8.6)	26 (28)	10 (45)	45 (48.4)	4 (4.3)
ICU patient with delirium is rarely agitated	6 (6.5)	49 (52.7)	21 (22.6)	15 (16.1)	2 (2.2)
Anti-psychotic such as haloperidol must be the initial intervention for all delirious patients	20 (21.5)	59 (63.4)	5 (5.4)	8 (8.6)	0
Delirium is challenging to be assessed in ICU	9 (9.7)	43 (46.2)	20 (21.5)	19 (20.4)	2 (2.2)
Patient with delirium usually have symptoms that are continuously present during a night shift.	38 (40.9)	20 (21.5)	35 (37.6)	0	0

*Score for perception: Poor (1-10), Moderate (11-20), Good (21-30).
*Range: 10-26
*Mean ± SD: 19.27±3.21

3.3 Knowledge of ICU nurses' regarding delirium

Table 3 shows sub-domains regarding the knowledge of ICU nurses about delirium. It can be noted that the knowledge mean score was 19.95 ± 3.06. The finding revealed that 53.8% of nurses were given the wrong answer regarding the questionnaire which explored whether delirium can persist for more than a few hours. Additionally, 45.2% answered incorrectly about the questionnaire which explored whether delirium management always contains sedation. Furthermore, 89.2% of the ICU staff responded correctly to the questionnaire which explored whether delirium can be manifested with altered sleep/wake cycle. Also, 86% responded correctly that a delirious patient faces difficulty when following a conversation.

Table 3. Knowledge of delirium among ICU

Questions regarding general knowledge	Correct N (%)	Uncertain N (%)	Incorrect N (%)
Fluctuation between orientation and disorientation is not atypical of delirium	38 (40.9)	20 (21.5)	35 (37.6)
Depression interferes with detection of delirium	61 (65.5)	19 (20.4)	13 (14)
Management of delirium always includes sedation	29 (31.2)	22 (23.7)	42 (45.2)
Patient never remembers episode of delirium	41 (44.1)	43 (46.2)	9 (9.7)
A mini mental examination is the best way to diagnose delirium	72 (77.4)	16 (17.2)	5 (5.4)
Delirium never lasts for more than a few hours	16 (17.2)	27 (29)	50 (53.8)
A patient who is lethargic and difficult to arouse does not have delirium	22 (23.7)	32 (34.4)	39 (41.9)
Patients with delirium are always physically or verbally aggressive	38 (40.9)	19 (20.4)	36 (38.7)
Behavioral changes in the course of the day are typical of delirium	71 (76.3)	12 (12.9)	10 (10.8)
A delirious patient faces difficulty when following a conversation	80 (86)	6 (6.5)	7 (7.5)
Patients with delirium will often experience perceptual disturbance	76 (81.7)	15 (16.1)	2 (2.2)
Altered sleep/wake cycle may be a symptom of delirium	83 (89.2)	8 (8.6)	2 (2.2)

*Score of knowledge 1-9 (Poor); 10-18 (Low); 19-27 (Moderate); 27-36 (High)

*Range: 12-26

*Mean ± SD: 19.95±3.06

3.4 Barriers to proper delirium assessment

Table 4 shows barriers to delirium assessment. The table revealed that 75.3% of ICU nurses felt that it is difficult to evaluate sedated patients, whereas 6.5% did not feel that screening for the delirious patient is a nursing responsibility. The barriers of delirium assessment mean score was 19.83 ± 3.91.

3.5 Association between critical care nurses' qualifications, knowledge and perception

Table 5 shows the relationship between ICU nurses' qualifications and the scores of perceptions and knowledge. The finding revealed that there was a statistically significant relationship between knowledge score and nurses' qualifications (p = .03).

Table 4. Barriers of delirium assessment

Questions regarding barrier to proper delirium assessment	Correct N (%)	Uncertain N (%)	Incorrect N (%)
Assessment tool of delirium are so difficult	26 (28)	25 (26.9)	42 (45.2)
It is not easy to assess sedated patient	70 (75.3)	10 (10.8)	13 (14)
Nurses are hesitating in using delirium assessment tool	22 (23.7)	32 (34.4)	39 (41.9)
Using delirium assessment tool does not improve outcomes	10 (10.8)	25 (26.9)	58 (62.4)
Delirium assessment consumes too much times	20 (21.5)	20 (21.5)	53 (57)
Screening for delirious patient is not a nursing responsibility	6 (6.5)	12 (12.9)	75 (80.6)
Doctors are the ones who complete delirium assessment	41 (44.1)	14 (15.1)	38 (40.9)

*Score of Barriers

*Range: 9-27

*Mean ± SD: 19.83 ± 3.91

Table 5. Association between qualifications, knowledge and perception

Total score	Diploma Mean ± SD	Bachelor Mean ± SD	Student *t* test	*p*-value
Perception	18.94 ± 3.71	19.46 ± 2.9	0.75	.46
Knowledge	19.09 ± 3.40	20.44 ± 2.7	2.09	.03*

*Statistically significant $p < .05$.

3.6 Association between critical care nurses' previous education regarding delirium, knowledge, and perception

Table 6 illustrates the association between critical care nurses' previous education regarding delirium and total scores of knowledge and perception of delirium. It can be noted that there was a statistically significant relationship between nurses' previous education and their total score of perception ($p = .04$).

Table 6. Association between critical care nurses' previous education regarding delirium, knowledge, and perception

Total score	Previous education		Student *t* test	*p*-value
	YES Mean ± SD	NO Mean ± SD		
Perception	19.08 ± 3.53	19.69 ± 2.3	1.21	.04*
Knowledge	19.75 ± 3.20	20.38 ± 2.66	0.98	.32

3.7 Association between critical care nurses' experience, knowledge, and perception

Table 7 illustrates the association between critical care nurses' experience and total scores of knowledge and perception of delirium. It can be noted that there was no statistically significant relationship between nurses' experience in ICU and their total score of perception and knowledge.

Table 7. Association between critical care nurses' experience, knowledge, and perception

Total score	1-5 years Mean ± SD	6-10 years Mean ± SD	11-15 years Mean ± SD	ANOVA test	
				f	*p*
Perception	19.05 ± 3.03	19.69 ± 3.0	18.43 ± 3.80	1.22	.29
Knowledge	19.50 ± 3.15	20.27 ± 2.82	19.57 ± 3.57	0.65	.52

4. Discussion

The result of the study illustrates that most ICU staff nurses have a moderate perception of the importance of delirium assessment in ICU. The majority of nurses are females who held Bachelor's degrees with six to ten years of experience in the ICU field. The study demonstrated no correlation between the perception score and ICU nurses' qualifications. The findings of this study enlightened that diploma nurses had less experience than bachelor nurses; however, having such experience is not always at the command of nursing.[14] Additionally, a degree could exhibit that you have the required knowledge and skills that the worker is searching for and could be passed at the workplace with minimal on-the-job training.

It showed that half of the nurses disagree that delirium is linked with a high mortality rate. Most of them considered that delirium is an under-determined problem. One-third of the staff considered that delirium requires active interventions on the part of the caregiver. This reflects the participants in this study are not aware of the seriousness of the disease condition although, the majority of them revealed the necessity of providing holistic care for the delirious patient. Many studies stated that nurses are lacking insight into the early identification and management of delirium.[11] This finding was in accordance with Alharbi[13] who noted that ICU nurses strongly agreed that the delirium problem necessitates active intervention from healthcare personnel and the majority of staff strongly agreed that delirium correlated to a high mortality rate.

Another key finding is that the majority of the staff nurses have previous education regarding delirium and one-third do not have previous education regarding delirium. This means the participants in the study received unstructured and theoretical education about delirium in their unit, however; delirium identification and prevention were not included in the mandatory training and in-service courses. Additionally, no orientation for new staff about delirium during the joining period, and it is not included in the critical care competency checklist.[15] The findings of the current study presented that there is no relationship between knowledge and previous education about delirium, but this requires more study to throw light on it. In addition, a significant relationship was noted between nurses' knowledge about delirium and their educational degree. This reflects knowledge base increased with educational background. However, having a piece of detailed speculative knowledge about delirium is certainly not enough to be considered competent at being able to identify and diagnose delirium. It is an established practice to evaluate someone's ability to identify ICU delirium based on knowledge, which in most cases is considered to ensure competence.[14] Additionally, it was illustrated that there was a positive relationship between general knowledge and ICU staff' qualifications; whereas there was no statistically significant relationship between nurses' experience in ICU and their total score of perception and knowledge. This means that the knowledge base increased with qualification. A bachelor's program in OMAN is extensive and combined with post-basic courses such as the adult critical care nursing program. So, through studying the nurse will acquire the core knowledge to improve her skills.[16] These

findings were in contrast with Talhouk et al.[17] who found a significant positive relationship between the experience in ICU and knowledge about delirium.

The participant ranked difficulty in interpreting intubated patients, inability to complete the assessment in sedated patients, and did not feel that screening for the delirious patient is a nursing responsibility and they were hesitant in using the delirium assessment tool as the highest barriers in assessing delirious patients. This finding reflects that ICU nurses are not competent enough to use the CAM-ICU assessment due to anxiety and stress when they are assigned to the delirious patient. Also, they need support, motivation as well as an intervention that will boost their confidence and overcome the obstacles. Peer nurses act an essential role in backing and supporting each other in taking the appropriate decision making which resulted in improving the staff practice and confidence level.[11] It is recommended to conduct a further study or a focus group discussion to explore why ICU nurses have difficulties in implementing this tool. These results are supported by AbuRuz[18] who stated that around half of the staff reported that they face difficulty in assessing a delirious patient. These findings were in line with Alharbi[13] who noted in her study that 100% of nurses agreed that they were not able to complete a delirium assessment for a sedated patient and they felt that they were not required to screen for ICU delirium, and doctors are the ones responsible for completing a delirium assessment. Moreover, 50% of the staff expressed that they are not competent to practice this tool and it's so difficult to use. These findings controverse with who noted these tools are easy to use when assessing sedated patient.[19] In addition to that, 27% of the staff agreed that the assessment tool of delirium is too difficult. These findings are in line with who noted that 50% of ICU nurses considered that the delirium assessment method is difficult to use and they are not competent enough to use this tool.[12, 16, 20] The findings of this study showed that most critical care staff have constrained delirium identification skills and cannot determine most of the cases. Having a lack of skill and knowledge can undesirably hurt patient outcomes and increase the workload of the nurses. Therefore, this finding imposes the importance of conducting continuous in-service training about delirium assessment, detection, and prevention. Assessing delirium is important in the clinical field because delirium identification is the best applicable way for successful delirium treatment. It's recommended to carry on educational intervention and hands-on practice to increase the knowledge of the nurses about delirium. Additionally, establish a structured mandatory course about ICU delirium for all critical care nurses.[21]

Limitations

There are several limitations in this study, mainly to do with sample size and setting. Firstly, the use of convenience sampling (n = 105) is limiting, and the fact that this study was carried out in one institution limits the generalization of the result to the general population. Based on the limitation of the study, the researcher recommends conducting this study in a different institutional setting and to consider large sample size. Future research should focus on barriers, risks and coping techniques nurses can use in handling delirious patients.

5. Conclusion

The study findings illustrate that most of the staff nurses have previous training regarding delirium. However, there are gaps in delirium assessment, perception, and knowledge in ICU. Therefore, appropriate education is required to increase delirium identification, skill, and knowledge including healthcare workers.

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Conflicts of Interest Disclosure

The authors state that they have no conflict of interest.

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