Nursing Knowledge and Practices Regarding Delirium as an Under-Recognized Syndrome in Intensive Care Units (ICU psychosis)

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Abstract

Background: Delirium is an acute and fluctuating change in mental status that characterized by marked disturbance of attention, with associated deficits in memory and orientation, disorganized thinking, perceptual disturbance, anxiety, sleep problems, agitation and motor unrest. **The aim** of this study was to assess the nurses' knowledge and practices regarding to delirium of critically ill patients in ICU. **Design:** A descriptive design was used**. Subjects:** A sample of convenience 64 critical care nurses who were currently available at morning shifts working was recruited for this study. **Tool:** Delirium awareness and practice in ICUs Questionnaire to measure healthcare professionals' awareness and practice related to delirium in the ICU. **Results:** The results revealed that lower significant knowledge score was observed for nurses who were not mentioned the definition of delirium and only one nurse attended training course/lecture about delirium within last year (1.6%), while 98.4% did not attend any training courses/ lecture about delirium last year. **Conclusion:** Based on this result, it was concluded that delirium was a problem that requires active interventions from the health care providers and it is under-diagnosed syndrome. **Recommendations:** Condensed training required to optimally manage the condition of delirium is needed for earlier intervention and greater interdisciplinary collaboration and more involvement of psychiatric services are needed.

Key words: Delirium, nursing, intensive care unit (ICU), ICU psychosis, psychosis psychiatric emergency

Introduction

Delirium is one of the most prevalent neuro psychiatric syndromes in the hospital context and is associated with poor prognosis, since it can progress to critical conditions with (stupor, coma) and consequently to death if the under lying causes remains untreated. Patients who are critically ill often develop a variety of psychiatric symptoms, which require assessment and treatment. Patients with in-hospital delirium had clinically significant depressive symptoms after discharge from the hospital and a statistically significant association between in-hospital delirium and subsequent general anxiety symptoms **(APA, 2016, and Bento, Marques, & Sousa, 2018).**

Delirium in the ICU was, until recently, referred to as "ICU syndrome" and can be interchangeably with ICU psychosis and acute brain failure to describe a cluster of psychiatric symptoms that are unique to the ICU environment **(Roshdi & Sabri 2016,**

kiran, Madhuri & Kotturi, 2015, kallenbach & Amado, 2017, and Fan, Guo, li & Zhu, 2012).

Delirium is a transient organic mental syndrome generally characterized by sudden onset of cognitive disturbances altered level of consciousness, impaired attention, increased or decreased psychomotor activity or irregular sleep- wake cycle and also reversed, common in both hospitalized and community- dwelling patients. It may present with rapid mood changes, agitation, restlessness, and/or hallucinations, or lethargy and sluggishness **(Ozsaban & Acaroglue, 2016, Mansour, Farhan, Othman & Yacoub, 2010, Boot, 2012 and Sharma, Malhotra, Grovers &Jindal, 2012)**. Although delirium causes long-term suffering, it has remained low priority compared to more life- threatening issues in ICU and it is a frequent complication in ICUs. It may occur in about 80% of the admitted patients and 66% of cases may be under diagnosed (Bento, Marques & Sousa, 2018).

Despite delirium being extremely common, it often goes unrecognized and failure to diagnose delirium. Not only increases morbidity and mortality rates, but is also a source of distress to caregivers and the medical team **(Jayaswal, Sampath, Soohinda & Dutta, 2019)**. Diagnosis of delirium in ICU might be unrecognized due to poor knowledge of delirium by medical staff, inadequate bedside assessment, few direct monitors of the central nervous system, and impairment of verbal contact due to need ventilation and frequently either completely missed or misinterpreted as dementia or depression by nurses as well as **physicians (Ozsaban & Acaroglu 2016, and Kallenbach & Amado, 2017).**

Critical care nurses are in the front line position to detect and monitor delirium because they provide around – the – clock care for the patient; they are key resources for identifying early changes in the patient's mental status in the ICU setting **(Faught, 2014).**

Patients with delirium present many risk factors, which must be taken into consideration, these factors such as dopamine excess or acetyl choline deficiency, sleep deprivation, sepsis, ageing, and certain pharmacological agents and history of dementia, stroke, epilepsy, malnutrition, anemia, renal, cardiac, liver diseases, hypoxia, and alcohol abuse in previous month **(Collet, Thomsen, & Egerod, 2018) and Faria & Moreno, 2013).**

Despite the known risk factors and outcomes of delirium, it is not well managed because a variety of reasons including poor diagnosis, attitude culture and resources, in addition, nurses in ICU receive little training in mental health, Therefore, nurses and physicians often rely on their personal experience in which there is lacking of studies that describe actual practice **(Weare, Green, Olasoji, & Plummer, 2019, and Burge et al, 2018).**

The attention paid to delirium in the intensive care environment is recent, and therefore, data are still scarce. However, the medical records of critical care units at Menoufia university hospital didn't have statistical data about Delirium ICUs. These data are important to clinical practice because they huge light the needs to take preventive measures. So, this study aimed at assesses the nurses' knowledge and practices related to delirium of critically ill patients in ICU.

Significance of the study

Delirium was regarded as a psychiatric and medical emergency. It has the same morbidity and mortality as sepsis and myocardial infarction **(Burge et al., 2018)**

Delirium is present in as many as 60-80% of mechanically ventilated patients and 25-80%of non-mechanically patients **(Lafi & Salem, 2018 and Elliott, 2014**).

Delirium poses a serious human and financial burden because of risk of morbidity, prolonged hospitalization, more nursing observation, and resultant decline in quality of care and increase morality and also, increased long-term conative impairment and higher medical expenditures. The field of delirium is hampered by poor detection and there is a paucity of published data on how nurses detect and manage delirium. Nurses, who spend more time at the bedside than physicians, play a crucial role in the recognition of delirium. Because nurses have continuous contact with patients, they can better observe fluctuations in attentions, level of consciousness, and cognitive functioning. Psychiatric nurse is taking an important role in delirium education and clinical researches for the broader inter disciplinary team.

Aim of the study:

To assess the nurses' knowledge and practices regarding to delirium of critically ill patients in ICU.

Research questions:

1-What is the nurses' knowledge levels regarding delirium?
2- What are the nurses' practices regarding delirium?

Subjects and Method

Research Design:

A descriptive design was used

Setting:

The study was conducted at intensive care units affiliated to Menoufia university Hospital, Egypt. These ICUs were cardiac, chest, neurological, hepatic, medical and liver ICUs

Subjects:

A sample of convenience of 64 critical care nurses who were currently available morning shifts working, were recruited for this study for at least one-month experience in the ICUs, with bachelor's and diploma degrees in nursing, who agreed to participate in the study, were enrolled using convenience sampling. ICU is a busy and stressful environment.

Tool of data collection:

Delirium awareness and practice in ICUs Questionnaire. It is a semi structured self-reported questionnaire which developed by **Ely et al (2004)** was adopted in this study. The questionnaire was designed to measure healthcare professionals' awareness and practice related to delirium in the ICU. The questionnaire is comprised of demographic data including specialty of nurses, years of practice in the ICU and the rate of ICU patients experiencing delirium in their practice (<50%, ≥50%).

The questionnaire also included 12 questions addressing staff opinions regarding the significance of delirium, staff training and knowledge of delirium and its treatment. Except for two-five-point Likert scale questions addressing the importance of delirium and staff opinions regarding risk factors associated

with it, all other questions are multiple-choice or yes/no-type questions addressing several other aspects of delirium including routine screening and protocol for its management, medical complications, and availability of literature that supports its regular screening and medications of choice. Although the majority of the above questions reflect opinions and attitudes towards the importance of delirium and the choice of its treatment, the answer to each of those questions can clearly be classified as correct or incorrect. Therefore, the above questions can also be used to measure nurses' knowledge and awareness about delirium and its treatment.

Scoring:

The questionnaire contained, items related to the nurses' demographic criteria as well as 8 nurses' knowledge assessment items each was three points Liker scale (0 – 2) as (0) for both incorrect answer/ don't know, (1) for correct and incomplete answer, and (2) for correct and complete answer. These items were as follow; definition of delirium, number of mechanical ventilated patients, number of adult ventilated patients experience delirium, Delirium is imp.in outcome of critically young age patients as well as critically old age, Extend of delirium as a problem in ICU, Delirium high risk factors, the most serious complications of delirium, and medication of choice for treatment of delirium. The questionnaire was evaluated giving a score of 0 -16. The total score of each nurse was categorized arbitrary into "poor knowledge" when the nurse achieved less than or equal < 30% of the total score , "moderate knowledge" was considered when the nurse achieved 30% -60 % the total score, and "good knowledge" when the nurse achieved more than 60 % of the total score.

Accordingly, if the total knowledge score of a nurse was "0 – 5", she was classified as had poor knowledge, if the total knowledge score of a nurse was "11 – 16", she was classified as had good knowledge.

Validity and reliability of the questionnaire

Original authors (Ely et al.2004) of the questionnaire reported a content validity through a panel of multidisciplinary experts in the field. Furthermore, a panel of psychometrics experts conducted further testing of question format, structure and validity of the questionnaire (Patel et al. 2009). The questionnaire was translated from English to Arabic then back translation was done to English to ensure translation accuracy by the researcher. The validity of the Arabic translated questionnaire was done by three blinding experts (two Professors in Psychiatrics Nursing and one expert has doctorate degree in Critical care nursing) who revised the questionnaire for content accuracy and internal validity. Also, professors were asked to judge the items for completeness and clarity (content validity). Suggestions were incorporated into the questionnaire. The Reliability was estimated among 10 participants by using test retest method with two weeks apart between them. Then Cronbach's alpha was calculated between the two scores, and it was 0.85 which indicates that the questionnaire is reliable to detect the objectives of the study. A subset of eight questions that used for measuring a delirium awareness score of the questionnaire, were subjected to reliability analysis which produced Cronbach's alpha=0.79 which indicated good internal consistency

Field of work

Administrative approval: Before starting the study, an

administrative approval was obtained from director of university hospital and directors of intensive care units after explanation of the purpose of the study.

Data were collected from intensive care units at Menoufia University Hospital over a period of 2 months from May to June 2020.The researcher collected the data during the morning shift at two days /week from 10 AM to 12 PM with approximately 4-5 nurses in each day.

Pilot Study

A pilot study was carried out on 10% of nurses representing the study sample to test the feasibility and clarity of the used tool; modifications were done based on the results. The sample of the pilot study was included in the final study because no modifications were done in the study tool.

Ethical considerations

Prior to the initial interview, the researcher introduced herself to nurses and explained the purpose and nature of the study, and then an informed oral consent was obtained from participants who accept to participate in the study. The researcher emphasized that participation in the study is entirely voluntary and withdrawal from the study can be done at any time without a rational; anonymity and confidentiality were assured through coding the data.

Statistical analysis

Data were analyzed by using SPSS (Statistical Package for Social Science) statistical package version 21(Release 21.0.0.0; IBM, Armonk, New York, USA). Graphics were done using Excel program. Quantitative data were presented by mean (X) and standard deviation (SD) in case of normal distributed data, and median (interquartile range; IQR) in case of non-parametric data. It was analyzed using student t- test/ or Mann–Whitney-test for comparison between two means, or the one-way ANOVA/Kruskal–Wallis test for comparison between more than two means. Qualitative data were presented in the form of frequency distribution tables, number and percentage. It was analyzed by chi-square (χ^2) test. However, if an expected value of any cell in the table was less than 5, Fisher Exact test was used Level of significance was set as P value <0.05 for all significant tests.

Results

Only 64 nurses out of 78 agreed to participate in this study, and completed the questionnaire, with a response rate of 82.1%.

Table 1showed that majority of the studied nurses were females (73.4%), had nursing diploma (54.7%), with Mean years of experience was 6.3±2.1, with range from 0.3 to 21 years. Regarding number of critical patients /month in ICU, approximately two thirds of nurses (57.8%) mentioned ≤ 40 critical patients / month, of them more than half (51.6%) were mechanically ventilated. Unfortunately, only one nurse attended training course/lecture about delirium within last year (1.6%), while 98.4% did not attend any training courses/ lecture about delirium last year.

The mean total score of studied nurses knowledge of delirium was 46 ± 12.1 with a range of 15 -80, and a median (IQR) of 43 (39 – 56). Lower significant knowledge was observed for participants who were not mentioned the definition of delirium (mean± SD = 40.7±6.7 vs 49.9 ±13.6), and median (IQR)= 39 (39–42) vs. 56 (42–59) for

others; p = 0.002). Moreover, participants manage > 40 critical patient, had significantly better knowledge about delirium than those manage ≤ 40 critical patients in average per month (mean± SD = 51.4±10.8 vs. 42.1 ±11.5), and median (IQR)= 56(43-59) vs. 41(35-51) respectively; p = 0.002).

Table 2 highlighted knowledge and attitude items about delirium among studied nurses distributed by their mention of definition of delirium . More than three quarters of studied nurses (>75%) mentioned that delirium is a significant /serious problem at ICUs, delirium is important in outcome of critically young age or old age patients. However, only 6.2% of them mentioned that delirium is largely preventable. Concerning knowledge of important risk factors for developing delirium, more than quarter of participants mentioned : shock , hypoxemia, age, heart failure , sepsis, liver disease, kidney disease, primary CNS disorders, baseline dementia, anemia, Acute Respiratory Distress Syndrome (ARDS), and administration of sedatives/ analgesics.

Regarding knowledge of the most serious complications of delirium: more than a quarter of participants mentioned injury and bleeding, disconnection of mechanical ventilation, disconnection of equipment, refuse medications, stroke, and agitation. Concerning nurses' knowledge about medication of choice for treatment of delirium, unfortunately, more than half of nurses mentioned that they don't know (53.1%), 31.3% of them mentioned sedatives, and 15.6% mentioned antipsychotics. These results reflect the low level of knowledge about medication of choice for treatment of delirium.

Concerning Nurses' attitude regarding delirium, the group mentioned the definition of delirium had significantly higher proportion of respondents who agreed that delirium is underdiagnosed, is a problem that requires active intervention, is a 'normal' part of ICU hospitalization, is largely preventable, Delirium in ICU is associated with long-term neuropsychiatric deficits.

Fig.1 showed that more than two thirds of participants had moderate knowledge (6-10) about delirium (64.1%), less than one fifth had either good knowledge(11-16) (18.7%) or poor knowledge (0 -5) (17.2%).

Fig.2 showed that the majority of subjects responded that delirium is under diagnosed syndrome.

Table 3 displayed the practice items regarding delirium, distributed by descriptive statistics of total score of knowledge about delirium. Participants checking routinely patients at ICU for delirium, had better mean knowledge score about delirium than other group who not checking, but this difference was insignificant statistically [47.1±12.8, median (IQR) = 50(37-56) vs. 43.7±10.1, 39 (39 – 49); p = 0.28]. More than half of them perform this delirium checking at admission only (51.2%), and one third of them perform it daily only (30.1%).

Participants who consulted a psychiatrist, had significantly better knowledge about delirium than those who did not consult a psychiatrist (mean± SD = 46.8±11.9 vs. 36.8 ±11.2), and median (IQR)= 44(39-56) vs. 42(25-46) respectively; p = 0.04).Also those who consulted psychiatrist three times had higher significant knowledge score than those who consulted psychiatrist twice times (44.7±4.6,42(42-44) vs. (25±0.00,25(25-25),p=0.01).

Table 1: Socio-demographic and work characteristics of the studied nurses, distributed by descriptive statistics of total score of knowledge about delirium (N=64)

Nurses characteristics	No	%	Knowledge total score		P value
			Mean ± SD	Median (IQR)	
Total participants	64	100	46 ± 12.1	43 (39 – 56)	
Definition of delirium:					
Mentioned	27	42.2	49.9±13.6	56(42-59)	0.002
Not mentioned	37	57.8	40.6±6.7	39(39 -42)	
Gender:	47	73.4	46.9 ± 12.4	46 (39 – 56)	
Female	17	26.6	43.4±11.3	39 (39 -54)	0.31
Male					
Education					
Nurse- Bachelor	29	45.3	47.4±13	44 (39 -56)	0.41
Nurse Diploma	35	54.7	44.8±11.3	43 (39 – 56)	
Mean years of experience: Mean ± SD	6.3 ± 2.1 Years		0.3-21		
No. Of critical patients seen per month in ICU:					
<= 40 patients/m.	37	57.8	42.1±11.5	41(35-51)	0.002 Sig.
>40 patients/m.	27	42.2	51.4±10.8	56(43-59)	
Percent of critical patients who are mechanically ventilated:		51.6	.5±14.1	(34-59)	'4
<=30 %					
>30 %	31	48.4	45.5±9.8	43(39-52)	
Attendance of training course/ lecture about delirium within last year:					
Yes	1	1.6	46	46(46-46)	
No	63	98.4	46±12.2	43(39-56)	1.0 NS
Total	**64**	**100**			

NB: Total knowledge score about delirium was ranged 15 – 80.

Table 2: Knowledge and attitude items about delirium among the studied nurses distributed by their mention of definition of delirium (N=64)

| Variables	Total N=64 %	Delirium definition		P value
		Not mentioned N= 27 %	Mentioned N= 37 %	
No. of adult ventilated patients experience delirium:				0.31 NS
≤ 25% patients	67.2	59.3	73	
> 25% patients	32.8	40.7	27	
Extend of delirium as a problem in ICU:				
Insignificant	17.2	0	29.7	0.003
Significant	59.4	63	56.8	HS
Serious	23.4	37	13.5	
Delirium is important in outcome of critically young age patients: Yes	98.4	100	97.3	
No	1.6	0	2.7	0.000 HS
Delirium is important in outcome of critically old age patients: Yes	98.4	100	97.3	
No	1.6	0	2.7	0.000 HS
Nurses' attitude regarding delirium (agree/strongly agree) % :				
Delirium is under-diagnosed syndrome Yes	93.8	85.2	100	0.006HS
Delirium is a problem that requires active intervention Yes	93.8	85.2	100	0.006HS
Delirium is a 'normal' part of ICU hospitalization	28.1	11.1	40.5	0.02 Sig.
Delirium is largely preventable	6.2	0	10.8	0.04 Sig.
Delirium in ICU is associated with long-term neuropsychiatric deficits	10	8.1	14.8	0.01 Sig.
We over sedate most of our patients in the ICU	26.6	18.5	32.4	0.04 Sig.
Delirium impairs weaning form ventilator	40.6	18.5	56.7	0.002HS
Nurses' Knowledge about Delirium high risk factors from nurses' point of view (Important/Very important) (%)				
Sepsis	34.3	3.7	56.7	0.000HS
Acute Respiratory Distress Syndrome (ARDS)	26.6	7.4	40.5	0.008HS
Postoperative Status	32.8	7.4	51.3	0.000HS
Primary CNS disorders	29.7	7.4	45.9	0.002HS
Baseline dementia	29.7	14.8	40.5	0.03 Sig.
Administration of sedatives/analgesics	25	18.5	29.7	0.44NS
Liver disease	34.4	7.4	54	0.000HS
Kidney disease	28.1	14.8	37.8	0.01 Sig.
Heart failure	37.5	18.5	51.3	0.000HS
Age	37.5	14.8	54	0.001HS
Hypoxemia	48.5	29.6	62.1	0.002HS
Anemia	29.7	7.4	45.9	0.002HS
Shock	51.2	14.8	64.8	0.000HS
Nurses' Knowledge of the most serious complications of delirium (%)				
Injury and bleeding	37.5	14.8	54.1	0.001HS
Suicide	17.2	14.8	18.9	0.74NS
Disconnection of mechanical ventilation	37.5	18.5	51.4	0.009 HS
Disconnection of equipment	34.4	11.1	51.4	0.001HS
Refuse medications	39.1	18.5	54.1	0.005HS
Trouble breathing dysrhythmia	18.8	14.8	21.6	0.53 NS
Stroke	32.8	14.8	45.9	0.01 sig.
Agitation	25	14.8	32.4	0.15 NS
Nurses' knowledge about medication of choice for treatment of delirium :				
Don't know	53.1	51.9	54.1	
Sedatives	31.3	37	27	0.56NS
Antipsychotics	15.6	11.1	18.9	
Current scientific research support routine monitoring of delirium at ICU				0.000
Yes	31.2	54.3±11.0	56(50-59)	
No	68.8	42.3±10.7	40(37.5 – 51.7)	
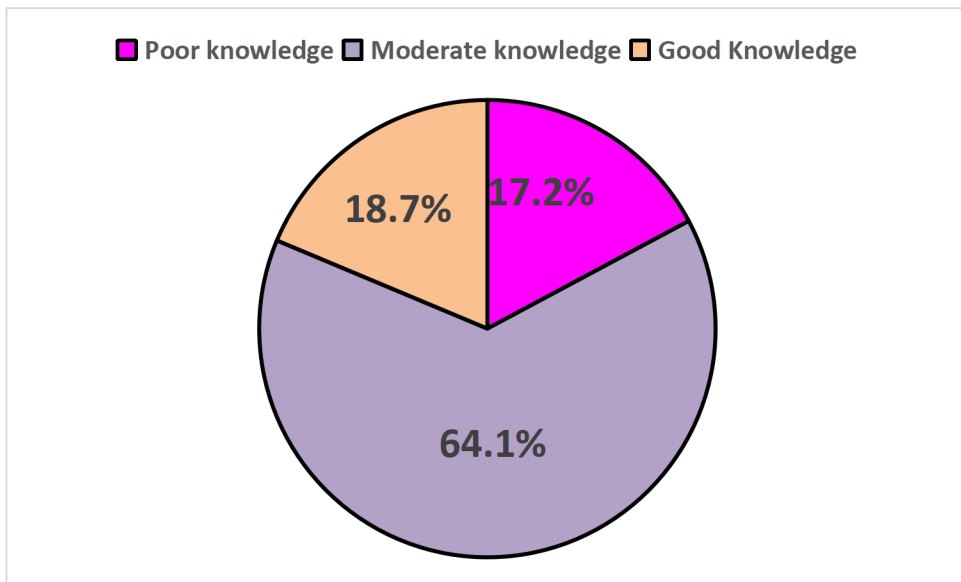
Fig.1: Groups of total score of knowledge about delirium among the studied nurses
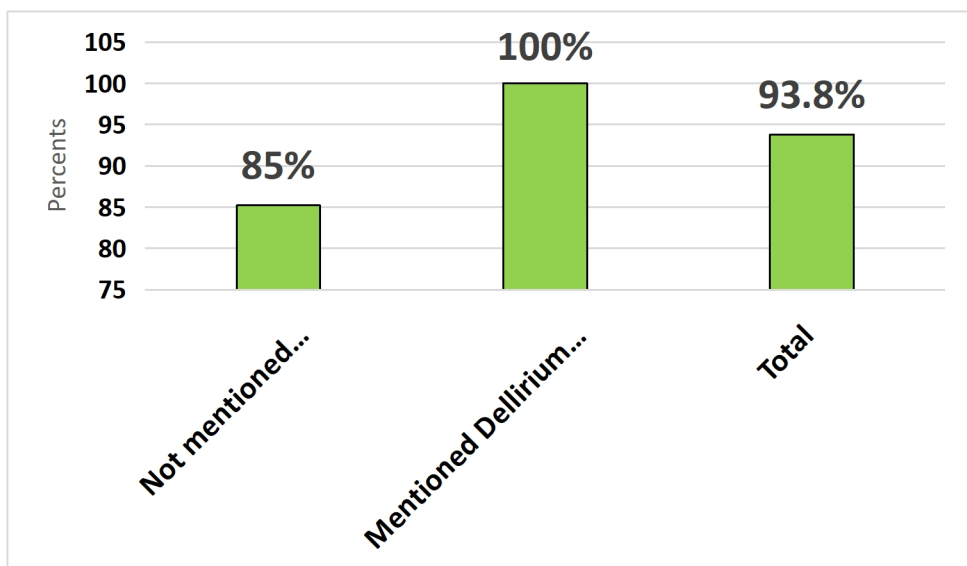

Fig.2: Participants (Yes) responses to "Delirium is under diagnosed syndrome"

Table 3: Practice items of the studied nurses, distributed by descriptive statistics of total score of knowledge about delirium (N=64)

Practice items	Total N=64 %	Delirium Knowledge total score		P value
		Mean ± SD	Median (IQR)	
Checking routinely patients at ICU for delirium				0.28
Yes	67.2	47.1±12.8	50(37-56)	
No	32.8	43.7±10.1	39(39 – 49)	
If Yes, when often? (N=43) :				
At admission only	51.2	45.7±11.9	42(41 -56)	
Daily only	30.1	44±13.8	50(29 -55)	0.07§
At discharge only	4.7	43±0.0	43(43-43)	
Others (any combination of the above)	14	59.3±5.1	56(56-66)	
If yes, is there a tool to check? (N=43)				
No	95.3	45.9±12.2	42.5(39-56)	0.63
Yes	4.7	50±0.0	50(50-50)	
Medication of choice for treatment of Delirium:				
Don't know	53.1	44.8±12.2	40.5(39-57.8)	0.61
Sedatives	31.3	46.5±10.5	47.5(41-56)	
Antipsychotics	15.6	49.1±13.1	50(40.7-56.3)	
List your typical daily dosing range/route using this medication: Wrong answer	81.2	40.5±12.8	43(39-56.7)	0.08
Incomplete answer	18.8	47.3±11.6	39(29-54.5)	
Highest dose used last 24 hours: Wrong answer	92.2	46.3±12.5	44(39-56)	0.03*
Incomplete answer	7.8	42± 9.2	41(34-43)	
Seen adverse reactions associated with treatment of delirium:				
don't know	98.4	46±12.2	43(39-56)	1.0
know	1.6	46.0±0.0	46(46-46)	
Follow protocol in managing delirium.				
N=8 No	87.5	45±11.4	42(39-56)	0.08
Yes	12.5	53±12.1	55(47-59)	
Consultation with psychiatric services regarding delirium? N=5				
No	92.2	36.8±11.2	32(25-46)	0.04*
Yes	7.8	46.8±12.6	44(34-56)	
If yes, How many times? (N=5)				
Three times	4.7	44.7±4.6	42(42-42)	0.01*
Twice	3.1	25±0.0	25(25-25)	
If yes, did psychiatric consultation help you in managing your patient?(N=5)				
No	92.2	36.8±11.2	42(25-46)	0.07
Yes	7.8	46.8±11.9	44(39-56)	

*Mann Witney test of significant (non-parametric test). § Kruskal Wallis test

Discussion

Delirium is an acute, transient, and usually reversible change in mental status, which has potentially life- threatening consequences for patients **(Fought, 2014).**

In the current study, more half of the nurses (54.7%) had diploma degree, while (45.3%) earned bachelor degree. This result was contrasted with **Lafi & Salem (2018)** who studied "Nurses' perception to words delirium in the intensive care unit", they reported that more than three- quarters of nurses (76.4%) had baccalaureate degree while 23.6% had diplomas.

On the same line, **Monfared, Soodmand & Ghasemzodeh (2017)** who studied "Knowledge and attitude of Intensive care units nurses towards Delirium working at Guilan University of Medical Sciences in 2015", they found that 94.6% of the nurses had a bachelor's degree. Also, Mansour, **Mansour, Farhan, Othman & Yacoub (2010)** who studied "knowledge and nursing practice of critical care nurses caring for patients with delirium in intensive care units in Jordan", they stated that only 7% had a master' degree, and others had a bachelor's degree and **Sampaio & Sequeira (2014)** reported that mostly 71.90% had just a university nursing degree and less than one postgraduate nursing degree.

In the present study, the mean work year of experience was 6.3 ± 2.1 years. On the same line, **Monfared, Soodmand & Ghasemzodeh (2017)** who studied "Knowledge and attitude of Intensive care units nurses towards Delirium working at Guilan University of Medical Sciences in 2015", they found that the mean   work experience in intensive care units was 6.63 ± 5.24 years**.** But **Mansour, Farhan, Othman & Yacoub (2010)** who studied "knowledge and nursing practice of critical care

nurses caring for patients with delirium in intensive care units in Jordan", they stated that years of experience ranged from 1 to 21 years. It clarifies that studied nurses had 11-16 years of experience in working with critically ill patients, while (8%) had 21- 20 years' experience.

The present study had the potentials to shed some lights on items that might explain the problem of under diagnosing delirium by intensive care nurses. As regarding the delirium knowledge, it is not surprising that intensive care nurses are under-recognized and under- screening delirium when they don't have the adequate knowledge and perception about delirium and its risk factors and adverse health outcomes **(Selim & Ely, 2016).** The present results revealed that higher knowledge total score was significantly associated with the mention of delirium definition. This result is relevant to the finding that the majority of studied nurses were not introduced to any workshops, lectures, or reading articles related to delirium. These findings are evident throughout the inaccuracy of the nurses' responses in relation to delirium risk factors, complications and its management.

In the present study, the mean knowledge total score of delirium was 46 ± 12.1 and the majority of nurses had moderate knowledge (64.1) that may due to lack of educational programs for nurses regarding delirium. On the same line, **Selim & Ely (2016)** who studied "Delirium the under recognized syndrome: survey of healthcare professionals' awareness and practice in the intensive care units", they illustrated that lower significant knowledge was observed who were not provided delirium definition for sample and ranged from 15 to 80. In the same context, the total score of delirium awareness ranged from 22- 96, with mean

± SD was 46.4 ± 14.0 and median (IQR) = 67 (56 – 74). The current finding was supported by **Monfared, Soodmand & Ghasemzodeh (2017)** who studied "Knowledge and attitude of Intensive care units nurses towards Delirium working at Guilan University of Medical Sciences in 2015", they found that the majority of nurses (68.3%) had a moderate level of knowledge about delirium, and 24.6% of them had a good level of knowledge in that regard.

As regards the attendance training course or lecture about delirium, the current study revealed that the all nurses except one never receive education about it. Study of **Lafi & Salem (2018)** reported that the majority of nurses (60%) had not received education on delirium assessment with the potential impact on patient's mortality. Participants in **Mansour, Farhan, Othman, & Yacoub (2010)** reported that nurses did not feel adequately trained and lacked ability to competently screen for delirium. They felt that they were not adequately trained for performing cognitive assessments and lack of fundamental knowledge may lead to lack of competency in managing ICU delirium.

However, education is vital for prevention and recognition but crucially a diagnosis of delirium needed to be made, and documented in the medical history **(Burge et al., 018)** and the difficulty in understanding the complexity of this condition may be related to the lack of knowledge about it and lead to poor delirium management **(Bento, Marquco, & Sousa, 2018)**. The study of **El Feky & Ali (2013)** who studied "Nurses' practices and perception of delirium in the intensive care units of a selected university hospitals in Egypt" indicates that 100% of the studied nurses never receive training about assessing and handling delirium; and the nurses

revealed unavailability of delirium assessment sheet in the ICU. In the same context, forty- two (75%) of the respondents reported having received no prior delirium- related education **(Baker, Taggart, Nivens & Tillman 2015)**. On the other hand, **Mansour, Farhan, Othman, & Yacoub (2010)** stated that approximately 10.0% (n = 23) of nurses reported receiving special education in critical care nursing. Only 1 in 22 delirious patients- were recognized by ICU staff. The explanation could be due to staff training lacking in recognition of delirium **(Xing et al., 2017).**

In this study, about the third of the total studied sample reported the delirium high risk factors, and the rest of the sample failed to report that. This is due to poor nurses' knowledge related to delirium. **Selim & Ely (2016)** who studied "Delirium the under recognized syndrome: survey of healthcare professionals' awareness and practice in the intensive care units", they illustrated risk factors as reported by participants as sepsis, ARDS, primary CNS disease, postoperative status, heart failure, kidney disease, base line dementia and hypoxemia. **Jayaswal, Sampath, Soohinda & Dutta (2019)** who studied "Delirium in medical intensive care units: Incidence, subtypes, risk factors, and outcome", they found that hyperlipidemia, raised serum creatinine, anemia, hypoxia, mechanical ventilation, fever and using of benzodiazepines were significantly associated with the occurrence of delirium and also death during ICU stay was greater in the delirious patients (9.09%). In the same context, **Roshdy & Sabri (2016)** who studied "Predictors for postoperative delirium after vascular surgery" and **Xing (2017) et al.,** who studied "Perceptions attitudes and current practices regard delirium in china", they found that advanced age, diabetes

mellitus and renal impairment support the developing delirium**.**

In the current study, the most serious complications were injury, bleeding, disconnection from mechanical ventilation, and refuse medications. These findings were supported by **Özsaban &Acaroglu, (2016)** who studied "Delirium assessment in intensive care units: practices and perceptions of Turkish nurses", who found that the main serious complications highlighted by the participants included injury, extubation and refusal of medications**.** However, nurses did not give any account on the serious complications of delirium such as increased rate of mortality, prolonged ICU and hospital stay, higher costs of care **(Selim & Ely 2016).**

In the present study, concerning nurses' knowledge about medication of choice for treatment of delirium, the half of the sample didn't know what the medication of choice is. That may due to lack of educational programs for nurses regarding delirium **Lafi & Salem (2018)** who studied "Nurses' perception to words delirium in the intensive care unit", they reported that antipsychotics and sedatives are the most common medication of choice.

However, almost of current studied sample agreed that delirium was a problem that requires active intervention, also it was an under- diagnosed syndrome (93.8%) and also quarter of the sample agreed that delirium was a normal part of ICU. Tolerating delirium as a normal part of ICU would add to the under diagnosis associated with delirium.

In the same context, more than two- thirds of the participants agreed that delirium was underdiagnosed; a normal part of ICU hospitalization, largely preventable, important for outcome of

both young and old critical care patients, may impair weaning from the ventilator and is affected by postoperative status **(Sharma, Malhotra, Grover & Jindal, 2012 and Shoeib, Ismael, Abdelhamid, & Rodwan, 2012).**

Although high prevalence of delirium, it is often under- recognized in 66-84% of critically ill patients and may be difficult to assess due to severity of illness **(El Feky & Ali, 2013).** **Xing et al. (2017**) revealed that delirium in the critical care unit may incorrectly be perceived or often goes unrecognized by healthcare providers as a "normal" reaction by patients to a potentially life-threatening situation, or incorrectly attributed to dementia, depression, or ICU syndrome. It clarified that all the studied nurses (100%) strongly agreed that: delirium was an under diagnosed problem in the ICU; it is a common response to the ICU environment; and it is a problem that requires active intervention. As well, more than two thirds (67.5%) of the studied nurses agreed that delirium is challenging to assess in intensive care unit patients **(El Feky & Ali, 2013).** In the same context, **Xie & xiang- ming (2009)** who studied "Importance of recognizing and managing delirium in intensive care unit", they illustrated that 78% of sample recognized delirium being under- diagnosed in ICU and 81% agreed that this problem needed active intervention.

As found a baseline screening of patients for delirium is limited. That is due to, as in the present study, no specific assessment tool used by the nurses. As well as, no used protocol for management and a need for liaison psychiatric services, but intensive care nurses rely on their clinical experience in detecting delirium. **El Feky & Ali (2013)** reported that there are many barriers to the recognition of delirium have been hypothesized and

baseline assessment of ICU patients with delirium is limited. These results indicate a pressing need for the ICU professionals to update their knowledge of delirium and familiarize themselves with theories, guidelines and research advances of delirium.

However, nurses in the studies of **Collet, Thomsen, & Egerod (2018)** who studied "Nurses' and physicians' approaches to delirium management in the intensive care unit: A focus group investigation" and **Sampaio & Sequeira (2014)** who studied "Nurses' knowledge and practices in cases of acute and chronic confusion: a questionnaire survey ", they revealed unavailability of delirium assessment sheet in the ICU and there are lacking in describe actual practice in which nurses rely on their personal experience in assessing and managing delirium. On the same line, the studies showed that, without the use of a screening instrument, more than 60% of patients with delirium are missed by ICU nurses and not sufficiently treated if they are not recognized **(Aparanji et al., 2018 and Lalithapriya, Kandasamy, & Chitra, 2019).** According to **Christensen (2014)** who studied "An exploratory study of staff nurses' knowledge of delirium in the medical ICU: An Asian perspective", he found that health care professionals did not use any standardized tools for screening ICU delirium and they relied on their clinical Judgment and 100% of them reported that they don't follow management protocol.

In the current study, concerning liaison psychiatric service, 92.2% of nurses not call psychiatric consultation. On the same line, **Wells (2012)** who studied "Why don't intensive care nurses perform routine delirium assessment?. A discussion of the literature" and **Özsaban & Acaroglu (2016)** who studied "Delirium assessment in intensive care units: practices and perceptions of Turkish nurses", they revealed that psychiatric consult was used rarely to evaluate the presence of delirium (67.9%).

Finally, most of nurses considered that delirium is a significant problem in ICU, but lack knowledge on delirium and monitor this condition was poorly done.

Conclusion

It was concluded that delirium was a problem that requires active interventions from the health care providers and early especially nursing staff where the majority of sample reported that the delirium was under diagnosed health problems. As regarding to nurses practices towards delirium, most of the studied nurses never assessed the critically delirious patients in the ICUs and this may due to unavailability of delirium assessment tools and they depend on their personal experience and communication with the patient.

Recommendations

- raditionally, psychiatric nurses have contributed to delirium study, but greater interdisciplinary collaboration and more involvement of psychiatric services are needed.

- ondensed Training required to optimally manage the condition of delirium is needed for earlier intervention which can positively influence outcome.

- ational guidelines and a protocol of care are needed for diagnosis, prevention, and early nursing interventions of delirium.

References

American psychiatric Association (2016). Diagnostic and statistical manual of mental disorders (4th .version). Washington, DC; American psychiatric publishing, chapter. 21pp: 1502- 1016.

Baker, N.D., Taggart HM, Nivens, A., Tillman, P. (2015). Delirium: why are nurses confused?. MEDSURG nursing. 24(1):15.

Bento MS, Marques RM, Sousa PP. (2018). Delirium: nursing interventions directed to the hospitalized adult patient–a bibliographic review. Enfermería Global. Oct 1; 17(4):674-88.

Boot, R. Delirium: a review of the nurse's role in the intensive care unit (2012). Intensive and Critical Care Nursing. Jun 1;28(3):185-9.

Burge, D., Kent, W., Verdon, J., Voogt, S., Haines, H.M. (2018). Nurse practitioners are well placed to lead in the effective management of delirium. Australian Journal of Advanced Nursing, Aust. J. Adv. Nurs, 82(1); 66-73.

Christensen, M. (2014). An exploratory study of staff nurses' knowledge of delirium in the medical ICU: An Asian perspective. Intensive and critical care nursing. Feb 1;30(1):54-60.

Collet, M., Thomsen, T. & Egerod, I. (2018). Nurses' and physicians' approaches to delirium management in the intensive care unit: A focus group investigation. Australian Critical Care 32(4) 1-7.

Elfeky, H.A. &Ali, F.S. (2013). Nurses' practices and perception of delirium in the intensive care units of a selected university hospital in Egypt. Journal of Education and Practice. Oct 1; 4(19):61-70.

Elliott, S.R. (2014). ICU delirium: a survey into nursing and medical staff knowledge of current practices and perceived barriers towards ICU delirium in the intensive care unit. Intensive and Critical Care Nursing. Dec 1; 30(6):333-8.

Ely, E.W, Stephens, R., Jackson, J, Thomason, J, Truman, B, Gordon, S, Dittus, R.S &Bernard, G (2004). Current opinions regarding the importance, diagnosis, and management of delirium in the intensive care unit: a survey of 912 healthcare professionals. Critical Care.

Fan, Y, Guo, Y, Li, Q, & Zhu, X. (2012). A review: nursing of intensive care unit delirium. Journal of Neuroscience Nursing. Dec 1; 44(6):307-16.

Faria, R.D., Moreno, R.P. (2013). Delirium in intensive care: an under-diagnosed reality. Revista Brasileira de terapia intensiva. Jun; 25(2):137-47.

Faught, D.D. (2014). Delirium: The Nurse's Role in Prevention, Diagnosis, and Treatment. Medsurg nursing. Sep 1; 23(5): 301-5.

Jayaswal, A.K, Sampath, H, Soohinda, G, & Dutta, S. (2019). Delirium in medical intensive care units: Incidence, subtypes, risk factors, and outcome. Indian Journal of Psychiatry. 61(4):352-4.

Kallenbach, T. F. Amado, L. A. (2017). Assessment of delirium in the intensive care unit. South. AFR. J. Anaesthesia and Analgesia; 23(3): 57-63.

Kiran, I., Madhuri, I., Kotturi, A.S. (2015). Delirium as a predictor of longer hospital stays in mechanically ventilated patients. International Journal of Medical Science and Public Health. Apr 1; 4(4):544-9.

Lafi, K. & Salem, A. (2018). Nurses' perception to words delirium in the intensive care unit J. Nursing and health science, 7 (20): 36-46.

Lalithapriya P, Kandasamy, N. & Chitra, F.(2019). Prevalence of ICU Delirium among Patients admitted to Intensive Care Unit. Madridge Journal of Internal and Emergency Medicine;3(2):121-124.

Lalithapriya, P. Kandasamy, N. & Chitra, F. (2019). prevalence of ICU delirium among patients admitted to intensive care unit. Madridge J. Jnt. And Emerg. Me; 3(2):121-4.

Mansour, A. Farhan, N,Othman, E, & Yacoub, M. (2010). Knowledge and nursing practice of critical care nurses caring for patients with delirium in intensive care units in Jordan, J. cont. edu. In nursing; 41 (12): 571-6.

Monfared, A., Soodmand, M., & Ghasemzadeh, G. (2017). Knowledge and attitude of Intensive care units nurses towards Delirium working at Guilan University of Medical Sciences in 2015. Preventive Care in Nursing & Midwifery Journal. Jun 10; 7(1):1-7.

Özsaban A, & Acaroglu R. (2016). Delirium assessment in intensive care units: practices and perceptions of Turkish nurses. Nursing in Critical Care. Sep;21(5):271-8.

Patel, R.P, Gambrell, M, Speroff ,T., Scott, T.A, Pun, B.T, Okahashi J, Strength, C, Pandharipande, P., Girard, T.D, Burgess, H., Dittus, R.S, Bernard, G.R & Ely, E.W (2009). Delirium and sedation in the intensive care unit: survey of behaviors and attitudes of 1384 healthcare professionals. Critical Care Medicine37,825–832.

Roshdy, H., & Sabri, Y. (2016). Predictors for postoperative delirium after vascular surgery. Egyptian Journal of Psychiatry. Jan 1;37(1):1.

Sampaio, F.M, & Sequeira, C. (2014). Nurses' knowledge and practices in cases of acute and chronic confusion: a questionnaire survey. Perspectives in psychiatric care. 51(2):98-105.

Selim, A., Kandeel, N., Elokl, M., Khater, M.S, Saleh, A.N, Bustami, R., & Ely, E.W. (2018). The validity and reliability of the Arabic version of the Confusion Assessment Method for

the Intensive Care Unit (CAM-ICU): A prospective cohort study. International journal of nursing studies. Apr 1;80:83-9.

Selim, A.A, & Ely, E.W. (2016). Delirium the under recognized syndrome: survey of healthcare professionals' awareness and practice in the intensive care units. Journal of clinical nursing. Mar; 26(5-6):813-24.

Sharma, A., Malhotra, S., Grover, S, & Jindal, S.K. (2012). Incidence, prevalence, risk factor and outcome of delirium in intensive care unit: a study from India. General hospital psychiatry. Nov 1;34(6):639-46.

Shoeib, F. Ismael, M. Abdelhamid, Z, & Rodwan, W. (2012). Relationship between intensive care unit (ICU) delirium and patient outcomes in the critical care department El-Manial university Hospital A suggested nursing intervention protocol. Unpublished master thesis faculty as nursing, Cairo university.

Weare, R., Green, C., Olasoji, M., & Plummer, V. (2019). ICU nurses feel unprepared to care for patients with mental illness: A survey of nurses' attitudes, knowledge, and skills. Intensive and Critical Care Nursing. Aug1;53:37-42. https://doi.org/10.2016/Jccn.201603.001.

Wells, L.G. (2012). Why don't intensive care nurses perform routine delirium assessment? A discussion of the literature. Australian Critical Care. Aug 1; 25(3):157-61.

Xie, Guo-hao & Xiang-ming, F. (2009). Importance of recognizing and managing delirium in intensive care unit. Chinese Journal of Traumatology (English Edition) 12.6: 370-374.

Xing, J. Yunbo, S. Jie, Y. Yuan, Z. & liu, W. (2017). Perceptions attitudes, and current practices regards delirium in china. Medicine, 96(39): 1-5.