

A Study to Assess the Knowledge among Staff Nurses Working in Various ICUs Regarding Identification and Management of ICU Delirium with a View to Develop a Protocol

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Abstract

Introduction: Patients with symptom of delirium present high rate of mortality, increase length of hospital stay, increasing the workload of ICU nurses. Nurses play key role in identification of ICU delirium and in providing quality care to patients.

Objective of Study: To assess the knowledge of ICU nurses identification and management of ICU delirium among ICUs patients.

Methods: A cross sectional survey was conducted among nurses working in various ICUs, AIIMS, New Delhi, INDIA, two- hundred subjects were selected by convenient sampling. Self report questionnaire was used for data collection.

Results: Majority (66.5%) of ICU staff were female, (28.5%) nurses were from medical surgical, (27.5%) from neuro-surgery and (25.5%) from trauma ICU. Most (37%) of nurses had 2 yr - 7yr experience in ICUs. Majority (78%) of the participants were Nursing officers. Majority (56%) were baccalaureate in nursing. Only 20% attended in-service/educational delirium program among which 60.98% had attended 2 years ago. ICU nurses had good (20%), fair (57%), and poor (23%) knowledge on ICU delirium. The knowledge score was higher among nurses working in medical surgical ICU, (13.22 ± 2.9) $p < 0.05$ and who have attended in-service/educational program on delirium within 2 years, (13.45 ± 2.34) $p < 0.05$. Staff nurses of age 30-50 years had 3.35 times good knowledge and 1.96 times fair knowledge regarding ICU delirium than nurses of age < 30 years (0.00). Senior nurses had 2.44 times good knowledge and 2.97 times fair knowledge on ICU delirium than nursing officers (0.05). Staff nurses who had attended in-service or educational program had 1.5 times good knowledge than nurses who had not attended the program on ICU delirium (0.04).

Conclusion: ICU Nurses have fair knowledge regarding identification and management of ICU delirium. In-service/educational programme is required for enhancement of knowledge among staff.

Implications: In-service training program for nurses should be plan and organized in area of assessment and management of ICU delirium among patients because a trained nurse could provide a far better service to her patients.

Keywords: ICU Nurses; Knowledge; Delirium; Identification; Management; Protocol

Introduction

Delirium is a clinical syndrome which can be caused due to an underlying disease, over consumption of alcohol, from drugs administered during treatment of a disease, withdrawal from drugs or from any number of health factors. Delirium may be difficult to diagnose without the proper establishment of the baseline mental function of a patient [1]. There are mainly three type of delirium: namely hyperactive, hypoactive, and mixed type. And among them most of the time hypoactive type of delirium is unrecognised, misdiagnosed and perceived as depression by most of non-psychiatric physician and nurses [2]. There are evidences that patients in ICU setting are at higher risk of developing delirium due to various risk factors which are associated with multi system illnesses, co-morbidities, pharmacological therapy, age etc. This lead to increase in hospital stay of ICU patient, increase number of mechanical ventilator days, and burden on care providers. And evidences also revealed that with direct and indirect measurements both delirium is undiagnosed by two-third of attending physician and nurse both. ICU nurses play a pivotal role to improve quality of patients care and outcome by early recognition of delirium, underlying causes, its risk factor and providing manageable care to the patients.

Background

Delirium occurs in 70 to 87% of those in intensive care units and in up to 83% of all patients at the end of life care [3]. Delirium is the most common cause of high rate of mortality and longer period of ICU and hospital stay for all age group individual. Those who had delirium had greater severity of illnesses with significant high sequential organ-failure assessment, SOFA and simplified acute physiology score 3 (SAPS3) scores [4]. Onset of development of delirium estimated is 2.6 ± 1.7 days, and the mean duration for the existence of delirium estimated was 3.4 ± 1.9 days. Among admitted patient in ICU, 80% of patient developed delirium and 60.4% developed complication while they were still in ICU. The duration of delirium was associated with the length of stay in ICU and in the hospital [5]. Incidence rate of delirium in India is 24.4% and the prevalence rate is 53.6% in ICU setting. While prevalence rate among mechanically ventilated is 64%. The median duration of ICU stay for development delirium is 7.9 days. The most common subtypes of delirium revealed are hypoactive type (45.33%), followed by hyperactive type (37.33%) and mixed subtype is (17.33%) of delirium. The mean age of people who are at risk of having delirium is 49.53 ± 19.27 years [6]. A study from South East Asia revealed that only 63.6% nurses positively answered question related to delirium, only 12% able to identify the signs and symptoms of delirium, 63.8% able to identify the risk factors associated with delirium [7]. Delirium is not well understood, under-recognised or managed by both medical and nursing personnel. Previous studies had examined the nurse's and physician level of knowledge regarding ICU delirium [17] concluded that the nurses had a moderate to low level of knowledge, with a mean score of 64.4. Studies also revealed that 79% medical staff had high level of knowledge whereas 67% nursing staff had high knowledge. 53% were aware about CAM-ICU tool and only 16% were aware of intensive care delirium checklist. Other recent studies examined the knowledge, attitude, perception and practices of nurses on ICU delirium [8,11-14]. These correlated that knowledge about delirium in patients in the ICU had positive and significant correlation with nursing practice. Forty four percent of nurses compared it with altered level of consciousness, 23% presence of pain, 21% improper placement of an invasive device. Delirium assessment found to be less common than sedation assessment. Thirty eight percent of them revealed intubation as a barrier factor for its assessment, 34% complexity of the tool for assessing delirium, and 13% sedation level respectively. The effect of an educational programme on nurse's knowledge regarding delirium was examined [15,16]. These showed that the scores of intervention groups were higher and the change score over time results were significant among intervention group. In context to Knowledge, perception and attitude regarding availability of screening tool by ICU nurses [12,19]. The study showed that 36% nurse's used CAM-ICU tool to assess delirium and 9% nurses seek for a psychiatric consultation. Perceived barriers to assessment included intubation (38%), complexity of the tool for assessing delirium (34%), and sedation level (13%).

Aim

The aim of this study was to assess the knowledge of ICU staff nurses regarding delirium among ICU patients and its management and to develop the protocol regarding screening of delirium in ICU patients, AIIMS, New Delhi.

Methodology

Design

A descriptive Cross-sectional survey design was used for the study.

Setting

The setting was AB8 ICU (Medical-Surgical ICU), C-2 ICU (Medical ICU), Neuro ICU-A, B, C (Neurology and Neuro-Surgery ICU), Trauma ICU- HDU, 2, 3, of AIIMS, New-Delhi tertiary health care institute of India, nurturing the excellence in all aspects of medical care, nursing care, research and education.

Ethical consideration

Ethical approval to conduct study was obtained from the ethics committee, AIIMS with reference no. IECPG-83/22.03.2017. Informed written consent was taken from the staff nurses. Confidentiality of information was provided to the subjects and their anonymity was maintained.

Participants

This study used convenient sampling, whereby 200 ICU staff nurses were enrolled. Fifty seven ICU staff nurses from Medical-Surgical unit, 72 from neuroscience unit, 71 from trauma centre. Data was collected from the ICUs staff nurses from period of August 2017 to December 2017.

Data collection

All Staff nurses who met the inclusion criteria and willing to participate in study were enrolled and briefed about the purpose of the study with details pertaining with the research, its aims, possible outcome and researcher contact, with the help of participant information sheet. Informed written consent was obtained from each staff nurses. Subject Data Sheet for demographic and selected variables were administered first. The structured knowledge questionnaire was administered to assess the knowledge among staff nurses regarding ICU delirium. It took 10 - 15 minutes to complete the questionnaire.

Content validity of the tool

Expert opinion was obtained to ensure the content validity of the tool and its appropriateness for the clinical setting. A panel of 5 anaesthesiologist, 5 psychiatrist, 5 experts from the field of nursing were invited for the readability, relevance and accuracy of the tool in the clinical setting.

Try out of tool

After confirming content validity and reliability, the tool was tried out on 10 staff nurses. The knowledge questionnaire was found feasible for collecting the required information.

Statistical analysis

All recorded data was coded and scored in the Microsoft Excel 2010 spread sheet. STATA-14.2 was used for statistical analysis. The coded excel spreadsheet was analyzed using descriptive and inferential statistics (Chi square, odds ratio, multinomial logistic regression analysis, Independent 't' test, ANOVA test, Bonferroni test) to find out frequencies, percentage, mean of demographic association and other variables under the study. Level of significance was set up as $p \leq 0.05$.

Results

Demographic variable and selected variables of staff nurses.

The Mean age of ICU nurses was 29.7 years in male (SD ± 8.19), and 34.7 in female (SD ± 9.3). Majority (66.5%) of subjects were female. Majority (78%) of subjects were predominantly nursing officers. Most of the subjects 27.5% were from neuro-surgery ICUs. Most (37%) of subjects had 2 yrs -7 yrs of experience. More than half (56%) of subjects were Baccalaureate in nursing. Only (20%) of subjects had attended any in-service programme/educational training programme on delirium.

| Demographic characteristics of the staff nurses. | | | |
|---|---|-----------------------|----------------------|
| | | Percentage (%) | Frequency (f) |
| Gender | Male | 33.5 | 67 |
| | Female | 66.5 | 133 |
| Designation | Nursing officers | 78 | 156 |
| | Senior Nursing Officers | 18 | 36 |
| | ANS | 4 | 8 |
| Current department | AB8 (Med-surgical) ICU | 20 | 40 |
| | C-2 (Medical) ICU | 8.5 | 17 |
| | Neuro (Neurology) ICU-A | 8.5 | 17 |
| | Neuro (Neuro-surgery) ICU-B | 9.5 | 19 |
| | Neuro (Neuro-surgery) ICU-C | 18 | 36 |
| | Trauma ICU-HDU | 10 | 20 |
| | Trauma ICU- II | 11.5 | 23 |
| Years of Experience: | 6 months-12 Months | 7 | 14 |
| | 1 yrs-2 yrs | 15.5 | 31 |
| | 2 yrs-7 yrs | 37 | 75 |
| | 8 yrs-13 yrs | 20 | 40 |
| | 14yrs -19 yrs | 9.5 | 19 |
| | 20yrs -25 yrs | 10.5 | 21 |
| Highest Nursing Degree | Diploma in nursing | 42 | 84 |
| | Baccalaureate in nursing | 56 | 112 |
| | Masters degree in nursing | 2 | 4 |
| Have attended delirium inservice programme/Educational training programme | No | 80 | 160 |
| | Yes | 20 | 40 |
| If yes then, | Within last six months | 12.2 | 5 |
| | In the last seven months to one year. | 12.2 | 5 |
| | Greater than one year ago but less than 2 year. | 14.62 | 6 |
| | Greater than 2 years ago | 60.98 | 24 |

Table 1: Demographic characteristics of ICU staff nurses (N=200).

Level of delirium Knowledge scores of ICU staff nurses in identification of delirium in ICUs patients.

More than a half (57%) of the ICUs staff nurses had fair knowledge regarding identification of delirium in ICUs patient.

While determining the level of delirium knowledge score and demographic characteristics, using the crude mean the staff nurses of 30-35 years of age were having 2.58 time good knowledge and 1.24 time fair knowledge than ICU staff nurses less than 30 years if age. Female had 1.59 times good knowledge and 1.8 times fair knowledge on identification and management of ICU than male staff nurses. Senior nursing officers had 1.97 time good knowledge and 3.15 time fair knowledge on ICU delirium than nursing officers. ICU nurses who had attended the delirium in-service/educational programme had 3.46 time good knowledge and 2.06 time fair knowledge regarding ICU delirium than who had not attended the programme.

| Variables of participants | Crude odds ratio and 95% CI | | |
|-------------------------------|-----------------------------|---------------------|---------------------|
| | Poor knowledge | Fair knowledge | Good knowledge |
| Age | | | |
| < 30 years | 1 | 1 | 1 |
| 30-50 years | 1 | 1.24 (0.57 - 2.74) | 2.58 (0.97 - 7.09) |
| >50 years | 1 | 1.57 (0.27 - 16.45) | 2.82 (0.29 - 37.51) |
| Gender | | | |
| Male | 1 | 1 | 1 |
| Female | 1 | 1.8 (0.83 - 3.88) | 1.59 (0.61 - 4.26) |
| Designation | | | |
| Nursing officers | 1 | 1 | 1 |
| Senior nursing officers | 1 | 3.15 (1 - 13.25) | 1.97 (0.42 - 10.33) |
| ANS | 1 | 1.94 (0.18 - 98.42) | 3.9 (0.3 - 213.01) |
| Highest Nursing Degree | | | |
| Diploma in nursing | 1 | 1 | 1 |
| Baccalaureate in nursing | 1 | 1.59 (0.75 - 3.36) | 1.35 (0.53 - 3.46) |
| Delirium programme | | | |
| No | 1 | 1 | 1 |
| Yes | 1 | 2.06 (0.7 - 7.44) | 3.46 (1 - 14) |

Table 2: Association between the level of delirium knowledge scores and demographic characteristics (N = 200).

Association between knowledge score and demographic characteristics of staff nurses.

There was statistically significant association between knowledge score and current department (p = 0.023). AB8-ICU staff nurses (medical- surgical) had higher knowledge regarding ICU delirium as compare to C-2 ICU (p = 0.05). ICUs staff nurses who had attended the inservice/educational program within the 2 years interval time period had higher knowledge regarding ICU delirium as compare with nurses who attended the programme greater than 2 years respectively (p = 0.02). There was no statistically significant association found between knowledge score and gender, designation, years of experience, highest nursing degree as p value > 0.05.

Association between knowledge score of staff nurses in identification of delirium symptoms, risk factors, assessment and management of delirium in ICU patient and participant demographic characteristics.

There was a statistically significant association between designation, highest nursing degree and knowledge score in identification of delirium risk factors ($p < 0.05$). A statistically significant association was found between subjects who had attended in-service/ educational programme on delirium and knowledge assessment score in identification of delirium symptoms, screening tool and management of delirium in ICU ($p < 0.05$).

Protocol regarding identification of delirium in ICUs patients.

The nursing protocol for identification of delirium among ICUs patients was developed. Firstly, various review of literature was done for development of the protocol from where the area practice recommendation for initial assessment is analysed. Secondly, the guidelines recommending how to use standardised tool RASS sedation scale for assessing the level of consciousness and CAM-ICU tool for assessing the ICU delirium was established. Finally, rough draft was prepared and finalised after consultation with guide and co- guides by the researcher

Discussion

Very little work is done from Asian and Indian perspective in the area of knowledge assessment among ICU staff nurses regarding ICU delirium, while much of the work is done from western perspective. There is no doubt that delirium is pertaining globally and leading to high mortality, morbidity, increase hospital stays, and health care costs. Thus, nurses play an important role in early identification and management of ICU delirium and serving standard and quality care to the ICUs patients.

Therefore, the overall aim of this descriptive cross sectional survey study design was to assess the baseline knowledge score of ICUs staff nurse working in various ICUs of AIIMS, New-Delhi regarding identification and management of ICU delirium among ICUs patients. In present study, 20% of subjects were having 8 years- 13 years of working experience in ICU setting, followed by 15.5%, of subjects have 1 years - 2 years of working experience in ICU. A study conducted by Sara E. Elliot (2014) support the findings of present study that 47% of nursing staff had over ten years of working experience in ICU, followed by 26% were having six to ten years of experience while 24% had 1year- 5 years working experience in ICU [17]. Similar findings also reported by Lotte van de Steeg, *et al.* (2015) that 44.8% had 1 year - 5 years of working experience in ICU, whereas 21.1% had 5-10 years experience. A proportion of 30% had more than 10 years of experience [20].

Most (66%) of ICU staff nurses were females while (34%) were males. This findings were supported by a study conducted by Martin Chrsitensen (2013) which reported that (90.6%) staff nurses were females while (9.4%) were males [7]. The study conducted by Lee YW, Kim CG, *et al.* (2007) also reported that most (96.1%) were female and (3.9%) were males [11]. While a contradictory finding from the study conducted by Ayman M. Hamdan-Mansour, *et al.* (2010) reported that 60% were male participants and 40% were female participants [8].

In the present study, majority (56%) of the staff nurses were Baccalaureate in nursing while only few (4%) were masters in nursing. These findings are supported with the study done by Ayman M Hamdan-Mansour, *et al.* (2010) which reported that only (7%) of the nurses were masters in nursing while (93%) were bachelors in nursing [8]. While a conflicting findings from the study done by Lotte van de Steeg, *et al.* (2015) reported that only 24.2% were bachelors in nursing [20].

Despite of availability of current guidelines and the growing recognition about the ICU delirium in recent scenario, Most (80%) of the subject had not attended any inservice/educational programme on delirium whereas (20%) had attended inservice/educational programme on delirium. These findings were almost consistent with study conducted by Ayman M. Hamdan-Mansour, *et al.* [8] reported only 10% of ICU nurses had received special education in critical care nursing. The study conducted by Lee YW, Kim CG [11] reported that (43.7%) had never experienced any education in delirium. While a conflicting findings from the study Sara E Elliot (2014) only 44%

of the nurses had never received any training/ education on ICU delirium [17]. The study conducted by Martin Christensen (2014) also compliment the present study findings suggesting that nearly half (44%) staff nurses had never received any education on ICU delirium [7].

In the present study, most (78%) of the participants were nursing officers while (18%) were senior nursing officers. These findings were supported by study done by Martin Christensen (2014) which reported that (73.6%) of the respondents were staff nurses while (26.4%) were senior staff nurses respectively [7].

In the present study, most of the staff nurses had fair (57%) knowledge regarding ICU delirium, (21%) had good knowledge and (22%) had poor knowledge regarding ICU delirium respectively. These findings were consistent with study conducted by Ayman M Hamdan-Mansour, *et al.* (2010) reported that most of the nurses had moderate-low level of knowledge, with a mean score (64.4 ± 6.5) [8]. The study conducted by Lee YW, Kim CG., *et al.* (2007) reported that most of the respondents had averaged (70%) knowledge regarding ICU delirium [11]. These findings are opposite to the result of study done by Martin Christensen (2014) which reported that most (67%) of the participants had higher level of knowledge with regard to definition of delirium [7].

In the present study, Staff nurses who had attended in-service or educational program had 1.5 time good knowledge than nurses who had not attended the program on ICU delirium (0.04). These findings are consistent with the study conducted by Sulekha Shrestha (2017) suggested that nurse who had attended training program on ICU delirium had good level of knowledge score as compare with those who had not attended any training programme on ICU delirium [22].

In present study staff nurses of 30-50 years had 1.96 time fair knowledge regarding ICU knowledge than < 30 years of ICU nurses (0.05). The study conducted by Ayman M. Hamdan-Mansour, *et al.* (2010) and Sulekha Shrestha (2017) represent a conflict findings suggesting that there was no significant association between age and knowledge on ICU delirium [8,22].

Limitations

Several limitations revolved around the study. First, convenient sampling was used. Second, Data was collected at only one point of time. Lastly, due to time constraint protocol could not be validated and assessed for its effective use in ICU setting.

Recommendations

- Large multisetting studies can be conducted for assessing the knowledge, attitude and practices of ICU staff nurses.
- Effectiveness of protocol implementation on nursing practice and perception can be assessed.
- Comparative studies can be conducted among staff nurses of different hospitals.
- Experimental study on effectiveness of training program in terms of knowledge, practice and attitude can be replicated.
- Training program can be plan and implement in future studies.

Implications

Nurses should follow protocol in daily nursing practice for early identification and management of ICU delirium, so that there will be positive clinical outcome and decrease hospital stay. Skill development in nursing assessment of ICU delirium patients should be ensured and protocol developed should be included in the curriculum of nursing.

Nurse administrator should plan In-service training program for nurses on ICU delirium.

While senior nurse, should conduct special supervision rounds for delirious patients.

Nurses specially trained in the field of critical care should be appointed for the care of ICU patients.

Conclusion

Majority of the ICU nurses have fair knowledge regarding identification, risk factors, screening tool, delirium assessment and management of ICU delirium. Standard protocol can help to identify and manage the ICU delirium by the nurses working in ICUs. The data yielded had revealed that most of the participant lacked knowledge on ICU delirium, therefore in-service education/educational programme on delirium should be at a forefront of reducing the incidence of ICU delirium.

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