

PERCEPTIONS, ATTITUDES, AND BEHAVIORS TOWARDS DELIRIUM AMONG  
ICU NURSES AT A SMALL COMMUNITY HOSPITAL IN SOUTHERN ARIZONA

by

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As members of the DNP Project Committee, we certify that we have read the DNP Project prepared by Rachel Knight entitled “Perceptions, Attitudes and Behaviors Towards Delirium Among ICU Nurses at a Small Community Hospital in Southern Arizona” and recommend that it be accepted as fulfilling the DNP Project requirement for the Degree of Doctor of Nursing Practice.

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## DEDICATION

I would like to dedicate this project to my husband, Jeremy Knight, because without his continued support, I would not have been as successful in graduate school. I would also like to dedicate this project to my daughters, Emma Knight and Tegan Knight who bring light and joy to my life even when the world is a crazy, busy place.

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## ABSTRACT

Most health care providers lack the education or clinical training to adequately recognize delirium, and are distressed when caring for patients with delirium (Akechi et al., 2010; Brajtman, Higuchi, & McPherson, 2006; Griffiths, Knight, Harwood, & Gladman, 2014; McCrow, Sullivan, & Beattie, 2014). Early recognition of delirium can improve patient safety and decrease the use of hospital resources (National Institute for Health and Care Excellence, 2014). Although delirium knowledge and recognition are increased after implementation of education and the use of screening tools, more could be done to improve patient outcomes and increase sustainability of knowledge learned (Yanamadala et al., 2013; Soja et al., 2008; van den Boogaard et al., 2009; Pun et al., 2005). The purpose of this DNP project was to explore the perceptions, attitudes and behaviors of ICU nurses in a community hospital when caring for patients with delirium. Findings indicated that most nurses felt delirium is an underdiagnosed problem. Almost all agreed or strongly agreed that assessing ICU patients for delirium is a worthwhile intervention. Interestingly, 38.5% disagreed and 30.7% were neutral that delirium is largely preventative. Despite 69.2% of the participants agreeing that they felt heard by the provider when they suspect the patient is delirious, 76.9% are neutral that they are satisfied with the applied treatment.

Despite agreeing that delirium is underdiagnosed, there is lack of knowledge regarding prevention and treatment of delirium. In this ICU, it would be beneficial to tailor the education prior to implementing any delirium screening tools. Results show that education should include: the types of delirium, delirium prevention strategies, RASS scales, importance of daily sedation vacations, and treatment. Education should be provided to both the nurses and the providers. In

addition to this, “buy in” should be obtained from the providers to ensure that they will use data gathered from screening tools. Prior to implementing any screening tool, examples of screening tools should be provided to the staff, as well as a bedside demonstration to show ease of use. An additional study should be done to assess the sustainability after tailoring education based on perceptions, attitudes, and behaviors.

## INTRODUCTION

### Background Knowledge

Delirium is the most common complication that older adults experience in the acute care setting (El Hussein, Hirst, & Salyers, 2015). It affects approximately 37% of general hospital admissions and up to 67% of surgical patients (Eeles, Hubbard, White, O'Mahony, Savva, & Bayer, 2010; Lundstrom, Olofsson, Stenvall, Karlsson, Nyberg, Englund, & ... Gustafson, 2007). In the intensive care unit (ICU) up to 80 percent of patients develop delirium (Eli et al., 2004). Most health care providers lack the education to adequately recognize delirium and are distressed when caring for patients with delirium (Akechi et al., 2010; Brajtman, Higuchi, & McPherson, 2006; Griffiths, Knight, Harwood, & Gladman, 2014; McCrow, Sullivan, & Beattie, 2014). Despite the high incidence of delirium in ICU settings, less than half the cases of delirium are recognized by clinicians impacting prevention and treatment (Rice et al., 2011).

Delirium is an acute and fluctuating disturbance of consciousness and cognition (Barr et al., 2013). Delirium increases patients' length of stay, increases morbidity and mortality, and decreases cognitive and functional abilities of the patient (McCusker, Cole, Dendukuri, & Belzile, 2003). Intensive care unit patients on the ventilator who experience delirium also often have more difficult and prolonged weaning for extubation leading to an increased number of days on a ventilator (Jeon, et al., 2016). Risk factors associated with delirium are also associated with conditions affecting many ICU patients including: older age, respiratory disease, alcohol abuse, dementia, fever, metabolic acidosis, need for intravenous vasopressors, mechanical ventilation, and electrolyte abnormalities (Van Rompaey, Schuurmans, Shortridge-Baggett, Truijen, & Bossaert, 2008). Several common medications used in the ICU such as

benzodiazepines, opiates, and anticholinergics have also been shown to be associated with increased incidence of delirium (Alagiakrishnan & Wiens, 2004; Pandharipande et al., 2006).

Health care costs are also increased. A recent study has shown that health care costs attributed to delirium are between \$38 billion and \$152 billion yearly in the United States (Leslie, Marcantonio, Zhang, Leo-Summers, & Inouye, 2008).

Delirium not treated promptly can lead to prolonged delirium and other adverse outcomes (The American Geriatrics Expert Panel, 2015). As of now there is no drug approved by the FDA to treat delirium, although there are many non-pharmacological interventions that have been effective (American Association of Critical-Care Nurses, 2015). Some of the treatments include: reorientation, behavioral intervention, use of sensory aids, avoidance of physical or chemical restraints, maintaining limited change of environment, minimizing noise, providing uninterrupted sleep (Fong, Tulebaev, & Inouye, 2009). Early recognition and treatment improves patient safety and decreases hospital resources used for these patients (National Institute for Health and Care Excellence, 2014). Additionally, being able to recognize changes in the patient early, allows the nurse to be able to prevent 30-40% of delirium cases in at risk patients (Faught, 2014).

Increasing knowledge about delirium by implementing an educational program and delirium recognition tools for clinicians may make a difference in not only recognizing but also treating delirium and preventing complications. Delirium education may increase nursing knowledge related to definition, pathophysiology, prevention, treatment, and use of recognition tools (Gesin et al., 2012). Although delirium knowledge and recognition are increased after implementation of education and use of delirium recognition tools, more needs to be done to improve patient outcomes and increase sustainability of knowledge learned (Yanamadala et al.,

2013; Soja et al., 2008; van den Boogaard et al., 2009; Pun et al., 2005). Some studies have shown that strategies to improve sustainability of education include: increasing end user feedback, using bedside nursing education, and assessing behaviors, perceptions, and attitudes of nurses so that education can be tailored (Soja et al., 2008; van den Boogaard et al., 2009; Pun et al., 2005; Gesin et al., 2012). However, more studies need to be completed to determine sustainability of these strategies (Gesinde et al., 2012).

### **Local Problem**

As a current employee in the ICU in a small community hospital in Southern Arizona, I have identified that delirium was not easily recognized or prevented, despite being so prevalent. Although, no formal study has been done to determine delirium prevalence, an anecdotal observation is that a majority of ICU patients at this hospital develop delirium. No formal delirium education has been provided to the staff. Delirium recognition tools are not currently utilized. Despite being in the daily orders, sedation vacations are not regularly performed on our patients. Early mobilization techniques have not been utilized. No studies have been conducted to assess staff knowledge about delirium or staff perceptions, attitudes, or behaviors about caring for patients with delirium.

After recognizing that delirium is a serious concern for the patients and that delirium knowledge and recognition were lacking; conversations were held with the unit director, unit educator, and Director of Nursing. All agreed that more needed to be done to increase delirium knowledge and recognition. Before the implementation of any educational programs or delirium recognition tools, perceptions and attitudes of nurses should be assessed to increase success (Devlin et al., 2008).

### **Purpose**

Although educational interventions improve recognition of delirium by ICU nurses, studies show that there is still under recognition of delirium (Devlin et al., 2008; Fick & Foreman, 2000; Yanamadala, Weiland, & Heflin, 2013). The reason for this under recognition is not well understood. The purpose of this DNP project is to explore the perceptions, attitudes and behaviors of ICU nurses in a community hospital towards caring for patients with delirium.

Negative views about delirium may directly affect retention of knowledge provided in an educational intervention and negatively influence the care provided for these patients. Exploring perceptions of ICU nurses about delirium could allow the education to be tailored to their needs. Behaviors and attitudes of ICU nurses about delirium should also be taken into consideration when implementing delirium guidelines, otherwise resistance will be met (Steeg, Langelaan, Ijkema, Nugus, & Wagner, 2014). Stakeholders will be important in assessing perceptions of nurses towards delirium and will be especially important if implementing delirium education and delirium recognition tools. Key stakeholders would include: ICU nurses, the unit director, nursing educators, the director of nursing, the chief nursing officer, and the chief executive officer.

### **Project Question**

What are the perceptions, attitudes and behaviors of ICU nurses in a community hospital towards caring for patients with delirium?

### **Aims**

- Determine if ICU nurses think that delirium education would be useful.
- Determine if ICU nurses think that a delirium recognition tool is necessary for their practice.
- Obtain nursing perceptions, behaviors, and attitudes about caring for the patient with delirium.
- Identify facilitators and barriers to caring for patients with delirium.

### **THEORETICAL FRAMEWORK**

The Theory of Planned Behavior, an extension of the Theory of Reasoned Action, is used to guide this project. The Theory of Reasoned Action assumes that a behavior is a result of an intention from two sources (Ajzen & Fishbein, 1975; Kasprzyk & Montano, 2008). These two sources include the attitude towards the behavior and subjective norms (Ajzen & Fishbein, 1975; Kasprzyk & Montano, 2008). The attitude towards the behavior is determined by the perceived outcomes either positive or negative (Ajzen & Fishbein, 1975; Kasprzyk & Montano, 2008). The subjective norms are determined by whether others view the behavior as positive or negative (Ajzen & Fishbein, 1975; Kasprzyk & Montano, 2008). It is also determined by whether the individual feels compelled to comply with others (Ajzen & Fishbein, 1975; Kasprzyk & Montano, 2008).

The Theory of Planned Behavior has the same two sources but also considers an additional construct of perceived control over the behavior (Ajzen, 1985; Kasprzyk & Montano, 2008). Perceived control is determined by the individual's belief of control over factors

promoting the behavior or creating barriers for the behavior (Ajzen, 1985; Kasprzyk & Montano, 2008).

Many studies have shown that there is an improved knowledge and recognition of delirium after educational interventions and implementation of delirium recognition tools, but delirium remains under recognized (Yanamadala, Wieland, & Heflin, 2013). However, there are few studies discussing the perceptions of nurses towards delirium and interventions related to delirium. Nurses' attitudes towards delirium may directly affect their behavior intention related to learning about delirium, using a delirium recognition tool, and caring for patients with delirium. The perception of use of a tool, whether difficult or easy, will affect intent of behavior (Ajzen, 1985; Kasprzyk & Montano, 2008). For instance, if nurses view the delirium recognition tool as difficult, the intention to use the tool may be decreased. If co-workers view delirium negatively, the nurse may also view delirium negatively. By using a questionnaire to assess perceptions, attitudes and behaviors towards caring for a patient with delirium prior to implementation of an educational program or recognition tool, these interventions may be modified to have increased success and hopefully, sustainability.

### **Concepts/Definitions**

- Delirium is an acute change in consciousness that is accompanied by inattention and change in cognition (American Psychiatric Association, 2013).
- Nurses – registered nurses in the ICU in a rural community hospital
- Attitudes – feelings about delirium determined by perceived outcomes whether positive or negative (Ajzen & Fishbein, 1975; Kasprzyk & Montano, 2008)

- Intentions – indicator of preparedness to complete a behavior (Ajzen & Fishbein, 1975; Kasprzyk & Montano, 2008)
- Subjective norms – determined by if others think a behavior is positive or negative and if we are motivated to follow their thinking (Ajzen & Fishbein, 1975; Kasprzyk & Montano, 2008)
- Perceived control – the perceived ease or difficulty of performing a behavior (Ajzen, 1985)

### **Synthesis of Evidence**

A synthesis of evidence was developed by searching databases including: PubMed, CINAHL, Dynamed, EMBASE, UpToDate, Clinical Key, TRIP, Web of Science, and ACP journal club. Several searches were conducted using a combination of search terms including: “delirium”, “education”, “recognition”, “tools”, “sustainability”, “perceptions”, “attitudes”, “behaviors”, “feelings”, “interventions”, “experiences”, “nurse”, “assessments”, and “management”. Over 100 articles were reviewed. Articles were excluded if not written in English. Articles were then narrowed down by comparison to the project question and aims. 12 articles were utilized for the synthesis and further exploration.

Findings from a study by Steeg et al. (2014) identified that nurses found delirium screening to be just another tool and did not understand the benefit of the tool. Eastwood et al. (2012) also found that nursing attitudes included an importance of delirium assessment, however many nurses felt that assessment tools could be difficult to use (Eastwood, Peck, Bellomo, Baldwin, & Reade, 2012). Most health care providers lack the education and knowledge to adequately care for patients with delirium (McCrow, Sullivan, & Beattie, 2014). Lack of

knowledge may lead to lack of understanding of the benefit thus affecting sustainability of use. Research supports that education would be beneficial in helping staff to recognize delirium and to prevent delirium complications (Belanger & Ducharme, 2015; Brajtman, Higuchi, & McPherson, 2006; Fisher et al., 2015; Gesin et al., 2012; Griffiths, Knight, Harwood, & Gladman, 2014; Hosie et al., 2014; McDonnell & Timmins, 2012). Gesin et al. (2012) discussed the importance of using different learning styles when implementing education such as visual, auditory, and kinesthetic (Gesin et al., 2012). Reaching out to every type of learner may improve delirium recognition. Articles reviewed, discussed the negative nursing perceptions or negative emotions associated with caring for patients with delirium (Belanger & Ducharme, 2015; Brajtman et al., 2006; Fisher et al., 2015; Gesin et al., 2012; Griffiths et al., 2014; Hosie et al., 2014; McDonnell et al., 2012). McDonnell et al. (2012) emphasized that negative perceptions about delirium could cause a possible decrease in delirium recognition (McDonnell et al., 2012). Negative perceptions may also directly affect the sustainability.

Further review of evidence identified that caring for patients with delirium can be distressing to nurses because it is hard to understand patients' needs (Belanger & Ducharme, 2011; Morandi et al., 2015). Nurses have discomfort when caring for patients with delirium because of perceived patient distress, patient agitation, and increased time spent with these patients (Morandi et al., 2015; Randen, Lerdal, & Bjork, 2013; Steeg, Langelaan, Ijkema, Nugus, & Wagner, 2014). Increased workload and distress creates a shortage of time, and many nurses said that delirium screening is one of the first things they omit in a time crunch (Steeg et al., 2014). Behaviors and perceptions of the nurses need to be taken into consideration before

implementing any educational intervention or recognition tool, otherwise resistance will be met (Steeg et al., 2014). Details of these articles are discussed in Appendix A and Appendix B.

Gaps in the literature were identified when reviewing the articles. Gaps in the literature include assessing perceptions, behaviors, and attitudes prior to implementation of screening tools and modifying implementation for those factors and sustainability of implementation of tools and educational modules. Strengths in the literature include: assessing perceptions of delirium in many studies, many studies noting perceptions of many different health care professionals, and that participants had varying education and experience levels. Weaknesses and limitations in literature include: perceptions rather than actual practice being taken into account in some articles, exclusion of patients with other health problems in some articles, mostly qualitative and descriptive methods, selection bias, mainly female participants, some voluntary participants, cross-sectional data collection, and relatively small sample sizes.

## **METHODS**

### **Design**

This DNP project used a descriptive study design with quantitative methodology to explore perceptions, attitudes, and behaviors of ICU nurses caring for patients with delirium. A descriptive study design is appropriate to determine perceptions because there is one study group with no comparison group (Omair, 2015).

### **Setting**

This project took place in a small community hospital in Southern Arizona with a 12 bed ICU.

## Participants

All registered nurses participating in the ICU, including full time, part time, and per diem with varied levels of experience had the opportunity to complete the survey. Demographic variables collected can be viewed in Table 1. Inclusion criteria included: currently working in the ICU and being 18 years of age or older. The only exclusion criterion was nurses currently on orientation in the ICU. There are approximately 25 nurses working in the ICU at this time. Target number of participants is 20.

TABLE 1. *Demographic Variables.*

Age
Number of years worked as an RN in the ICU
Number of years worked as an RN on this unit
Have you ever practiced on another unit that used a delirium screening tool?
<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
Level of education
<ul style="list-style-type: none"> <li>• Associate's degree</li> <li>• Bachelor's degree</li> <li>• Some Master's, PhD, or DNP</li> <li>• Master's, PhD, or DNP</li> </ul>
Gender
<ul style="list-style-type: none"> <li>• Male</li> <li>• Female</li> </ul>

## Data Collection

Data collection occurred through a single survey using Likert type items. The survey was constructed by adapting pertinent questions from several available surveys (Law et al., 2012; Marino, Bucher, Beach, Yegneswaran, & Cooper, 2015; Trogrlić et al., 2016; Ely et al., 2004; and Devlin et al., 2008). The survey was developed by reviewing over 20 articles and surveys with similar aims. The survey questions were then narrowed down to align with the aims of this

paper. The survey consisted of 32 questions and took approximately 10-15 minutes to complete.

These questions can be viewed in Table 2.

TABLE 2. *Survey Questions.*

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Select the appropriate response for each item

• Strongly disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

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- Delirium is an underdiagnosed problem
- Delirium is a “normal” part of ICU hospitalization
- Delirium is a problem that requires active interventions on the part of caregivers
- Delirium is associated with higher patient mortality
- ICU patients with delirium are rarely agitated
- Initiation of antipsychotic therapy (e.g., Haldol) should be in the initial intervention for all patients with delirium
- Delirium is challenging to assess in ICU patients
- Delirium is difficult to interpret in intubated patients
- I do not feel that using a delirium assessment tool improves outcomes
- Delirium assessment tools are too complex to use
- Physicians do not use my assessments in their decision making
- I feel that there is not enough time to complete delirium assessments
- Delirium is largely preventative
- Delirium in the ICU is associated with long term neuropsychological deficits
- We oversedate most of our patients in the ICU
- Delirium impairs weaning from the ventilator
- I understand what delirium is and the types of delirium
- If asked on the spot, I can give a definition of delirium
- My delirium assessments are accurate
- My colleagues’ delirium assessments are accurate
- I am comfortable assessing my ICU patients for delirium
- I am confident in communicating my concerns about presence of or risk for delirium to my patients’ critical care provider
- I can identify at least 2 interventions that can be used to prevent or decrease duration of delirium in ICU patients
- I feel that assessing ICU patients for delirium daily is a worthwhile intervention
- I think that delirium is a major problem in the ICU
- In difficult to treat delirium I believe that all psychoactive drugs should be ceased
- In difficult to treat delirium I have a feeling of powerlessness
- In difficult to treat delirium I have the feeling that nothing helps and that the patient should improve spontaneously over time
- In difficult to treat delirium I feel the patient gets less delirious as their physical condition improves
- When I suspect the patient is delirious I feel heard by the physician/intensivist
- When I suspect the patient is delirious, the physician/intensivist confirms my opinion
- When I suspect the patient is delirious, I am satisfied with the applied treatment

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Surveys were reviewed for face validity by the principal investigator’s DNP committee.

Surveys were sent to every registered nurse employed in the ICU by hospital email. The email

contained a disclosure notice. Participants were able to choose to anonymously complete the survey via a link to Qualtrics. Qualtrics is a leading global provider of data collection and analysis products, where surveys can be easily created and distributed (Qualtrics, 2016). By using Qualtrics, anonymous links to the survey were sent to protect confidentiality by ensuring that specific data is not tied to the respondent (Qualtrics, 2016). Security was maintained by the use of high end firewall systems, Transport Layer Security encryption, and safeguards to follow HITECH and HIPAA rules (Qualtrics, 2016). Prior to sending the participants the surveys, a notice was placed on the bulletin board in the break room. This notice informed staff to expect a link to a survey to determine perceptions, attitudes, and behaviors towards delirium via Qualtrics in their hospital email. It also explained that participation was completely voluntary and if completed results will be anonymous. They had two weeks to complete the survey. A reminder notice was sent after one week to inform participants that they have one more week to complete the survey.

### **Data Analysis**

Descriptive statistics were used to analyze the data collected in the survey. Data was directly exported from Qualtrics into Microsoft Excel. All raw data moved into Excel was kept secure on a devoted USB drive that was both password protected and encrypted. The USB drive was kept in a locked drawer in the principal investigator's home during the study. Most data will be ordinal (Sullivan & Artino, 2013). Mean, median, mode, standard deviation, and variances were determined using Microsoft Excel.

### **Resources and Budget**

Resources included: hospital email, Qualtrics, and Microsoft Excel. The budget for this project was low because the only cost was placing bulletins in the breakroom. Staff were not reimbursed for completion of the survey. Qualtrics was free of charge by using it through the University.

### **Ethical Issues**

The project was approved and not deemed to be human research by the University of Arizona IRB Committee. Site approval was granted by the Director of Nursing. This hospital currently does not have their own IRB process. A disclosure statement was added to every email sent to the participants prior to them completing the survey in Qualtrics. Informed consent was waived because the project presented no more than minimal risk of harm to subjects and involved no procedures for which written informed consent is normally required. The three key ethical principles addressed in this project included: respect for persons, beneficence, and justice. Respect for persons was maintained because participants maintained autonomy. The survey was sent out to every RN practicing in the ICU and they had the choice on whether to respond or not anonymously via Qualtrics. Autonomy was maintained because participants could choose to participate freely (Varelius, 2006). Participants were not asked to provide their name. Data security was maintained by data collection via Qualtrics, limited access to the computer used to analyze data, and collection of only the minimum necessary subject identifiers. Beneficence refers to acting in kindness to benefit others (Sundean & McGrath, 2013). Overall, the goals of healthcare providers conducting research are to promote good and do no harm. The immediate benefit of this study was increased awareness about delirium. The long term benefit was

increased awareness of staff feelings towards delirium that may help further develop delirium education. Additionally, this can be accomplished by minimizing risks. Because the survey was sent to participants that can voluntarily respond, there is minimal to no risk. Justice was maintained because surveys were distributed fairly and equally to every RN working in the ICU unless he or she was still on orientation. All data was treated equally.

### **Demographics**

The survey was available to participants between October 1, 2016 to October 15, 2016. The survey was sent out to 21 nurses working in the intensive care unit. There was a 61.9% response rate (n=13). Of the sample, there were 3 males (23%) and 10 females (77%). The age range of the participants was 26-63 with a mean age of 43.3 years old. The level of education was varied. 30.8% of participants had an associate's degree (n=4). 53.8% had a bachelor's degree (n=7). 7.7% had some Master's, PhD, or DNP (n=1). 7.7% had a Master's, PhD, or DNP (n=1). There was a wide range of experience working as a RN in the ICU from less than a year to 25 years. The mean number of years working in the ICU was 6.8 years and the median was 2. The number of years working as an RN in this particular ICU also varied greatly from less than a year to 17 years. The mean number of years working in this ICU was 3 years with a median of 1. Most of the participants, 84.6%, had never practiced in another ICU that used a delirium screening tool (n=11). Demographics can be viewed on Table 3.

TABLE 3. *Demographics Collected.*

<b>Variable</b>	<b>n</b>	<b>%</b>
<b>Gender</b>		
Female	10	77%
Male	3	23%
<b>Age</b>		
20-25	0	0%
26-30	2	15.4%
31-35	2	15.4%
36-40	3	23%
41-45	1	7.7%
46-50	1	7.7%
51-55	1	7.7%
56-60	1	7.7%
61-65	2	15.4%
<b>Number of years worked as a RN in the ICU</b>		
Less than 1	4	30.7%
1-5	4	30.7%
6-10	1	7.7%
11-15	2	15.4%
16-20	1	7.7%
21-25	1	7.7%
<b>Number of years worked as a RN on this unit</b>		
Less than 1	4	30.7%
1-5	7	53.8%
6-10	1	7.7%
11-15	0	0%
16-20	1	7.7%
<b>Have you ever practiced on another unit that used a delirium screening tool?</b>		
Yes	2	15.4%
No	11	84.6%
<b>Level of education</b>		
Associate's degree	4	30.7%
Bachelor's degree	7	53.8%
Some Master's, PhD, or DNP	1	7.7%
Master's, PhD, or DNP	1	7.7%

## Results

As expected, 46.2% agree and 30.7% strongly agreed that delirium is an underdiagnosed problem. Results were varied on whether delirium was difficult to interpret in ICU patients, but 54.8% agree and 30.7% strongly agree that delirium is difficult to interpret in intubated patients. 53.8% of the population disagreed or were neutral that we currently oversedate our patients. However, both participants that have used delirium screening tools before agreed that we oversedate our patients. Five nurses disagreed that delirium was difficult to interpret in ICU patients, while 8 participants agreed or strongly agreed that it was difficult to interpret. The standard deviation for this question was 1.07 with a variance of 1.14. 92.3% either agreed or strongly agreed that assessing ICU patients for delirium is a worthwhile intervention.

A majority of participants either strongly disagreed or disagreed that patients with delirium are rarely agitated. No participants agreed or strongly agreed that patients with delirium are rarely agitated. Interestingly, 38.5% disagreed and 30.7% were neutral that delirium is largely preventative. All participants with less than a year of experience in the ICU, were neutral or disagreed that delirium is largely preventative, but older and the most experienced participants did believe that delirium was largely preventative. All nurses agreed or strongly agreed that delirium was a problem that required active intervention. Answers varied on the initial treatment of delirium. Surprisingly, all nurses with less than a year of experience were neutral or disagreed that antipsychotics should be the initial line of treatment for delirium. Both participants with higher education, also disagreed or strongly disagreed that antipsychotics should be the first line of treatment for delirium. 5 participants were either neutral or agreed that antipsychotics should be the initial intervention for all patients with delirium. Despite 69.2% of the participants

agreeing that they felt heard by the intensivist/physician when they suspect the patient is delirious, 76.9% are neutral that they are satisfied with the applied treatment. Results of all questions from this study can be viewed in Table 4 and Table 5.

TABLE 4. *Survey Responses.*

<b>Question</b>	<b>Strongly disagree = n, (%)</b>	<b>Disagree = n, (%)</b>	<b>Neutral = n, (%)</b>	<b>Agree = n, (%)</b>	<b>Strongly agree = n, (%)</b>
Delirium is an underdiagnosed problem	1 (7.7%)	0 (0%)	2 (15.4%)	6 (46.2%)	4 (30.7%)
Delirium is a “normal” part of ICU hospitalization	1 (7.7%)	7 (53.8%)	2 (15.4%)	3 (23%)	0 (0%)
Delirium is a problem that requires active interventions on the part of caregivers	0 (0%)	0 (0%)	0 (0%)	8 (61.5%)	5 (38.5%)
Delirium is associated with higher patient mortality	0 (0%)	1 (7.7%)	2 (15.4%)	6 (46.2%)	4 (30.7%)
ICU patients with delirium are rarely agitated	4 (30.7%)	7 (53.8%)	2 (15.4%)	0 (0%)	0 (0%)
Initiation of antipsychotic therapy (e.g., Haldol) should be in the initial intervention for all patients with delirium	2 (15.4%)	6 (46.2%)	3 (23%)	2 (15.4%)	0 (0%)
Delirium is challenging to assess in ICU patients	0 (0%)	5 (38.5%)	0 (0%)	7 (53.8%)	1 (7.7%)
Delirium is difficult to interpret in intubated patients	0 (0%)	1 (7.7%)	1 (7.7%)	7 (53.8%)	4 (30.7%)
I do not feel that using a delirium assessment tool improves outcomes	4 (30.7%)	5 (38.5%)	4 (30.7%)	0 (0%)	0 (0%)
Delirium assessment tools are too complex to use	2 (15.4%)	4 (30.7%)	7 (53.8%)	0 (0%)	0 (0%)

TABLE 4 - *Continued*

<b>Question</b>	<b>Strongly disagree = n, (%)</b>	<b>Disagree = n, (%)</b>	<b>Neutral = n, (%)</b>	<b>Agree = n, (%)</b>	<b>Strongly agree = n, (%)</b>
Physicians do not use my assessments in their decision making	1 (7.7%)	5 (38.5%)	2 (15.4%)	4 (30.7%)	1 (7.7%)
I feel that there is not enough time to complete delirium assessments	1 (7.7%)	7 (53.8%)	3 (23%)	2 (15.4%)	0 (0%)
Delirium is largely preventative	0 (0%)	5 (38.5%)	4 (30.7%)	3 (23%)	1 (7.7%)
Delirium in the ICU is associated with long term neuropsychological deficits	1 (7.7%)	1 (7.7%)	5 (38.5%)	6 (46.2%)	0 (0%)
We oversedate most of our patients in the ICU	0 (0%)	4 (30.7%)	3 (23%)	5 (38.5%)	1 (7.7%)
Delirium impairs weaning from the ventilator	0 (0%)	1 (7.7%)	0 (0%)	8 (61.5%)	4 (30.7%)
I understand what delirium is and the types of delirium	1 (7.7%)	1 (7.7%)	5 (38.5%)	5 (38.5%)	1 (7.7%)
If asked on the spot, I can give a definition of delirium	0 (0%)	2 (15.4%)	4 (30.7%)	7 (53.8%)	0 (0%)
My delirium assessments are accurate	0 (0%)	2 (15.4%)	9 (69.2%)	2 (15.4%)	0 (0%)
My colleagues' delirium assessments are accurate	1 (7.7%)	2 (15.4%)	8 (61.5%)	2 (15.4%)	0 (0%)
I am comfortable assessing my ICU patients for delirium	0 (0%)	3 (23%)	6 (46.2%)	4 (30.7%)	0 (0%)

TABLE 4 - *Continued*

<b>Question</b>	<b>Strongly disagree = n, (%)</b>	<b>Disagree = n, (%)</b>	<b>Neutral = n, (%)</b>	<b>Agree = n, (%)</b>	<b>Strongly agree = n, (%)</b>
I am confident in communicating my concerns about presence of or risk for delirium to my patients' critical care provider	0 (0%)	1 (7.7%)	3 (23%)	7 (53.8%)	2 (15.4%)
I can identify at least 2 interventions that can be used to prevent or decrease duration of delirium in ICU patients	1 (7.7%)	1 (7.7%)	4 (30.7%)	7 (53.8%)	0 (0%)
I feel that assessing ICU patients for delirium daily is a worthwhile intervention	0 (0%)	1 (7.7%)	0 (0%)	7 (53.8%)	5 (38.5%)
I think that delirium is a major problem in the ICU	0 (0%)	1 (7.7%)	4 (30.7%)	5 (38.5%)	3 (23%)
In difficult to treat delirium I believe that all psychoactive drugs should be ceased	0 (0%)	6 (46.2%)	6 (46.2%)	1 (7.7%)	0 (0%)
In difficult to treat delirium I have a feeling of powerlessness	0 (0%)	4 (30.7%)	2 (15.4%)	5 (38.5%)	2 (15.4%)
In difficult to treat delirium I have the feeling that nothing helps and that the patient should improve spontaneously over time	0 (0%)	10 (76.9%)	2 (15.4%)	0 (0%)	1 (7.7%)
In difficult to treat delirium I feel the patient gets less delirious as their physical condition improves	0 (0%)	2 (15.4%)	2 (15.4%)	9 (69.2%)	0 (0%)
When I suspect the patient is delirious I feel heard by the physician/intensivist	1 (7.7%)	2 (15.4%)	1 (7.7%)	9 (69.2%)	0 (0%)
When I suspect the patient is delirious, the physician/intensivist confirms my opinion	1 (7.7%)	0 (0%)	5 (38.5%)	7 (53.8%)	0 (0%)

TABLE 4 - *Continued*

<b>Question</b>	<b>Strongly disagree =n, (%)</b>	<b>Disagree = n, (%)</b>	<b>Neutral = n, (%)</b>	<b>Agree = n, (%)</b>	<b>Strongly agree = n, (%)</b>
When I suspect the patient is delirious, I am satisfied with the applied treatment	1 (7.7%)	0 (0%)	10 (76.9%)	2 (15.4%)	0 (0%)

TABLE 5. *Survey Response Analysis.*

<b>Question</b>	<b>Mean</b>	<b>Median</b>	<b>Mode</b>	<b>Standard deviation</b>	<b>Variance</b>	<b>Interquartile range</b>
Delirium is an underdiagnosed problem	3.9	4	4	1.07	1.15	1.50
Delirium is a “normal” part of ICU hospitalization	2.52	2	2	0.93	0.86	1.5
Delirium is a problem that requires active interventions on the part of caregivers	4.38	4	4	0.49	0.24	1
Delirium is associated with higher patient mortality	4	4	4	0.88	0.77	1.5
ICU patients with delirium are rarely agitated	1.85	2	2	0.66	0.44	1
Initiation of antipsychotic therapy (e.g., Haldol) should be in the initial intervention for all patients with delirium	2.38	2	2	0.92	0.85	1
Delirium is challenging to assess in ICU patients	3.31	4	4	1.07	1.14	2
Delirium is difficult to interpret in intubated patients	4.08	4	4	0.83	0.69	1
I do not feel that using a delirium assessment tool improves outcomes	2	2	2	0.78	0.62	2

TABLE 5 – *Continued*

<b>Question</b>	<b>Mean</b>	<b>Median</b>	<b>Mode</b>	<b>Standard deviation</b>	<b>Variance</b>	<b>Interquartile range</b>
Delirium assessment tools are too complex to use	2.38	3	3	0.74	0.54	1
Physicians do not use my assessments in their decision making	2.92	3	2	1.14	1.30	2
I feel that there is not enough time to complete delirium assessments	2.46	2	2	0.84	0.71	1
Delirium is largely preventative	3	3	2	0.96	0.92	2
Delirium in the ICU is associated with long term neuropsychological deficits	3.23	3	4	0.89	0.79	1
We oversedate most of our patients in the ICU	3.23	3	4	0.97	0.95	2
Delirium impairs weaning from the ventilator	4.15	4	4	0.77	0.59	1
I understand what delirium is and the types of delirium	3.31	3	3,4	0.99	0.98	1
If asked on the spot, I can give a definition of delirium	3.38	4	4	0.74	0.54	1
My delirium assessments are accurate	3	3	3	0.55	0.31	0
My colleagues' delirium assessments are accurate	2.85	3	3	0.77	0.59	0.5
I am comfortable assessing my ICU patients for delirium	3.08	3	3	0.73	0.53	1.5

TABLE 5 – *Continued*

<b>Question</b>	<b>Mean</b>	<b>Median</b>	<b>Mode</b>	<b>Standard deviation</b>	<b>Variance</b>	<b>Interquartile range</b>
I am confident in communicating my concerns about presence of or risk for delirium to my patients' critical care provider	3.78	4	4	0.80	0.64	1
I can identify at least 2 interventions that can be used to prevent or decrease duration of delirium in ICU patients	3.31	4	4	0.91	0.83	1
I feel that assessing ICU patients for delirium daily is a worthwhile intervention	4.23	4	4	0.80	0.64	1
I think that delirium is a major problem in the ICU	3.78	4	4	0.89	0.79	1.5
In difficult to treat delirium I believe that all psychoactive drugs should be ceased	2.62	3	2,3	0.62	0.39	1
In difficult to treat delirium I have a feeling of powerlessness	3.38	4	4	1.08	1.16	2
In difficult to treat delirium I have the feeling that nothing helps and that the patient should improve spontaneously over time	2.38	2	2	0.84	0.70	0.5
In difficult to treat delirium I feel the patient gets less delirious as their physical condition improves	3.54	4	4	0.75	0.56	1

TABLE 5 – *Continued*

<b>Question</b>	<b>Mean</b>	<b>Median</b>	<b>Mode</b>	<b>Standard deviation</b>	<b>Variance</b>	<b>Interquartile range</b>
When I suspect the patient is delirious I feel heard by the physician/intensivist	3.38	4	4	1.00	1.01	1.5
When I suspect the patient is delirious, the physician/intensivist confirms my opinion	3.38	4	4	0.84	0.70	1
When I suspect the patient is delirious, I am satisfied with the applied treatment	3.15	3	3	0.68	0.46	0

## DISCUSSION

Although most participants felt that delirium was an underdiagnosed problem and that screening was a worthwhile intervention, there are some barriers to implementation of a delirium screening tool or delirium educational program. One possible barrier is that nurses may feel that their patients are not receiving the best applied treatment for delirium. Other possible barriers include: perceived difficulty in assessing ICU patients and intubated patients for delirium, perceived difficulty in using a delirium screening tool, and perceived lack of use of the information gathered from the screening tool.

The results show that delirium education may be useful to the participants. A majority of the participants either were neutral or disagreed that delirium is largely preventative. Despite many participants agreeing that they could state what delirium and the types of delirium are, a majority of participants disagreed or strongly disagreed that patients with delirium are rarely

agitated. Education on delirium prevention strategies as well as the different types of delirium, especially hypoactive delirium would benefit the staff to better manage patients with delirium.

This survey had several limitations. A majority of the participants were female and had little experience in the ICU. The response rate to the survey was approximately 2/3rds of the ICU. Although the survey was completely voluntary, participation may have been increased due to the primary researcher working as a charge nurse in the ICU. Participation may have been decreased due to the survey being sent to hospital email. Many nurses have difficulty accessing their hospital email, especially on night shift. Sending the survey to personal email instead may have increased the response rate and would have been more reflective of the unit as a whole. Many participants answered neutral to questions. It is unclear whether the participants were neutral about the question or if he or she did not know the answer because “I don’t know” was not an option.

### **Conclusion**

Delirium has been a common issue in the ICU, affecting up to 80% of patients (Eli et al., 2004). With the growing number of older adults, this number may increase in future years. Despite initiation of educational programs and delirium recognition tools, delirium remains under recognized (Devlin et al., 2008; Fick & Foreman, 2000; Yanamadala, Weiland, & Heflin, 2013). The results of this study show that most nurses feel that delirium is an underdiagnosed problem, but there is lack of knowledge regarding prevention and treatment of delirium. Because there has never been a delirium education program implemented in this ICU, it would be beneficial to tailor the education prior to implementing any delirium recognition tools. For instance, a majority of nurses were neutral or disagreed that delirium is largely preventative.

These results show that educating the group about delirium prevention strategies would be useful. Education on the types of delirium would be useful to help the nurses better recognize delirium, because many participants felt that their patients with delirium were agitated. Because over half of the nurses were neutral or disagreed that we oversedate most of our patients in the ICU, education should also include RASS scales and the importance of sedation vacations. For the education and use of a screening tool to be effective in this ICU, nurses and providers would need to be involved. Not all nurses felt heard by the provider when voicing concerns about delirium, and even those who did may not agree that they are satisfied with the applied treatment. This aligns with the Theory of Planned Behavior, because if the nurses do not see a perceived benefit to delirium screening, it may not be successful (Ajzen & Fishbein, 1975; Kasprzyk & Montano, 2008). If they are not able to obtain the outcomes they wish to achieve for their patients, there is a perceived lack of control of the situation and resistance will be met. Education on treatment of delirium should be provided to both the nurses and providers. Buy in from providers should be obtained to ensure that they support and plan to use the information gathered from delirium screening. Because 7 participants were neutral that delirium assessment tools are too complex to use, it would be beneficial in this ICU to show examples of delirium assessment tools and provide a bedside demonstration of use. As stated in the Theory of Planned Behavior, subjective norms of the group that the task is too complex to use may negatively impact adherence if the person feels pressure to comply with the other nurses (Ajzen & Fishbein, 1975; Kasprzyk & Montano, 2008). An additional study should be done to assess the sustainability after tailoring education and prevention tools based on perceptions, attitudes, and behaviors.

APPENDIX A:  
LITERATURE REVIEW

References	Study Design	Sample/Setting	Methods/Data Collection/Data Analysis	Findings	Strengths/Limitations
Fisher et al., 2015	Descriptive	<p>Sample: 24 out of 31 persons with knowledge of delirium teaching methods at medical schools</p> <p>These people included: 12 geriatricians, eight psychiatrists, three course directors, and an academic neurologist</p> <p>Setting: Medical schools in the United Kingdom</p>	<p>Data Collection: Electronic survey on open and closed questions</p> <p>Mapped learning outcomes into three themes including: knowledge, skills, and attitudes</p> <p>Data Collection: Collected surveys over six months with email reminders at two and four months</p>	<p>Only two schools covered all three learning outcomes</p> <p>Only two schools covered the attitudes domain</p> <p>Teaching methods included: 22/24 clinical placements, 20/24 lectures, 16/24 seminars, 9/24 e learning, 6/24 interprofessional learning, 5/24 role playing</p> <p>Most deliverers of teaching were geriatricians (22/24) and psychiatrists (21/24)</p> <p>Only 4 schools evaluated their teaching</p> <p>Only 3/24 schools used patient/relative involvement</p> <p>Only 13/24 schools guaranteed exposure to delirium for clinical</p> <p>Future: Previous studies have shown that just improving knowledge and skills alone has been ineffective</p> <p>Focus should be placed on work based, multidisciplinary, patient centered learning, aka increase interprofessional education</p> <p>Negative attitudes need to be addressed</p>	<p>Strengths: involved all UK schools</p> <p>Piloted the survey for usability</p> <p>Email reminders were given to maximize participation</p> <p>Limitations: response bias due to incomplete responses from some universities</p>

Belanger et al., 2015	Case study research design, descriptive	<p><b>Sample:</b>  Purposive sampling  n = 15  12 female, 3 male  23-64 years old  78% had full time positions  All participants could write, understand and speak French, had taken care of an older adult with the risk of delirium, and were available for the whole study  <b>Setting:</b>  Short stay hospital's cardiac and orthopedic surgery units</p>	<p><b>Data Collection:</b>  Data was triangulated via investigator field notes  Reflective exercises completed by participants were photocopied  A questionnaire of open ended questions was conducted at the end of end of each day of training with the aim of identifying elements that facilitated of constrained intervention implementation  Individual semi structured interviews lasting approximately 35 minutes at the start or end of a shift were conducted by an external interviewer</p> <p><b>Data Analysis:</b>  Data was analyzed by the content analysis method by Miles and Huberman using QDA miner software  Data was coded by the first author and validated by the second  Data analyzed included: 174 pages of field notes, 56 reflective exercises, 48 end of day questionnaires, and 15 semi structured interviews  Data from reflective exercises was coded by an external person  Redundant data was grouped and put into subthemes</p>	<p><b>Themes included:</b> intervention facilitators, intervention constraints, empirical knowing expressed, ethical knowing expressed, esthetic knowing expressed, personal knowing expressed, and emancipatory knowing expressed  Listening, respect and openness of participants, diversity of experiences, use of real situations, and active role facilitated intervention implementation  Personal and emancipatory patterns of knowing were rarely expressed  <b>Recommendations:</b>  Using an educational nursing intervention could improve care to older adults at risk for delirium</p>	<p><b>Strengths:</b>  Possibly transferable to nurses caring for other groups of patients  Sample was of varying educational levels and different work shifts  <b>Limitations:</b>  An external facilitator could have yielded more in depth results and removed bias  The small and unvaried sample left out other subgroups including college education and varied work experience limiting the applicability  Over 70% of the sample worked in a cardiac unit leaving out considerations for other units</p>
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(Hosie et al, 2014)	Qualitative, Critical incidence technique	<p>Sample: n = 30</p> <p>Most participants were female (n = 29) Worked in a major city (n = 28) registered or enrolled nurses working in specialist palliative inpatient care settings</p> <p>Nurses had at least 3 months experience in this setting and 12 months overall experience</p> <p>Setting: In private rooms of palliative inpatient care settings or over the phone during office hours</p>	<p>Data Collection:</p> <p>25 Face to face interviews were conducted with the option to view the vignette 30 minutes to 1-hour prior</p> <p>5 Semi structured telephone interviews were conducted with the vignette emailed out a couple of hours prior</p> <p>All interviews lasted about 20 minutes and were audiotaped When new behaviors were not collected, a further 5 participants were added to confirm data saturation</p> <p>Data Analysis: Inductive process using thematic content analysis Interviews transcribed verbatim Field notes were completed immediately after interviews All incidents were put on an electronic spread sheet All vague recollections were omitted Data was read and re-read Themes and subthemes were discussed with the research team</p>	<p>Two themes emerged as the delirium experience and nursing knowledge and practice in delirium recognition and assessment Six subthemes were: patients' delirium, concern for the patient and self, challenges naming observed changes, varying comprehensiveness of assessment, interpersonal relationships and communication valued, and uncertainty promotes desire for learning Limited delirium diagnostic criteria knowledge Recommendations: Improving nursing knowledge about delirium symptoms and diagnostic criteria will help effectively manage patient's care Delirium screening upon admission should be routine practice Education involving real patient experiences, evidenced based practice, and relevant to nursing is important although isolated education may not be enough without systematic processes for recognizing delirium</p>	<p>Strengths: Feasible method to determine nursing perspectives</p> <p>Limitations: Nurses self-selected to participate and thus the sample could be of nurses who are most interested in delirium Most participants were female (n = 29) leading to results geared towards women Most participants worked in a major city (n = 28) leading to little diversity on setting Participants may have not been given sufficient time for recall Difficulty in recall could relate to under recognition of delirium symptoms Excluded insights that could not be recalled by adhering to the CIT The interviewer was an experienced palliative care nurse so questions required objectivity</p>
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(Griffiths et al, 2014)	Consensual qualitative research approach, descriptive	<p>Sample: Purposive sampling n = 60 Male (n = 12), female (n = 48)</p> <p>12 participants were recruited from each subspecialty: three doctors, two senior nurses, three registered nurses, two healthcare assistants, one occupational therapist, and one physiotherapist Majority of participants (n =44) were White British</p> <p>Setting: Large general teaching hospital in the UK</p>	<p>Data Collection: Semi structured interviews lasting 20-70 minutes with a mean of 39 minutes using open ended questions Interviews were recorded and transcribed</p> <p>Data Analysis: Thematic analysis of interviews using Consensual qualitative research to identify patterns of responses using NVivo8 software Coding scheme tested on purposive sample of 3 interviews A revised coding scheme was made and then tested the same way This was repeated until no new categories were needed to code and the auditor had no more recommendations</p>	<p>Three overarching themes: knowledge and skills necessary for the job, interactions with patients and colleagues, and effects on staff</p> <p>Subthemes included: education and training, job expectations, experience outside formal settings, initial assessment, handling aggression and violence, communication with patients, teamwork, specialist support, emotional responses and psychological well-being, behavioral responses, job satisfaction, and confidence in competence</p> <p>Staff was aware of their lack of knowledge and skills</p> <p>Recommendations: Specialist support for education and training Care of older adults with delirium should be added to school curriculums</p>	<p>Strengths: Sample was of multiple disciplines making results more credible and applicable to the entire hospital</p> <p>Responses were collected by independent researchers</p> <p>Limitations: Only studied participants in one hospital limiting generalizability The hospital did not have a liaison psychiatry service limiting findings Patient and carer perspectives were not explored on staff education and training limiting results by not finding out if training would be perceived well Majority of subjects were female and White British also generalizing results</p>
(Brajtman et al, 2006)	Qualitative exploratory design	<p>Sample: Purposive sample n = 9 5 nurses from a palliative care unit (PCU) and 4 nurses from palliative home care From PCU 3 were registered</p>	<p>Data Collection: Semi structured interviews with open ended questions lasting about an hour Interviews were tape recorded and transcribed Experienced palliative care</p>	<p>Four themes identified: experiencing distress, the importance of presence, valuing the team, and the need to know more</p> <p>Recommendations: Provide nurses with the specific support they need to take care of patients with delirium</p>	<p>Strengths: Gave an understanding of the unique nursing experience</p> <p>Limitations: Small sample of palliative</p>

		<p>nurses and 2 were practical registered nurses The home care team were all registered nurses Experience ranged from 18 months to 10 years Setting: Large teaching hospital in Canada</p>	<p>nurses conducted the interviews Data Analysis: Thematic content analysis used for initial coding Data was organized by QSR NVivo software Data was reviewed resulting in secondary coding Independent review and peer consensus validated the data A third researcher further validated results</p>	<p>Education not only focusing on symptom management is key element to implementation although a combination of interventions may be necessary to change staff behaviors</p>	<p>care nurses does not reflect experiences of all nurses thus it is not generalized The researchers were palliative care nurses so questions needed to have objectivity</p>
Gesin et al., 2012	Quantitative	<p>Sample: 20 nurses with at least 1 year experience  63% had their BSN  53% had their CCRN  Setting: ICU at Carolinas Medical Center</p>	<p>Data Collection: Pre-test of 30 multiple choice questions was given to the nurses  2 different educational interventions were used due to different learning styles including visual, auditory, and kinesthetic  This included a 30 slide live presentation, a webcast education module, and a bedside demonstration by a validated judge  The ability of the subject nurse was evaluated by the judge  3 phases noted with the first phase with no education prior to implementation  Data Analysis: Significance was evaluated using Wilcoxon rank test</p>	<p>Nursing knowledge greater in phase 3 (P = 0.001)  Perceived difficulty in assessing delirium decreased in Phase 3 to 63.2 % from Phase 1 89.5%  Recommendations: Use multiple education methods to improve nurses perceptions about screening for delirium  Delivery by critical care pharmacists and nurses improves knowledge  Perceptions of nurses and barriers of implementation need to be addressed in education</p>	<p>Strengths: Patients were not excluded for precluding the evaluation of delirium allowing results to be generalizable  Separated implementation into several phases  Evaluator was formally trained  Limitations: Only evaluated patients at a single point in time  Nurse recall could be varied</p>

			Analysis was done by SAS version 9.2		
McDonnell et al., 2012	Quantitative descriptive design	<p>Sample: Random sample (n = 800) nurses in the national regulatory body registry; response rate was n =181</p> <p>Most were women (98.3%)</p> <p>Setting: Republic of Ireland</p>	<p>Data Collection: The Strain of Care for Delirium Index was used to collect data</p> <p>Self-reporting questionnaire</p> <p>Data Analysis: Analyzed by SPSS version 16</p> <p>Cramer's V measure of association was used to detect significant relationships</p>	<p>Identified behaviors from very difficult to quite easy</p> <p>The subjective burden that nurses experience when caring for patients with delirium is high</p> <p>Hyperactive/hyperalert behaviors are particularly hard to deal with</p> <p>Poor perceptions may hamper delirium diagnosis</p> <p>Recommendations: Also focus education on hypoactive symptoms as these may progress into poorer prognosis</p> <p>Reducing this nursing burden requires prevention or fast diagnosis and treatment</p> <p>A multidisciplinary focused prevention and intervention program is necessary</p> <p>Both education and support at required</p>	<p>Strengths: Minimized bias by using convenience sampling</p> <p>Range of responses from nurses working in diverse areas of health care</p> <p>Questionnaire was tested by a pilot study</p> <p>Limitations: Poor response rate may causes bias</p> <p>Use of a 4 point Likert scale instead of a 5 point Likert scale</p>

APPENDIX B:  
LITERATURE REVIEW 2

References	Study Design	Sample/Setting	Methods/Data Collection/Data Analysis	Findings	Strengths/Limitations
Steeg et al., 2014	Qualitative	<p>Sample: 63 participants including 28 nurses, 17 policy advisors, and 18 doctors</p> <p>Setting: 19 Dutch hospitals varying in size</p>	<p>Data Collection: Open ended semi structured interviews by two researchers</p> <p>Mapped learning outcomes into three themes including: knowledge, skills, and attitudes</p> <p>Data Analysis: Coded using MAXQDA 2007</p> <p>Coding was continued until a consensus was reached Then themes were identified</p>	<p>4 themes emerged: motivation and goals, knowledge and skills, professional role and identity, and context and resources</p> <p>Motivation and goals: nurses lack motivation to do screening because it is just another task and benefits are not clear to them</p> <p>Knowledge and skills: Feelings of knowledge varied greatly, but nurses in general were open to advice especially if feeling that patients with delirium require extra attention and make them practice poorly</p> <p>Professional role and identity: Screening is one of the first things omitted in a time crunch</p> <p>Varied in confidence levels taking care of patients with delirium</p> <p>Context and resources: Attitudes were not positive in terms of changing delirium care due to time restraints</p> <p>Some viewed screening tool as limiting their autonomy</p> <p>Future: Behaviors and perceptions need to be taken into consideration when making guidelines otherwise there will be resistance</p>	<p>Strengths: perceptions were taken from various health care professionals providing a wide range of responses</p> <p>Limitations: Participants were chosen by hospital contact person leading to possible selection bias</p> <p>Only done in one country</p>

<p>Randen et al., 2013</p>	<p>Qualitative Cross sectional survey design</p>	<p>Sample: Convenience sample sent to 183 qualified nurses</p> <p>Inclusion criteria included: specialty educated ICU nurse, minimum of 6 months of practice in an ICU, and experience with ventilated patients</p> <p>86 nurses of the 183 completed the survey</p> <p>Median experience was 14 years</p> <p>Setting: Three general ICUs in Norway</p>	<p>Data Collection: Self-administered questionnaire distributed by nurse managers to eligible nurses in a non-identifiable envelope</p> <p>Questionnaire was guided by The Symptom Management Model by Dodd</p> <p>Included 3 sections: (1) unit sedation practices, (2), perception of personal sedation practice, assessment of unpleasant signs and symptoms, (3) demographic data</p> <p>Data Analysis: Data was analyzed by SPSS 15.0.1</p> <p>Descriptive statistics and frequencies were performed</p>	<p>Less than half of sample believed that pain or delirium occurred frequently</p> <p>Physiological signs were hardly identified but facial grimacing and agitation were considered crucial signs</p> <p>Oversedation was not noticed as well as undersedation</p> <p>Future: Further studies are needed to help communicate levels of consciousness and intolerance of unpleasant symptoms</p>	<p>Strengths: Pilot tested for linguistic and general style and scope and relevance by 4 ICU nurses</p> <p>Limitations: Results reflect perceptions rather than actual practice</p> <p>Unable to compare actual experiences of patients due to difficulty in obtaining consent in ventilated patients</p>
<p>Morandi et al, 2015</p>	<p>Qualitative and quantitative  Prospective cohort study</p>	<p>Sample: 74 subjects including: 33 caregivers, 8 staff nurses, 20 physical therapists, and 13 staff nurse aides</p> <p>81% of caregivers were female</p> <p>Setting: In hospital rehab ward in Italy</p>	<p>Data Collection: Caregiver and staff were evaluated 3 days after resolution of delirium superimposed on dementia</p> <p>Standardized questionnaire</p> <p>Open ended questions by one of two neuropsychologists</p> <p>Data Analysis: Questionnaire analyzed by descriptive statistics</p> <p>Open ended questions were evaluated by qualitative content analysis</p> <p>Reviewed and coded by four authors</p>	<p>Mean distress level of caregivers was moderate</p> <p>Mean distress level was lower for nurses than physical therapists or aides</p> <p>Staff worried about inability to understand pt's needs and provide care</p> <p>Little distress was reported unless the patient was aggressive</p> <p>Other emotions included: apathy, loss of dignity, anxiety, and fear</p> <p>Future: Future studies should focus on effect of staff and caregiver distress on psychological interventions for the</p>	<p>Strengths: Both qualitative and quantitative</p> <p>A variety of staff members included</p> <p>Limitations: Unable to identify specific predictors of distress due to small sample</p> <p>No control group of patients with dementia without delirium</p>

			into labels and topics	patient	
Belanger et al., 2011	Literature review meta-analysis	<p>Sample: Search was done via CINAHL and Medline and yielded 68 articles</p> <p>After filtering 17 articles remained</p>	<p>Data Analysis:</p> <p>Two themes emerged from 6 articles associated with nurses experiences (1) incomprehension and other feelings of discomfort (2) various goals and interventions</p>	<p>6 articles were associated with nurses experiences</p> <p>It was hard to understand the patient's needs</p> <p>Discomfort was caused from varying reasons including: perceived distress to the patient and complex situations</p> <p>Had doubts when taking care of these patients</p> <p>Keeping their distance often</p> <p>Future: Acknowledge lived experience of patients, recognize, treat, and prevent delirium with multidisciplinary team</p>	<p>Strengths: Future avenues for improvement discussed</p> <p>Many articles pertained to the lived experience of patients and staff</p> <p>Limitations: Articles were excluded if they dealt with any other health problems</p>
Devlin et al., 2008	Quantitative web based survey	<p>Sample:</p> <p>601 critical care nurses</p> <p>331 respondents</p> <p>75% had their BSN</p> <p>Mean age =40.2 years</p> <p>Mean years = 13.6 years</p> <p>Setting: 3 academic teaching and 2 community hospitals in Boston</p> <p>Neurological, trauma, and burn ICUs were not utilized</p>	<p>Data Collection: Survey distributed via email and a hard copy given bedside</p> <p>The survey was sent at biweekly intervals to each nurse twice</p> <p>Paper copies were distributed either bedside or in mailboxes at the hospital</p> <p>Data Analysis: Analyzed using standard statistics, t tests, x2 analysis, and Mann Whitney test</p> <p>SPSS 14.0</p> <p>P less than 0.05 significant</p>	<p>40% of those surveyed stated that their sedation protocols did not specify on delirium</p> <p>Only 13% of those working at community hospitals assessed for delirium</p> <p>Common reported barriers to delirium assessment included: intubation, complex evaluation tools, and inability to screen sedated pts</p> <p>Those who rarely or never screened for delirium did not believe delirium to be underrecognized</p> <p>Nurses that rarely screened also believed that first interventions for</p>	<p>Strengths: Anonymous collection of data</p> <p>Sent to nurses working at multiple different ICUs</p> <p>Limitations: Response bias due to only 55% response rate</p> <p>No validation due to self-reported data</p> <p>Only sent out to staff nurses</p> <p>Only surveyed nurses in one city</p>

		Selected by random numbers table		delirium should be anti-psychotics Future: Nurses may be unaware of pts needs Screening should be mandated by Joint Commission Increase education of delirium for nurses	
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