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The impact of education and perceived barriers on critical care nurses' delirium assessments

Original research paper (3542 words)

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Abstract:

Aims and objectives: The aim of this study was to examine perceived barriers of critical care nurses to assessment of delirium, and the impact of education on their knowledge and practice.

Background: Delirium is a significant problem in critical care, leading to increased morbidity and mortality. Many authors have found variations in assessment by critical care nurses, but there has been limited analysis of the reasons for this. Education on the topic improves knowledge and practice, but the best approach has not been examined.

Design: A questionnaire survey design.

Methods: A self-reported questionnaire was distributed to critical care nurses (n = 31) at a district general hospital. Data were analysed with descriptive statistics.

Results: Knowledge and practice were variable, but correlation was seen between nursing band and years of experience with better scores. Formal education (lectures or seminars) led to significantly improved scores. Several barriers to assessment were found, with the most common being lack of knowledge and difficulty in assessing intubated patients.

Conclusion: Education is vital to improve the knowledge and practice of critical care nurses regarding delirium.

Relevance to clinical practice: It is essential to improve practice in delirium assessment and management.

Aims and Objectives:

- To establish current practice for assessment of ICU delirium, including tools used, frequency of assessment and recording of findings.
- To examine current knowledge of ICU delirium, including types, features and management strategies.
- To identify perceived barriers to effective assessment and management of ICU delirium.
- To establish any education received on the topic and analyse whether this has contributed to better knowledge and practice.

Introduction:

ICU delirium is defined as an altered state of consciousness featuring disordered attention, impaired cognition, altered psychomotor activity (increased or decreased) and disorder of the sleep-wake cycle (Borthwick et al 2006, Tait 2016). It has an acute onset and is thought to be reversible (Borthwick et al 2006), although Morandi et al (2012) state that long-term cognitive impairment is common after diagnosis of ICU delirium. Delirium is associated with poorer outcomes, higher costs and increased mortality (Chevrolet and Jolliet 2007; The National Institute for Health and Care Excellence [NICE] 2010).

Incidence varies widely but it is thought to affect from 18% to 82% of critically ill patients (Ely et al 2004a; Morandi et al 2012). There are three subtypes: hyperactive, characterised by hallucinations and agitation; hypoactive, where the patient is withdrawn and inattentive; and mixed delirium, which fluctuates between the two (Elliott 2014).

Both the Intensive Care Society (ICS) guidelines (Borthwick et al 2006) and the NICE guidelines (2010) state that assessment for delirium should take place daily, based on the Diagnostic and Statistical Manual of Mental Disorders (DSM) criteria agreed by the American Psychiatric Association (APA 2014), and that the Confusion Assessment Method - Intensive Care Unit tool (CAM-ICU) is the preferred method of screening in the ICU, due to its high sensitivity and specificity (Gusmao-Flores et al 2012).

Background:

Several studies have been done internationally to establish knowledge and practice regarding ICU delirium for a range of critical care personnel (Ely et al 2004a; Devlin et al 2008a; Patel et al 2009; Hamdan-Mansour et al 2010; Devlin et al 2011; Christensen 2014; Elliott 2014), with many indicating a lack of knowledge and sporadic adherence to accepted guidelines. However, few studies have looked at the impact of educational strategies and targeted learning on improving practice in this area (Page and Ely 2015).

A UK based survey of medical ICS members (n = 681) showed that only a quarter routinely assess for ICU delirium, and only half of those use a validated assessment tool (MacSweeney et al 2010). A similar survey in the United States by Ely et al in 2004(a) (n = 912) and a follow up study by Patel et al in 2009 (n = 1384) showed 40% and 59% assess for ICU delirium, with 16% and 33% using a validated tool respectively, which may indicate a higher prioritising of ICU delirium in the US compared with the UK.

Research has consistently found a lack of knowledge on ICU delirium and inadequate screening across the world, including Australia (Eastwood et al 2012), Jordan (Hamdan-Mansour et al 2010), the Netherlands (Riekerk et al 2009) and the UK (Elliott 2014), but only a few authors have discussed the

barriers to effective assessment and management of ICU delirium for critical care nurses (El Hussein, Hirst and Salyers 2014), which may go some way towards explaining why there appears to be slow progress in the management of this condition in the critical care environment (Wells 2012).

In the author's clinical area, delirium assessment is mainly carried out by nursing staff, however, no clear policy exists and no recommendations are in place regarding the frequency of assessment or which assessment tool is used. Management of delirium varies widely according to medical staff preference, and anecdotally both nursing and medical staff feel poorly equipped to effectively assess and manage this condition.

General approach:

As there is no formal policy, a service evaluation was conducted in the form of a self-reported questionnaire. This method was chosen as anonymous responses were sought to gain an accurate picture of current practice, and to allow comparison with previous studies on this topic.

Setting and sample:

The service evaluation took place during July 2016 in the 14-bed medical-surgical critical care unit in a district general hospital. The inclusion criteria were all clinically-based registered nurses working in the unit during the period of data collection, to ensure a representative sample. At the time of the study, 60 nurses employed to cover 52 whole time posts were eligible to take part. Only nurses were included in the target population, as within the local unit it is nurses who are expected to perform and document delirium assessments.

Ethical approval:

The service evaluation protocol was submitted to the Health Board's Research and Development department, who stated that as patients were not involved in the study, Ethics Committee approval was not required. The Head of Department gave permission for the service evaluation to go ahead.

Data collection and tools used:

None of the previously published questionnaires on this topic answered the specific aims of this service evaluation. Despite reuse of an existing questionnaire being considered good practice and increasing the rigour of a study, this was not possible.

A comprehensive literature review was undertaken, and key issues were identified from previous studies. These were developed into the following themes to allow development of the questions; current knowledge and practice of ICU delirium; perceived barriers to assessment; and any education received on the topic of delirium.

The questions were developed by the author and then assessed for content validity by a clinical expert in delirium. Modifications were made, and the questionnaire was then submitted on a test-retest basis with a two-week interval to five respondents similar in demographics to the target population, to assess inter-rater reliability, and to ensure clarity of the items. Modifications were made and then the final questionnaire was submitted to the Head of Department and the Practice Development Nurse of the target unit to ensure appropriate terminology was used. The questions were mostly in a closed-response format to allow ease of analysis (Timmins 2015), but respondents were invited to elaborate on any topic if they wished.

An invitation was emailed to all eligible staff inviting them to participate in the questionnaire. Information given included a description of the planned study and the author's contact details. Blank questionnaires were placed in the staff room with a sealed drop box for return of completed questionnaires, in order to allow anonymity of participants. A participant information sheet was included with each blank questionnaire, which detailed the study aims, how the data would be used and disseminated and the final date of return. Informed consent was assumed on return of a completed questionnaire and those who did not wish to participate were advised to disregard the study. A reminder was sent by email to all eligible staff after one week and again in the third week of data collection. All data was destroyed after tabulation.

Data analysis and statistics:

Data was tabulated to summarise data and indicate cross-tabulations between variables. This allowed correlation testing to establish whether years of critical care experience or education received corresponded to better knowledge or practice.

Data was analysed using SPSS software under the guidance of a statistician.

The two most common methods used to calculate correlations are Pearson correlations and Spearman Rank correlations. The Pearson method relies on the distribution of the data whereas the Spearman method is a non-parametric method where ranks¹ are used instead of the actual scores. The non-parametric method is preferred in this analysis due to the scales being ordinal without any clear distinction of how much one value is greater than another. Moreover, non-parametric statistics based on rank do not have any prior assumptions about normality (the distribution of the data).

¹ Instead of using the actual values, each score is put into a rank order. For example, the values 3, 6, 9 and 12 would be ranked 1, 2, 3 and 4 in order.

Results:

The overall response rate was 51.6%. This is lower than some previous studies, and increases the risk of non-response bias - whereby the sample is not representative of the total population - and voluntary response bias, meaning that the respondents are those with an interest in the topic (Greenhalgh 2014). This means that the results should be interpreted with caution.

Demographics:

Main characteristics of respondents are summarised in Table 1. The majority of respondents (71.0%, n = 22) were Band 5 nurses, followed by Band 6 nurses (19.3%, n = 6) and the remainder Band 7 (9.7%; n = 3). Years of experience in critical care were broadly distributed, with a slight majority having 6 to 10 years of critical care experience. Those with 0 to 1 years experience were all Band 5, and all Band 7 nurses had over 10 years experience in critical care.

Table 1. Demographic data

Demographics	%	n
Grade of nurse		
Band 5	71.0	22
Band 6	19.3	6
Band 7	9.7	3
Years of critical care experience		
0 to 1	16.1	5
2 to 5	29.0	9
6 to 10	32.3	10
Over 10	22.6	7
Education received on delirium		
None	38.7	12
Personal research or reading	16.1	5
Informal bedside teaching	19.4	6

Lecture or seminar	25.8	8
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Figure 1: What is your nursing band in intensive care?

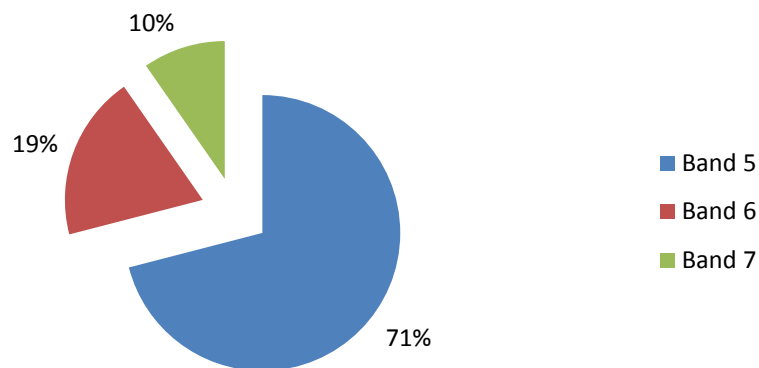
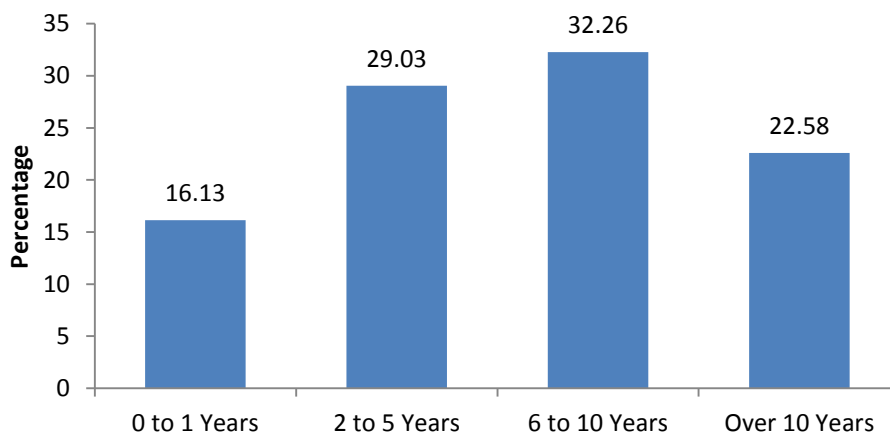
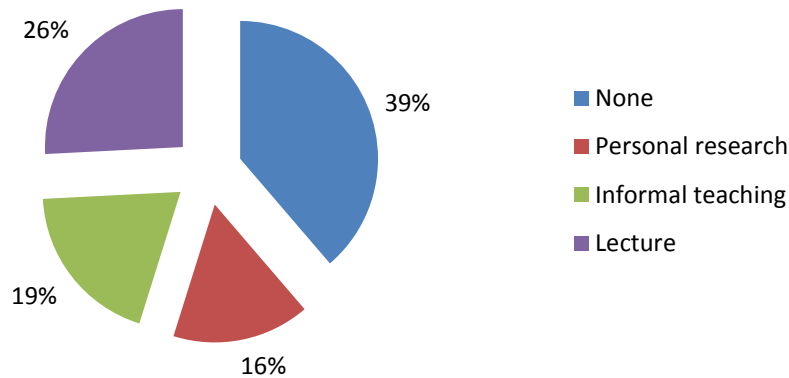


Figure 2: How many years' experience do you have in critical care?



The majority of respondents had never received any education on the topic of ICU delirium (38.7%; n = 12), while some had done personal research and reading (16.1%; n = 5), informal bedside teaching (19.4%, n = 6) and eight respondents (25.8%) had attended a lecture or seminar on the topic.

Figure 3: Have you received any education on ICU delirium?



Knowledge and practice:

Each knowledge item was ranked from 1-4 (Poor - Excellent) according to the accuracy of responses. See Table 2 for summary. Overall, knowledge of risk factors for delirium received the highest scores, with 41.9% (n = 13) of respondents scoring a Good or Excellent. Outcome knowledge was less comprehensive, with 32.3% (n = 10) scores of Good or Excellent. On the other hand, 32.3% (n = 10) received a score of Poor for the question on features of delirium. Most nurses were able to identify some features of hyperactive delirium such as agitation, but only 12.9% (n = 4) correctly identified features of hypoactive delirium such as lethargy.

Table 2. Scores for knowledge of delirium

Knowledge of features of delirium	%	n
Excellent	12.9	4
Good	25.8	8
Fair	29.0	9

Poor	32.3	10
Knowledge of risk factors for delirium		
Excellent	3.2	1
Good	38.7	12
Fair	35.5	11
Poor	22.6	7
Knowledge of outcomes for delirium		
Excellent	6.5	2
Good	25.8	8
Fair	54.8	17
Poor	12.9	4

In terms of practice, 38.7% (n = 12) of respondents used the CAM-ICU assessment tool, while 22.6% (n = 7) did not assess patients for delirium. No nurses reported using the ICDSC, while the remainder (38.7%; n = 12) used clinical observation to identify delirium.

Regarding frequency of assessment, 22.6% (n = 6) did not assess for delirium, while 51.6% (n = 16) assessed their patient every shift. 16.1% of respondents (n = 5) assessed for delirium only if the patient appeared agitated, and the remainder (9.7%; n = 3) assessed less frequently than once per shift.

An open-response question on prevention strategies gave some varied answers. Three nurses (9.7%) stated they would involve the patient's family as a prevention measure, while 22.6% (n = 7) of respondents said they would re-orientate the patient regularly.

Barriers to assessment:

Several different barriers to delirium assessment were identified by the respondents (see Table 3). More than one option could be chosen.

Table 3. Barriers to delirium assessment

Barriers	%	n
None	12.9	4
Complexity of assessment tools	29.0	9
Intubated/ non-verbal patients	58.1	18
Result is not valued by medical staff	6.5	2
Lack of time	12.9	4
Patients are too sedated	19.4	6
Lack of knowledge of delirium	41.9	13

Four nurses (12.9%) found no barriers to delirium assessment, but other nurses gave varied responses - the two most common barriers were intubated/ non-verbal patients (58.1%; n = 18), and lack of knowledge of delirium (41.9%; n = 13). Few nurses (12.9%; n = 4) stated that lack of time was a barrier to assessment, or that medical staff do not value the results (6.5%; n = 2).

Education:

There were several significant correlations found in the analysis. The overall general trend was that higher band of employment or education, the greater the level of knowledge. There were significant positive correlations between receiving education on delirium and knowledge of Features ($r=0.55$, $p=0.0012$), knowledge of Risk Factors ($r=0.67$, $p<.0001$), knowledge of outcomes ($r=0.55$, $p=0.0013$), amount of Assessment ($r=0.36$, $p=0.0456$) and how often a respondent assesses for delirium ($r=0.38$, $p=0.0356$). In all these instances, as education increased, then the level of knowledge, amount of assessment and regularity of assessment increased as well. By far the largest association found was between education and identification of risk factors ($r=0.67$, $p<.0001$).

A higher nursing band was only found to be significantly correlated with one item of knowledge. This was Risk Factors ($r=0.46$, $p=0.0085$). As would be expected, a higher nursing band was also significantly associated with years of experience ($r=0.50$, $p=0.0044$).

Discussion:

These results give a perspective on the local picture regarding delirium in critical care.

The demographics of the sample appear broadly representative, with a range of bands of nurses and clinical experience represented, however this may be limited by the low response rate (51.6%). The data collection period was done over the summer holiday period which may have affected staff availability and willingness to participate. Incentives could have been used to increase the response rate, such as an opportunity to enter a prize draw, and perhaps having the researcher on-site for questions and concerns may have allowed more potential participants to complete the questionnaire. The pilot study did not pick up any issues with content or form, which are often reasons for non-participation (Greenhalgh 2014), but further testing and modifications may have been beneficial.

Knowledge of features, risk factors and outcomes of delirium was mainly of a moderate level, perhaps reflecting the low levels of education on the topic. This echoes the results of several previous studies (Hamdan-Mansour et al 2010; Elliott 2014; Glynn and Corry 2015) in samples similar to the local participants.

The widest variation was shown in knowledge of features of delirium, particularly those of the hypoactive subtype, which may be due to poor awareness of this manifestation of delirium. This remains an area of concern in the literature and highlights the need to use a validated assessment tool in order to identify this subtype rather than relying on clinical observations which will usually only recognise hyperactive behaviours (Page and Ely 2015).

Very few respondents identified the presence of a urinary catheter or use of benzodiazepines as risk factors for delirium, despite these being common procedures in the critical care environment, and wider

awareness may have a significant impact on reducing the frequency of these seemingly innocuous procedures.

Most nurses did not use a validated assessment tool (such as CAM-ICU) to identify delirium, despite widespread recommendations in the literature (Ely et al 2004b; Borthwick et al 2006; Devlin et al 2008; NICE 2010; Page and Ely 2015), but again this is similar to the findings of other studies (Hamdan-Mansour et al 2010; MacSweeney et al 2010; Christensen 2014; Elliott 2014; Glynn and Corry 2015).

It is unclear why this remains the case despite increasing awareness and understanding of delirium in the critical care environment. However, the target unit does not have a formal policy on delirium assessment, and perhaps this is an area for development.

To this end, the results on barriers to assessment may be pertinent - lack of knowledge and difficulty assessing intubated patients were the two most commonly cited barriers locally. In fact, these are the same issue - a lack of understanding - as the misconception that assessment cannot be completed in a non-verbal/ intubated patient has been widely disproven (Ely et al 2004b; Devlin et al 2008b; Eastwood et al 2012; Radtke et al 2012). Despite this, intubation remains a commonly reported barrier to effective assessment in other studies in the critical care environment (Devlin et al 2008a; Devlin et al 2011; Scott, McIlveney and Mallice 2013; Andrews et al 2015). Interestingly, the study by Scott, McIlveney and Mallice (2013) showed very little change in the number of nurses who felt that intubation was a barrier to assessment after delivery of a comprehensive educational intervention, perhaps suggesting that this is not merely a matter of understanding. On the other hand, it could be an issue with the questionnaire itself that led to this anomaly.

Many researchers have demonstrated the impact of educational intervention on staff knowledge and performance regarding ICU delirium (Devlin et al 2008b; Riekerk et al 2009; Gesin et al 2012; Eastwood et al 2012; Scott, McIlveney and Mallice 2013) and this was reflected in this service evaluation. The results demonstrated that there was a significant correlation between formal education and better knowledge and practice scores, and as this was not education delivered recently by the author (as is the case in the studies examined in the literature review) it could be assumed that this was not merely assessing the participants' recall, but actually showing a sustained improvement.

Limitations:

There were several limitations to this study. It was felt that including other members of the multi-professional team was beyond the scope of the study within the time period, but valuable perspectives may have been added by their inclusion, as delirium does not belong only in the nursing domain, and many different staff members have input into its assessment and management (Page and Ely 2015). The study by Riekerk et al (2009) showed sustained improvement in knowledge and practice following an educational intervention, and the authors claim that their good results were due in part to the inclusion and investment of all roles of critical care staff.

The exclusion of other members of the multi-disciplinary team also meant that there was no opportunity to explore local management of ICU delirium. As management of the condition usually comprises use of physical restraints or use of anti-psychotic medication (both of which must be prescribed by medical staff according to local policy) it was felt that the inclusion of questions on this topic would not represent nursing management, rather it would indicate medical staff preferences of management options. However, this

information would have given more insight into the state of current practice, and perhaps warrant a further investigation of medical staff and management options favoured by them.

The questionnaire methodology was chosen in order to facilitate comparisons with the findings of other studies; however, this may have limited the findings. A qualitative approach using focus groups may have shed more light on some of the issues found, and may be a useful strategy to help continue development of improvements relating to delirium assessment in this clinical setting.

Conclusion:

This literature review and service evaluation has established a limited insight into the local perspective on ICU delirium assessment.

Current research has been examined and compared with the findings of the questionnaire study of local critical care nurses.

It has been demonstrated that knowledge relating to delirium assessment is inadequate and that practice falls short of recommended guidelines (NICE 2010). Several barriers to effective assessment have been identified, and can be targeted to improve practice.

It has been shown that formal education on the topic leads to improved knowledge and practice, and this can be used to develop an educational intervention to address the deficits found.

Recommendations:

1. Promote a multi-disciplinary approach to practice improvement, with all roles of staff involved and invested.
2. Develop a formal written policy regarding ICU delirium assessment, including assessment tools to be used and frequency.
3. Investigate management strategies currently used locally, by surveying medical staff and address any deviations from recommended practice.
4. Conduct focus groups of nurses to explore in more depth the issues raised, particularly the barriers to assessment.
5. Develop an educational intervention for nursing staff, targeting the knowledge and practice deficits observed, and promoting best practice in line with national guidelines.

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