FACTORS INFLUENCING NURSES' PERCEPTIONS AND PRACTICES REGARDING ASSESSMENT OF DELIRIUM AMONG INTENSIVE CARE UNIT PATIENTS AT KENYATTA NATIONAL HOSPITAL

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DECLARATION

I confirm that this dissertation is my original work and to the best of my knowledge it has not been presented for a degree or any other award in any other university.

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CERTIFICATE OF APPROVAL

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DEDICATION

I dedicate this work to my family; to my mother Mrs. Jane Nyarangi and daughter Lexy Bahati Moragwa for their enduring support, understanding and encouragement throughout the study.

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LIST OF ABBREVIATIONS

APA	American Psychological Association
CAM-ICU	Confusion Assessment Method Intensive Care Unit
CT	Computed Tomography
DSM-IV	Diagnostic Statistical Manual of mental disorders version IV
HDU	High Dependency Unit
ICCU	Intensive Care Unit
ICDSC	Intensive Care Unit- Delirium Screening Checklist
ICU	Intensive Care Unit
KNH	Kenyatta National Hospital
MRI	Magnetic Resonance Imaging
PAD	Pain Agitation Delirium
RASS	Richmond Agitation Sedation and Score
RCT	Randomized Controlled Trial
SCCM	Society of Critical Care Medicine
SPSS	Statistical Package for Social Sciences

OPERATIONAL DEFINITIONS

Confusion: inability for clear and coherent thoughts and speech.

Consciousness: a product of arousal and being aware of the environment.

Cultural factors: perception or beliefs about causes, assessment and treatment of delirium.

Delirium: it is an acute condition characterized by sudden change and fluctuation of mental status, inattention, disorganized thinking, and an altered level of consciousness.

Demographic factors: are variables that are used to define characteristic of nurses such as age and education level.

Determinants: demographic factors, institutional factors and cultural factors that influence perception and practices of nurses regarding delirium assessment.

Institutional factors: are factors that influence the quality of care given to patients such as trainings, assessment tools, guidelines/protocols or staffing levels.

Intensive Care Nurse: a nurse with advanced problem solving abilities using specialized knowledge regarding the human response to critically ill patients in Intensive Care Unit.

Morbidity rate: delirium associated cases and/ or complications occurring in delirious patients within 48 hours of admission to the Intensive Care Unit.

Perception: cognition and personal understanding of delirium.

Practice: delirium detection and prevention of delirium.

The Hospital: Kenyatta National Hospital

The knowledge: knowledge on delirium and its assessment using a tool.

The patient: A critically ill patient in ICCU KNH who is intubated or with tracheostomy and is on mechanical ventilation

The unit: Intensive Care Unit, KNH

ABSTRACT

Background: Delirium is an acute loss of consciousness and cognitive ability which poses an impact on the patient, family and the hospital. It is associated with increased mortality rates, prolonged hours in mechanical ventilation, stress to the patient and family, increased need for nursing scrutiny and prolonged hospitalization. In order to manage delirium, it must be detected first by the Intensive Care Unit nurses who are in constant contact with patients.

Broad objective: To establish factors influencing nurses' perceptions and practices regarding assessment of delirium among ICU patients in KNH.

Methodology: a descriptive cross- sectional design with qualitative study nested on quantitative study was used in this study. A simple random sampling method was used to select study participants. The study was conducted in the General Intensive Care Unit at Kenyatta National Hospital, Kenya. Ethical approval was sought from KNH and University of Nairobi ethics and Research Committee while authority to conduct the study was sought from the hospital administration. Data was obtained from consented nurses working in ICU. The sample size was 88 ICU nurses from whom quantitative data was collected while interview was conducted from 3 nurse in-charges. Quantitative data was collected using a questionnaire while the qualitative data was collected using an interview guide and audio recorded. Quantitative data was analyzed using statistical package for social sciences (SPSS) version 23. Descriptive and inferential statistics was used to examine the distribution of variables and statistical significance measured using chi square. Qualitative data was transcribed verbatim, coded and deductively analyzed into themes using content analysis method. The results were presented in graphs, tables, figures and in narrative form.

Results: More than half of the nurses (71%) reported that their ICU lacked an established guideline to screen for delirium and that sedation protocol did not specify assessment of delirium. Preferred methods for assessing delirium in a 12-hour shift included assessing ability to follow commands (78.4%), checking for agitation-related events (48.9%). They also reported the unavailability of other reliable, specific, and validated delirium tools. Only 32.5% of the nurses reported using the Confusion Assessment Method for the Intensive Care Unit while 9.1% and 13.6% indicated using the Intensive Care Delirium Screening Checklist and psychiatric consultation respectively. This could be a leading cause of low frequency of delirium assessment among the studied sample as 38.6% of the nurses indicated that they never assessed delirium while 34.1% rarely assessed the patients for delirium. In addition, more than half (55.7%) respondents reported that they had never been trained on delirium assessment and monitoring.

Conclusion: In conclusion, the study shows that majority of the nurses working in Kenyatta National Hospital ICU do not assess delirium among the critically ill patients.

Nurses demographic factors such as age, years of experience and level of training do not influence assessment of delirium among the critically ill patients in ICU.

Cultural factors of ICU nurses such as delirium is a 'normal' part of ICU environment, delirium is caused by depression of illness or associated with old age slightly influence assessment of delirium among ICU patients.

Institutional factors such as unavailability of delirium guideline, appropriate assessment tool and training on assessment of delirium are significant contributors to lack of delirium assessment by majority of the nurses in ICU. The possible impact of this is under diagnosis of delirium requires intervention strategies on the part of ICU management

CHAPTER ONE: INTRODUCTION

1.1 Background information

Intensive Care Units (ICUs) are centers of treatment reserved for patients who need high standard of care by specialized caregivers to treat and manage life threatening illnesses and diseases. Patients in these units are at a greater risk of developing delirium, which has been identified as one of the complications of prolonged hospitalization and prolonged mechanical ventilation, affecting 20% to 80% of patients in ICU (Allen & Alexander, 2012). In addition, Luis et al, (2017) reported 20-40% of delirium cases in non-mechanically ventilated patients in ICU and 60-80% in mechanically ventilated patients. Despite this, delirium is still under-recognized and therefore not addressed promptly (Hamdan-Mansour, Farhan, Othman, & Yacoub, 2010). This therefore indicates that delirium prevalence is on the rise and assessment of patients to detect delirium is important for early intervention.

The number of delirious patients in CCU could be increasing due to increase in number of patients admitted to ICU. Center for Disease Control and Prevention [CDC] (2015a) estimates that, more than 300,000 patients receive mechanical ventilation in the United States per year. In the Kenyan setting, the ratio of ICU beds to the general population is very high (0.29 ICU beds/100000) according to Okech and Chokwe, (2015), with critically ill patients often have to wait for availability of an ICU bed before admission. This is important, bearing in mind that all ICU patients are predisposed to developing delirium during their ICU stay and therefore requiring routine assessment of delirium for prompt intervention.

In order to accomplish the assessment of delirium and intervene early, one must understand what delirium is and how it presents among ICU patients. According to the Diagnostic and Statistical

Manual of Mental Disorders (DSM) IV, delirium is characterized by acute disturbance of consciousness and cognition, particularly a decrease in attention span, memory deficit, disorientation and language disturbance. Pun & Ely, (2007) defines delirium as a sudden confusional state characterized by fluctuating mental status and either impaired reasoning or disturbance of consciousness. In addition, American Psychiatric Association (2013) defines delirium as a sudden disturbance in attention and awareness that fluctuates and can be due to pre-existing dementia or underlying organic etiologies. Voyer et al., (2008) indicated that delirium is sometimes misinterpreted as dementia or depression. Therefore, knowing what delirium is, will prevent misdiagnosing it with other conditions such as dementia or agitated related events such as pain which might lead to delayed intervention.

Prompt detection of delirium among ICU patients is key for implementation of management and preventive measures for patients at risk of developing delirium. In order to achieve this, nurses should assess delirium because they are always at the bedside during every shift. Day, Higgins & Koch, (2008), indicated that nurses are in the best position to assess delirium in ICU patients due to the amount of time they spend at the bedside. In addition, Devlin et al., (2008) indicated that critical care nurses who are in constant contact with ICU patients are in the best position to practice the routine delirium assessment. The studies however failed to indicate if the nurses involved in the assessment of delirium had the necessary training to be able to detect delirium among ICU patients. Nevertheless, critical care nurses should assume a leading position among ICU patients regarding monitoring of delirium.

It is suggested that all ICU patients be screened for delirium at the index of admission to the unit and during the patient's stay in ICU. Boot (2012); Eastwood et al., (2012) indicated that although delirium has an acute onset that fluctuates throughout the day and can be missed, nurses should perform routine screening at least once per shift. This can be achieved by identifying patients who are likely to develop delirium. The predisposing factors include advanced age, existing neurological disorders, chronic diseases, some medications and the surrounding environment (Wells 2012; Bruno & Warren 2010). Wells 2012 study failed to highlight cultural beliefs that might influence nurses' judgment on identifying the risk factors that might lead to development of delirium. For example, old age does not necessarily mean a patient will develop delirium. Therefore, nurses should use evidence based practice while assessing the delirious patients in order to avoid misconceptions that are not scientifically proven.

In addition, according to Florence Nightingale's environmental theory, nurses' primary focus was to manipulate the patient's environment to maintain and achieve a state of health. Devlin, Fong, Fraser & Riker (2007), indicate that nurses' role should not only include detecting predisposing factors that lead to development of delirium but also continuously orient the patient to place, time and self. In addition, a nurse should minimize interruptions during sleep periods by providing sleep and wake cycles, minimize noises in ICU, hydrate the patient, range of motion exercises, assess and relief pain. Therefore, reducing the risk of delirium development among critically ill patients in ICU can be achieved by making the environment conducive for the patients.

Some groups of ICU patients require specific attention in the assessment of delirium for example use of a tool to assess delirium. However, due to the fact that most patients admitted to ICU require mechanical ventilation and sedation hence not able to talk, it might be a challenge for the nurses to assess these critically ill patients (Hanaa et al., 2013). Sedation and analgesic protocols suggest that all patients be routinely assessed using a validated assessment tool (Gesin et al., 2012). The study failed to identify whether there is a protocol that guides assessment of delirium and whether all the nurses have the knowledge on how to use an assessment tool. This is key, bearing in mind that most patients in ICU are mechanically ventilated and therefore the need to use the most appropriate tool that is easy to understand is necessary.

In addition, delirium is a psychological disturbance and therefore a neurological disorder that requires an appropriate tool for assessment. Aysel et al., (2017) indicated that neurological assessment should be done to all ICU patients initially using Glasgow Coma Scale to identify unresponsive patients who will be rendered not suitable for assessment. However, tools can aid in the screening of unresponsive patients for example intubated patients (Devlin et al., 2008). Some tool identified to be commonly used included; the Organic Brain Syndrome Scale, the Confusion Assessment Method for the ICU (CAM-ICU), Intensive Care Delirium Screening Checklist (ICDSC) and the Neelon and Champagne Confusion Scale (NEECHAM) (Adamis et al., 2009). However, the study failed to identify the most appropriate validated tool for use among the critically ill patients in ICU. This is key because an assessment tool should be specific and be used in a specific setting. Therefore, a tool should be easy to understand and use by the nurses in the assessment of delirium which is a neurological disorder.

Furthermore, a tool that is easy to use and apply in ICU is the most appropriate. Among the assessment tools mentioned, CAM-ICU is most commonly used and recommended internationally because of its validity (Luetz, Heymann, Radtke & Chenitir, 2010). It is easy to administer and takes a short time to administer. On average the CAM-ICU requires only 20 minutes training and less than five minutes of the nurse's time (Sri-On, Tirrel, Wuthisuthimethawee & Liu, 2014). This indicates that CAM-ICU is time saving, having in mind that ICU has a lot of activities involving patient care for a limited time. Therefore, CAM-ICU can be used routinely in the assessment of delirium in ICU.

1.2 Problem Statement

Delirium is one of the parameters that should be assessed among the critically ill patients. According to American Association of Nurses (2012) there should be a guideline for delirium assessment that specifies the frequency of assessing all ICU patients, using a validated tool such as CAM-ICU and ICDSC. In addition, patients at risk of developing delirium should be identified and measures taken to prevent delirium development.

According to a study conducted in a multidisciplinary tertiary care hospital in Chicago, USA in ICU patients by Grover et al., (2017), 68% of the patients in the study had delirium during their ICU stay. This was similar to a study by Luis et al., (2018) in Mexico which indicated that out of 109 patients involved in the study 22.9% developed delirium with a mortality rate of 12% of those who developed delirium in ICU. In addition, a multicenter study conducted in Uganda, Africa on incidence and risk factors for delirium among mechanically ventilated patients in ICU by Kwizera and Nakibuuka, (2015), 51% of the patients studied had delirium. However, delirium assessment was ranked fourth after the assessments of GCS, pain, agitation related events by all nurses involved in the study (Hanaa et al., 2013). Unfortunately, there is no published data on

delirium assessment in Kenya despite the fact that the vulnerable ICU patients are at high risk of developing delirium which has been shown to be one of the most common complications of ICU hospitalizations.

Delirium assessment by use of a validated tool can ensure early detection and therefore appropriate care is given to the critically ill to avoid deterioration of the mental status. Hashim & Ismail, (2012) reported that nurses are facing major problems related to early detection and management of critically ill patients with delirium. In addition, Meunier (2010) indicated that ICU nurses have misconceptions concerning the patient with delirium and that nurses base their practice on myths and traditional beliefs. Therefore, nurses should have knowledge about delirium assessment and base their judgment on evidence-based practice while assessing the delirious patients. However, despite many studies conducted worldwide, no studies have been carried out in Kenya. This study therefore seeks to address this evidence gap in the Kenyan setting. The study will also answer questions such as; do nurses in ICU assess delirium routinely, do they have a delirium guideline, do they have training about delirium assessment and their cultural beliefs in the assessment of delirium in General ICU KNH.

1.3 Study Significance/justification

Delirium complications not only affect individual patient or family but also have an impact on the country's economy. These consequences include; increased mortality rates of ICU patients and hospital, prolonged time on mechanical ventilation and hospital stay, and increased cost of hospitalization.

The Hospital's mission is to offer specialized and standard quality care services to its patients and participate in national health planning and policy making. Identifying the perceptions and

practices of Intensive Care Unit nurses regarding delirium assessment in ICU, KNH will give the hospital a foundation to enhance prevention of delirium. This can therefore be achieved through establishing a guideline that specifies delirium assessment, training critical care nurses on delirium and its preventive measures, establishing a standardized assessment tool, and encouraging nurses to assess delirium.

If nurses are not able to assess and detect delirium for early interventions, there will be prolonged ICU stay due to deteriorating mental status of delirious patients and can lead to delayed admission of other critically ill patients in need. It can also cause stress to the family members of the delirious patients to feel unsatisfied with the care provided to their patient. In Kenya, no study has been carried out to identify perceptions and practices of nurses regarding delirium assessment in ICU. Therefore, findings from this study may be useful in restructuring the environment if need be and improving care given to delirious patients in ICU, with the aim of reducing ICU mortality and morbidity. The study will also be useful for benchmarking by other county hospitals in the country and encourage future related researches.

In view of the fact that KNH is the Country's National Referral and Teaching Hospital with the largest CCU in East and Central Africa, joining other big hospitals in the world in delirium case surveillance and sharing delirium prevalence trends through CDC reports is of great importance.

1.4 OBJECTIVES

1.4.1 Broad Objective

To establish factors influencing nurses' perceptions and practices regarding assessment of delirium among ICU patients in KNH.

1.4.2 Specific Objectives

1. To establish nurses' demographic factors that influence their perceptions and practices in the assessment of delirium among critically ill patients in ICU KNH.
2. To identify nurses' cultural factors that influences their perception of assessment of delirium among the critically ill patients in ICU KNH.
3. To determine institutional factors that influence nurses' perceptions and practices regarding assessment of delirium among the critically ill patients in ICU KNH.

1.5 Research Questions

1. What are nurses' demographic factors that influence their perceptions and practices in the assessment of delirium among critically ill patients in ICU KNH?
2. What are the nurses' cultural factors that influence their perceptions and practices of assessment of delirium among the critically ill patients in ICU KNH?
3. What are institutional factors that influence nurses' perceptions and practices regarding assessment of delirium among the critically ill patients in ICU KNH?

1.6 Null Hypothesis

1. There is no relationship between nurses' demographic factors and their perceptions and practices regarding assessment of delirium in KNH ICU.
2. There is no relationship between nurses' cultural factors and their perceptions and practices regarding assessment of delirium in KNH ICU.
3. There is no relationship between institutional factors and nurses' perceptions and practices regarding assessment of delirium in KNH ICU.

1.7 Theoretical Framework

This study's goal is to apply Betty Neuman's system model which suggests preventive measures as the most important intervention and points to environmental risk factors that need to be addressed for the patient to maintain his or her healthy state (Gomez.T, Luz .O, Diaz.S, Leticia C.M & Fabian 2016). In addition, preventive measures are key and can be achieved in order to avoid complications associated with prolonged hospitalization of patients in ICU especially delirium.

Predisposing factors that can lead to the development of delirium include; noises from alarms of monitors and ventilators, lack of continuous orientation to time, place and self, continuous lighting, use of sedatives especially benzodiazepines and insomnia (Gomez .T et al., 2016). In addition, the predisposing factors should be prevented by continuous orientation, providing all the information the patient requires, minimizing activities during sleep time, decreasing noises at night and allowing the patient to use aids that help in sleeping. According to Zakieh .A & Tabandeh .S (2017), nurses responsibility is viewed in terms of reaction to stressors and the use of preventive measures which are; primary, secondary and tertiary prevention.

In primary prevention, the nurse applies knowledge to identify patients at risk of developing delirium and prevent it. This can be achieved if the nurse has the training and skills about delirium and this will influence demographic factors such as, years of experience and level of training. In secondary prevention, the nurse performs prompt assessment of delirium and intervenes to avoid further deterioration of the patient's cognitive function. In order to assess delirium there should be fulfillment of institutional factors such as provision of a delirium guideline, training and an appropriate assessment tool. While in tertiary prevention, nurses

ensures that after treatment of delirious patients, they are able to adapt to the environment and after discharge, because patients often experience feelings of shame, guilt, and fear of recurrence which can be ignored. Therefore, nurses should be able to care for these patients without placing their judgment on beliefs but rather on evidence based practice. In addition nurses' cultural factors should be considered such as beliefs because nurses might neglect caring for the older patients after discharge from the hospital through viewing delirium as a disease for older people.

1.8 Conceptual Framework

In view of Betty Neuman's System Model which suggests prevention measures as the most important intervention and points on environmental risk factors that need to be addressed for the patient to maintain his or her healthy state (Gomez .T et al., 2016). The preventive measures included primary, secondary and tertiary prevention. In this study, primary prevention can be operationalized as the demographic factors such as level of training and years of experience. Secondary prevention can be achieved through institutional factors such as training, guideline and assessment tool. Lastly, tertiary prevention is viewed as the nurses' cultural factors such as traditional beliefs.

The dependent variable is assessment of delirium which is dependent on nurses' demographic, institutional and cultural factors. It is worth noting that assessing delirium will prevent the patient from deterioration of mental status and variables that may influence knowledge and prevention practices on delirium include nurse trainings, protocol establishment, nurse's attitude and the hospital policies.

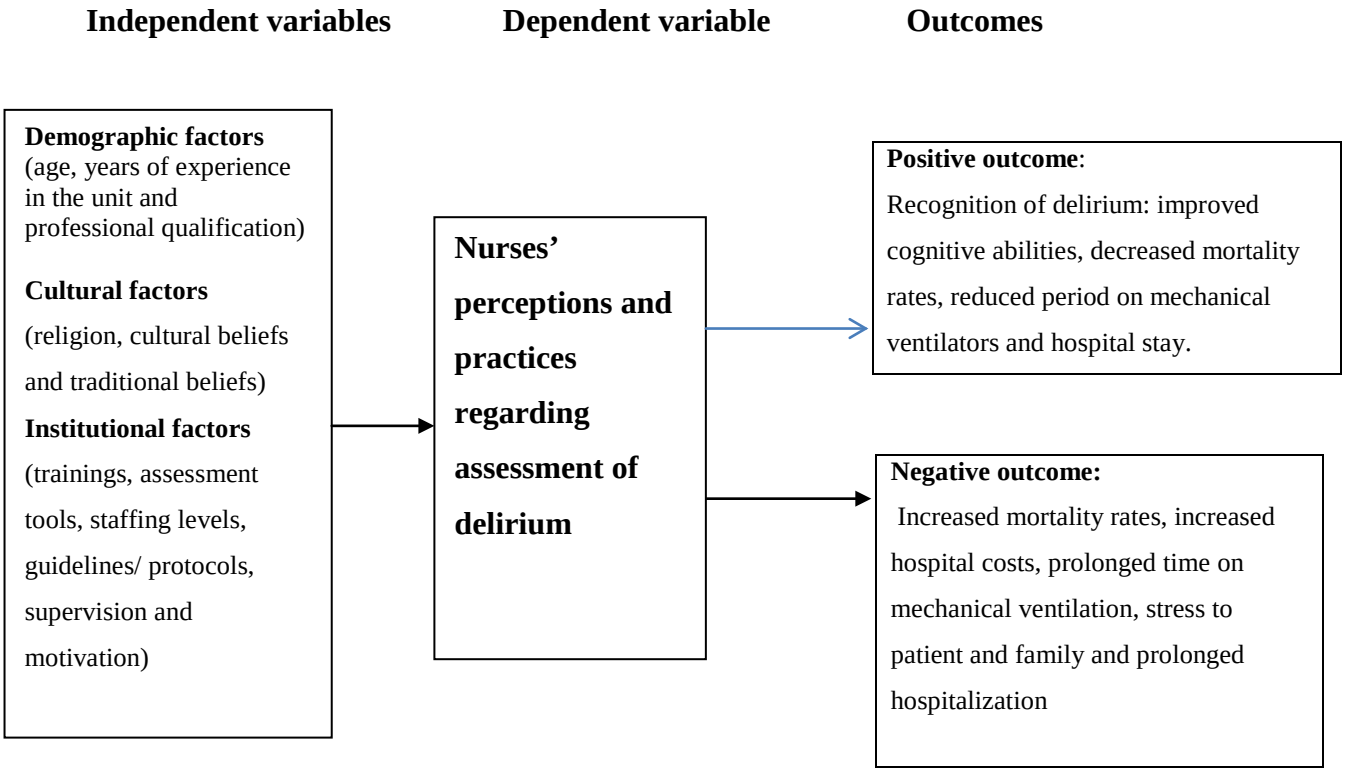

Figure: 1.1 Conceptual Framework

CHAPTER TWO: LITERATURE REVIEW

This chapter covers delirium assessment in details and include; definition, assessment of delirium, nurses' demographic factors, nurses' cultural factors and institutional factors that influence perceptions and practices regarding delirium assessment and conclusion.

To achieve this, the researcher searched several literature databases including; The University of Nairobi library digital Repository, Google scholar and Hinari. Current literature and sources within the last ten years were used as well as seminal literature. The following key search terms and combination of search terms were used; delirium, assessment of delirium, delirium assessment tools and perception and practices on delirium assessment.

2.1 Definition of delirium

Delirium is known to be a reversible condition of the central nervous system that is characterized by an acute disturbance of consciousness and cognition, particularly a decrease in attention span, abnormal psychomotor activity and sleep disturbances. Pun & Ely, (2007) says that delirium is a sudden confusional state characterized by fluctuating mental status with either impaired reasoning or disturbance of consciousness. In addition, American Psychiatric Association APA (2013) defines delirium as a sudden disturbance in attention and awareness that fluctuates and can be due to preexisting dementia or underlying organic etiologies. Since delirium is reversible, this means that if critical care nurses are able to screen delirium in ICU patients, they will be able to detect delirium early and therefore intervening early to prevent complications of delirium that would result to the poor patient outcomes.

2.2 Assessment of delirium

Delirium is an abrupt brain dysfunction which remains undetectable by both nurses and physicians in more than 65% of ICU patients and up to 81% of mechanically ventilated patients develop delirium (AHA et al., 2014). This may lead to self-extubation of ICU patients and

increased oxygen demand. Assessment of delirium is recommended to be done at least once per shift using assessment scale such as the Confusion Assessment Method for ICU (CAM ICU) or Intensive Care Delirium Screening Checklist (ICDSC). In addition, continuous ambulation of ICU patients improves respiratory, psychological, immune, circulatory status, and muscle strength hence prevent occurrence of delirium and should be done at least twice a day. According to AHA et al., (2014), mobilization can decrease delirium duration by 50%, can decrease ICU length of stay by 25%, and can increase the likelihood of return to independence by the time of discharge by nearly 75%.

The CAM-ICU (Confusion Assessment Method for the Intensive Care Unit) tool is a revised version of the original confusion assessment model, and has been created for use in the ICU setting with mechanically ventilated critically ill patients (Bruno & Warren, 2010). Therefore, critical care nurses can be trained on how to use the CAM-ICU tool at the bedside because it offers a quick and comprehensive screening of the ICU patients. In addition, prompt assessment of delirium will help reduce short-term and long-term complications associated with delirium thus, better patient outcome. Another highly recommended tool that is used to assess delirium is Intensive care delirium screening checklist (ICDSC). This checklist has an eight-point questionnaire that has key features of delirium that are used to identify delirium symptoms (Allen & Allexander, 2008). This tool assesses for altered level of consciousness, decreased attentiveness, disorientation, abnormal psychomotor activity, incomprehensible speech, insomnia and hallucinations (Girard et al., 2008). In order to avoid missing out delirium symptoms a structured, understandable and easy to use diagnostic instrument should be available in the critical care units.

In addition, tools have been identified to screen for delirium, yet nurses are unable to use them and rely on clinical experience to assess for delirium. The use of CAM-ICU and ICDSC has been suggested because of their validity and reliability (Zaal, 2017). Delirium assessment tools that have been identified include; CAM-ICU, Intensive Care Delirium Screening Checklist (ICDSC), Nursing Delirium Screening Scale (Nu-DESC), and Delirium Detection Score (DDS) (Boot, 2012). Out of all the screening tools, Confusion Assessment Method for the Intensive Care Unit (CAM-ICU) and the Intensive Care Delirium Screening Checklist ICDSC has been researched intensively and validated to be used in the medical field (Boot, 2012). This is because they are easy to use and can be used bedside by the ICU nurses for a quick and thorough assessment of delirium. Therefore, identification of an appropriate tool initiates assessment of delirium among critically ill patients in ICU.

However, according to the study conducted by Xing et al., (2017) in China it revealed that 16% of respondents reported the use of CAM-ICU, and another 16% reported the use of ICDSC. In comparison, 34.46% participants claimed to monitor delirium using their methods of assessing and 18.21% of participants reported no use of screening tools. The results indicated that nurses do occasionally use CAM-ICU and ICDSC tools in assessing delirium in ICU.

2.3 Demographic factors that influence nurses' perception and practice in the assessment of delirium

Literature review indicates that training and length of experience of the nurses working in the ICU might have an impact on nurses' perceptions and practices regarding delirium assessment. According to a descriptive, correlational study conducted in five public Turkish hospitals on practices and perceptions on delirium in ICU on nurses by Aysel Özsaban and Rengin Acarogluet (2015), the mean age of the participants was 28·84 years. Out of all participants, 48·2% had achieved degree level, 41·5% had between 2 and 5 years of clinical experience which

were the majority. Despite almost half of the nurses having Bachelor's degrees, a small number of these nurses (14·7%) who participated in this study reported to be assessing delirium. Therefore, level of education and years of experience might not have an influence on perceptions and practices of nurses' regarding delirium assessment. Comparably, the results of a study conducted by Hanaa & Fatma (2013) to assess critical care nurses' practices and perception of delirium among critically ill patients in different critical care settings in Cairo University Hospitals, Egypt, indicated that 95.8% of the nurses in the study had diplomas and half of the nurses had worked in ICU for 6-16 years. Despite the many years of experience, more than half of the nurses never assessed delirium. According to this study, years of experience was not a major factor influencing perception and practices of the delirium assessment.

In another study by Devlin et al., (2008), 75% of the participants had a baccalaureate degree and worked in a medical or surgical ICU at a teaching hospital. The nurses who responded had a mean age of 40.2 although the frequency of delirium assessment was not different between nurses who were 40 years old with those who were 40 years old and above. Also nurses had worked in an ICU for a mean of 13.6 years. Despite the study indicating that most nurses had achieved degree level, routine delirium assessment was less performed as 47% of the nurses in the study reported. Therefore, the level of education might not influence perception and practices of nurses on delirium assessment in ICU patients. This was similar to another descriptive study conducted on nurses' perception and practices towards delirium in ICU conducted in Saudi Arabia at King Fahad Hospital of University, by Khadija and Hemida (2018). More than three-quarters of nurses (76%) had baccalaureate degree while only 23% had diplomas but still reported lower routine assessment of delirium. In Kenya or Africa, it is perceived that most nurses are trained at a higher diploma level as CCU nurses.

2.4 Cultural factors that influence nurses' perception and practice in the assessment of delirium

Delirium is a well-recognized and preventable condition among ICU patients and in order to assess delirium effectively, misconceptions about delirium should be identified and corrected. Such as; how nurses judge delirious patients or what is known by the nurses as the etiology of delirium and whether evaluation of delirious patients is based on misconceptions rather than on evidence based nursing. Xing et al., (2017) conducted a study to assess the knowledge, perceptions and interventions concerning CCU nurses' and doctors' understanding of delirium from 74 tertiary and secondary hospitals across Shandong province, China. The results indicated that 88% agreed that delirium is due to prolonged mechanical ventilation, and 79.72% indicated that delirium is related to prolonged length of stay in the hospital while 14.17% suggested that delirium is normal part of ICU setting. However, in Kenya almost three quarters of the population is under the age of 30 years based on data from Central Intelligence Agency CIA (2018). Therefore, low risk of developing delirium in ICU.

According to a study by Grover et al., (2011) on 72 nurses who had patients with delirium, more than one-third of the nurses (36.11%) perceived that the symptoms of delirium had non-organic etiology like supernatural causation, depressions due to physical illness, tension due social stresses, hysterical behavior, disobeying the gods and sense of isolation. About 8% of the nurses had no reason for delirium occurrence and had no opinion about its existence. From the results of this study, delirium assessment can be a challenge because of how caregivers perceive delirium in ICU.

2.5 Institutional factors that influence nurses' perception and practice in the assessment of delirium

Nurses spend more time at the bedside with the ICU patients where they are in a position to evaluate delirium but yet nurses remain unable to accurately detect the delirious patient. This can be due to lack of a guideline or hospital protocol, a standardized tool, misconception that the assessment tool is difficult to use, adequate education and training on delirium and inadequate time (Devlin et al., 2008; Wells, 2012). According to National Institute for Health and Clinical Excellence, (NICE 2010) guidelines in the UK, the aim of a guideline is prevention of delirium in patients with predisposing factors through non-therapeutic treatment of modifiable factors. This indicates that for nurses to be able to assess delirium there should be an established guideline that recommends and advices assessment of delirium using a standardized tool thus, improving the quality and services of care.

Hospital guideline or protocol has also been shown to influence delirium assessment. A study on staff nurses' knowledge of delirium in a Teaching Hospital in South East Asia by Christensen (2013) indicated that only 39% of nurses were aware that a hospital guideline existed about delirium assessment, 69% had no formal training on delirium assessment and 46% were not using delirium screening tool for the assessment of delirium. This indicated that an established guideline or protocol, a standard tool for assessing delirium and training of ICU nurses on delirium assessment would probably have an influence on perceptions and practices regarding delirium assessment in ICU patients.

Assessment is the first and the most crucial stage in evaluating and diagnosing ICU delirium because without assessment there will be no intervention. A descriptive exploratory study conducted by Hanaa & Fatma (2013) to assess critical care nurses' practices and perception of delirium among critically ill patients in Egypt, indicated that 54.2% of the nurses included in the

survey never assessed delirium and 100% of the nurses had not received training on the assessment of delirium. This indicates that delirium was under recognized due to low knowledge on delirium assessment (Hamdan et al., 2010). Therefore, training is an institutional factor that influences the assessment of delirium in ICU.

Delirium remains unrecognized by ICU nurses; due to lack of knowledge on delirium assessment and some studies recommend training of all the ICU nurses on methods of assessing delirium and its prevention. ICU nurses have a low level of knowledge about ICU delirium according to Hamdan-Mansour, Farhan, Othman, and Yacoub's, (2010) survey on nurses' knowledge and practices regarding ICU delirium in Jordan and this was similar to a study by Elliott (2014) conducted in United Kingdom. The results indicated that 44% of those studied had not yet received education on delirium, and only one of the ICUs was using the CAM-ICU to monitor for delirium. Therefore, in these two studies lack of delirium education was consistent and had an impact on delirium assessment.

Critically ill patients in ICU are continuously assessed on other parameters that monitor any deviation that needs intervention such as agitation events and ability to follow commands. In a study conducted by Meunier et al., (2010), 80% of nurses reported using the ability of the patient to follow commands method at least four times in a shift followed by the evaluation of agitated related events which was reported by 65% of nurses at least four times a shift. However, in this study, use of confusion assessment method (CAM-ICU) was lower at (35.2%), psychiatric consultation (13.6%) and finally intensive care delirium screening checklist (ICDSC) (9.1%). In Kenya, no study has been done to measure whether nurses use these tools.

Delirium assessment cannot be achieved without the use of a tool to assist in screening delirium and it is indicated that nurses should use assessment tools in diagnosing delirium. According to Ely et al., (2004) 16% of the nurses involved in a survey carried out in America indicated the use of screening tools to assess delirium. Similarly, Scelsi, Giusti, Federica & Sandra (2011) also gave a report of 12% of the nurses in Italy who reported using a tool to assess for delirium. In addition, there was a report that only 7% used tools to assess for delirium by Van, Kesecio˘glu & Slooter (2008). These studies indicate that majority of the caregivers do not use screening tools in the assessment of delirium and this can due to the tools being too complex to use or some caregivers are not aware that the tools exist. Therefore, a standard tool that is easy to understand and use can influence perception and practices of nurses regarding delirium assessment among critically ill patients in ICU.

2.6 Conclusion

The literature review established that nurses play a key role in identification of delirium and that the many practice guidelines recommended routine assessment for delirium using CAM-ICU and ICDSC in ICU. Nevertheless, future research and quality improvement should determine which single screening tool is appropriate for assessing delirium in regular practice in ICU. In addition, caregivers perceived delirium assessment differently and therefore, perception should be addressed for correction. Also, from the literature, most nurses lacked the knowledge and ability to demonstrate competence in managing delirious patients and this was a barrier for delirium assessment. Therefore, educational strategies are needed to promote assessment and management of delirium among ICU nurses. With growing body of literature, delirium remains underdiagnosed even among ICU nurses. Exploring the practices and perceptions on delirium assessment in ICU patients will provide the opportunity for a better understanding and

awareness. This is because nurses screening for delirium has been shown to have several advantages to patients, nurses' and hospitals. This will also help in maximizing patient outcome, staff satisfaction and provide an excellent standard of professional practice. There is a great need for further education on how to manage and care for delirious patients.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the methodology that was used during the study. It comprises a detailed account of the research design, target population, sampling techniques and sample size, research instruments, data collection procedures and data analysis techniques.

3.2 Study Design

The study utilized the descriptive cross-sectional design with qualitative nested on quantitative study. This was because the data gathered was from participants with varied characteristics and demographics known as variables. Qualitative study was done to add information on quantitative study in establishing determinants of nurses' perceptions and practices of assessing delirium in ICU at KNH.

3.3 Study Area

The study was conducted at Kenyatta National Hospital because it is the country's National Teaching and Referral Hospital with the largest ICU in East and Central Africa,. It is located at the capital city and receives referrals from all counties. It has a total bed capacity of 2,034 beds with a percentage occupancy rate of 82.4% in the year 2017. The facility has various specialties and departments in the hospital. The hospital had 74,580 total admissions in the year 2017 with an average of 8.3 days' length of stay. KNH has many critical care units that is; Pediatric Intensive Care Unit (PICU), Neonatal Intensive Care Unit (NICU) and Cardiology Intensive Care Unit (CICU). Currently General ICU has a capacity of 21 beds with 113 nurses. It is categorized as open general ICU. Approximately 95% of the nurses in the unit are specialized in critical care nursing, with the remaining number of nurses having either Master's degree or Bachelor of Science in Nursing and usually but not always work at a normal staffing ratio of 1 patient to 1 nurse. There are morning; afternoon and nights shifts for all nurses working in the

unit. Other key players are physicians, surgeons, nutritionist, physiotherapists, pharmacists and counselors.

3.4 Study Population

The study population consisted of all qualified 113 nurses in the General Intensive Care Unit because nurses spend most of their time bedside with the patients as compared to other health workers.

3.4.1 Sample Size Determination

The sample size was obtained using Yamene Taro formula (1967) which provides a simplified formula to calculate sample sizes. Calculated as follows:

$$n = \frac{N}{1 + N(e)^2}$$

Where; n-was the desired sample size,

N-was the population size, an

e-was the level of precision.

Therefore, with a population of 113

N = 113

e = 0.05

$$n = \frac{113}{1+113(0.05)^2}$$

$$= \frac{113}{1+113(0.0025)}$$

$$= \frac{113}{1.2825}$$

=88

Sample size 88 nurses.

3.4.2 Sampling Method

Simple random sampling was used to identify participants who met the inclusion criteria. The participants picked a folded piece of paper from a basket. Each of the papers had a ‘yes’ response or ‘no’ response. Those who picked the yes response were included in the study. The researcher identified those participants on duty who picked ‘yes’ responses and informed them about the study before distributing the questionnaires until the required number (88) was reached.

3.5 Eligibility Criteria

3.5.1 Inclusion Criteria

The study participants included all qualified nurses working in General ICU at Kenyatta National Hospital who consented regardless of cadres or age.

3.5.2 Exclusion Criteria

The study excluded the nurses who could have participated but could not such as those on annual leave or sick offs.

3.6 Data collection

3.6.1 Data Collection Tool

Quantitative data was collected using a paper based survey tool adopted from Devlin et al., (2008) in their title Assessment of delirium in the Intensive Care Unit: Nurses’ Practices and Perceptions in Boston, Masachusettes area. The tool was previously designed to compare sedation assessment with delirium assessment in different practice settings. The survey was distributed to a pilot group of six ICU nurses at Tufts Medical Centre who were not included in the initial survey. This group was asked to comment on the clarity and distinctiveness of each response item. The reliability of the survey instrument was measured by distributing the survey to a pilot group of ten nurses who had not been involved before in the instrument validation

process. These nurses completed the survey twice at an interval of at least two weeks. The resulting agreement between the answers provided during these two attempts was 86 %.

The study conducted by Devlin et al (2008) indicated that sedation assessment was identified to be highly implemented by critical care nurses in mechanically ventilated ICU patients using a validated tool (98%) while only 47% assessed for delirium. The study concluded that sedation assessment was the first step in assessing delirium. The researcher however has adopted this and modified some items. For example, some items related to demographics, practice, knowledge and perception of nurses regarding delirium assessment were included because they were relevant to the study title and other items on barriers of delirium assessment, sedation and assessment of other conditions in ICU patients dropped since that were not relevant to the study and not applicable in our health system.

The questionnaire developed for this study had three sections (appendix 1)

Section A: **Demographics factors that influence nurses' perception and practices in delirium assessment.** It included social-demographic characteristics of the nurses working in the General ICU such as age, years of experience and level of training.

Section B: Institutional factors that influences nurses' perception and practices in delirium assessment. Included; delirium guideline or protocol, training and an assessment tool.

Section C: Cultural factors that influence nurses' perception and practices in during screening of delirium. Included; misconceptions of nurses regarding delirium.

For qualitative data collection, key informants who included the nurse in-charge and two team leaders were approached and upon consenting they were interviewed by the researcher who guided the interview as per the interview guide (appendix v).

3.6.2 Reliability and Validity of the Research Instrument

Pretesting of the questionnaire was carried out in Medical Critical Care Unit situated in eighth floor, ward 8A because patients in this unit are also at a greater risk of developing delirium. The sample size used for pretesting was 9 nurses which represented 10% of the 88 nurses that were used during the study. The questionnaire was pretested for consistency, accuracy, timing and reliability. The results obtained from the pretest indicated an agreement with the tool and that the tool was testable, therefore no changes were made to the tool.

3.7 Data collection procedures

3.7.1 Recruitment process

The researcher gained access to the unit by introducing herself to the unit in-charges and provided evidence of approval from ethics to undertake the research. Eligible participants were recruited from the General Intensive Care Unit; by simple random sampling where the participants were asked to pick pieces of paper written ‘No’ and ‘Yes’. Those who picked ‘yes’ were included in the study and this process was repeated till the required number (88) was achieved.

3.7.2 Consenting procedure

The researcher approached and introduced self to the participants who met the inclusion criteria. Study participants were given information on purpose of the study and benefits. They were also informed about no anticipated risks during the study. This was to facilitate informed consent before participation. The process was repeated in every shift until the 88 number of participants was reached.

3.7.3 Data Collection

Data was collected from the 88 participants working in General ICU, KNH. The researcher administered the questionnaires by herself from one participant to the other in every shift;

morning, evening and night shifts until all the 88 questionnaires were correctly and completely filled. Data verification was done concurrently with data collection.

3.7.4 Interview procedure

Each prospective informant who were; one in-charge and two team leaders working in General ICU, KNH was approached and explained about the study and then asked to give informed consent in order to conduct an interview. Each participant was taken to a reserved room in the general ICU where face to face interview was conducted. The audio responses were recorded with concurrent writing of some notes.

3.8 Data management and analysis

Data was entered by the researcher and statistician. Quantitative data analysis was done using both descriptive statistics and chi-square. All the data was sorted, coded and entered into the computer through the statistical package for social sciences (SPSS) version 23. Descriptive statistics were presented using frequency tables, graphs and figures while chi-square was presented in form of a table. The graphs and figures were drawn using Microsoft excel. Qualitative data was transcribed verbatim, coded and deductively analyzed manually. All data collected was kept locked and confidential at all times and only accessible by the researcher.

3.9 Variables

Dependent variable was delirium assessment while the independent variables were nurses' demographic factors, nurses’ cultural factors and institutional factors.

3.10 Dissemination of Results

Study finding will be presented to members of staffs working in General ICU, KNH, school of nursing, Nairobi University repository and it will also be published.

3.11 Ethical Considerations

Ethical approval was sought from KNH-UON Ethics research committee (appendix VIII). The permission to carry out the study was sought from the Kenyatta National Hospital administration and Head of Department ICU (appendix IX). Informed consent was obtained from individual staff members and coded numbers used to uphold their confidentiality, the information given was kept confidential and the subjects were allowed to withdraw from the study at any stage.

3.12 Limitations

Information bias; trust that everything the participants say is the true reflection of them.

Unavailability of local studies on the topic; recommend further research.

Nurses might not give the exact practice done in ICU; researcher ensures confidentiality.

CHAPTER FOUR: RESEARCH FINDINGS

4.1 Introduction

The purpose of this study was to identify factors that influence nurses' perceptions regarding the assessment of delirium and the existing practices regarding assessment of delirium in ICU at KNH. The recruitment of study participants, data collection and analysis took about six weeks. This was done in the month of June and July 2018. In this chapter the researcher presents the research findings of the study from 88 participants who responded to a questionnaire and 3 key informants who were interviewed. There was a 100% response because the researcher administered the questionnaires by herself and ensured that they were correctly and completely filled. The results are presented and interpreted based on the objectives and conceptual framework. These include demographic factors such as age, years of experience and level of training, cultural factors and institutional factors such as presence of a guideline, assessment tool and training. The results are presented using frequency tables and figures while chi-square was presented inform of a table. Qualitative data was transcribed verbatim, coded and deductively analyzed into themes manually.

4.2 Socio-demographic factors

The distribution of the demographic characteristics among ICU nurses is shown in table 1. The table presents the age, training in critical care nursing, level of training in critical care nursing and years worked in ICU.

Table 4.1: Socio-demographic factors of the participants

Variable	Frequency	percent (%)
Age		
21 - 30 years	4	4.5
31 - 40 years	41	46.6
41 - 50 years	39	43.3
Above 50 years	4	4.5
Training in critical care nursing		
Yes	83	94.3
No	5	5.7
Level of training in critical care nursing		
Higher Diploma	82	98.8
BSc. Nursing	1	1.2
Years worked in ICU		
1 - 5 years	27	30.7
6 - 10 years	37	42
11 years and above	24	27.3

4.2.1 Relationship between socio-demographic factors of ICU nurses and assessment of delirium for ICU patients

A chi-square test was done to ascertain a relationship between socio-demographic factors of ICU nurses and assessment of delirium. The socio-demographic factors were: age of the nurse, training in critical care nursing and years worked in ICU while the question about frequency on evaluation of patients for presence of delirium in 12 hour shift was used as the most appropriate dependable variable to depict assessment of delirium. Before a chi-square test was run, some transformations were made on the variables of interest to ensure that the rule of the chi-square was not violated. The result is presented in table 2.

From table 4.2, it is shown that there was a relationship between age of nurses and training in critical care nursing and frequency of assessment of delirium for ICU patients. 25.6% of nurses

aged 41 years and above frequently or always assess presence of delirium in ICU patients as opposed to 24.4% of those aged between 21 – 40 years. Likewise, only 26.5% of the nurses who had a training on critical care nursing reported that they did assessment of delirium to ICU patients as opposed to none for those who had no training on critical care nursing.

Table 4.2: Relationship between socio-demographic factors of ICU nurses and assessment of delirium for ICU patients

Variable	Category	Frequency on evaluation of patients for presence of delirium in 12 hour shift		Degrees of freedom	Chi square – value	P - value
		Never or Once	Frequently or Always			
Demographic Factors						
Age of Nurses	21 - 40 years	75.6% (34)	24.4% (11)	1	0.015	0.902
	41 years and above	74.4% (32)	25.6% (11)			
Training in Critical Care Nursing	No	100.0% (5)	0.0% (0)	1	1.767	0.184
	Yes	73.5% (61)	26.5% (22)			
Years Worked in ICU	1 - 5 years	66.7% (18)	33.3% (9)	2	4.492	0.106
	6 - 10 years	86.5% (32)	13.5% (5)			
	11 years and above	66.7% (16)	33.3% (8)			

4.3 Nurses' cultural factors that influence perception and practices in assessment of delirium

The participants were asked to respond to statements on cultural factors that are percieved to affect perception and practices in assessment of delirium. The response were in a likert scale as either stongly agreed, moderately agreed, neither agreed nor disagree, moderately disagree and strongly disagree. Majority (75.0%, n = 66) of the respondents agreed strongly and moderately that delirium is caused by depression. Other highly rated statements for possible causes or reasons for delirium were: deliriuma is associated with old age (65.9%, n = 58); delirium is a "normal" part of ICU environment (51.1%, n = 45) and delirium is a hysterical behaviour (42.0%, n = 37). On the contrary, majority (83.0%, n = 73) of the respondents strongly and moderately disagreed that delirium is a punishment from gods. They also disagreed to a large

extent that: delirium is caused by supernatural forces (76.1%, n = 67); delirium is a “normal” part of ICU environment (42.0%, n = 37) and percentage almost equal to those who associated delirium with hysteria as indicated above.

4.3.1 Relationship between cultural factors and assessment of delirium for ICU patients

A chi-square test was done to ascertain a relationship between perceived cultural factors that affect perception and practices of assessment of delirium and frequency of delirium assessment. This was to test hypothesis that the current perceptions of ICU nurses in KNH have no influence on assessment of delirium among critically ill patients. The cultural factors were: delirium being part of ICU environment, delirium associated with old age, delirium is a hysterical behavior, delirium is a punishment from the gods, delirium is caused by depression due to depression and delirium is caused by supernatural forces. The question about frequency on evaluation of patients for presence of delirium in 12 hour shift was used as the most appropriate dependable variable to depict assessment of delirium. Before a chi-square test was run, some transformations were made on the variables of interest to ensure that the rule of the chi-square was not violated.

There was a relationship between the cultural factors and frequency on assessment of delirium. For example, 75% (7) of those who agree that delirium is caused by supernatural forces, never or rarely assess for delirium. However, the number of the nurses is only 7, out of the 88 nurses. Likewise, 24.1% of those who agreed that delirium is associated with old age assessed delirium frequently or always as opposed to 28.6% of those who disagreed. On the contrary, 30.3% of those who agreed that delirium is caused by depression due to illness frequently or always assessed delirium in ICU patients as opposed to only 5.6% of those who disagreed.

Table 4.3: Relationship between cultural factors and assessment of delirium for ICU patients

Variable	Category	Frequency on evaluation of patients for presence of delirium in 12 hour shift		Degrees of freedom	Chi square – value	P - value
		Never or Once	Frequently or Always			
Cultural Factors						
Delirium is caused by supernatural forces	Agree	87.5% (7)	12.5% (1)	2	0.817	0.665
	Disagree	73.1% (49)	16.9% (18)			
	Neutral	76.9% (10)	23.1% (3)			
Delirium is caused by depression due to illness	Agree	69.7% (46)	30.3% (20)	2	4.62	0.099
	Disagree	94.4% (17)	5.6% (1)			
	Neutral	75.0% (3)	25.0% (1)			
Delirium is a punishment from the gods	Agree	50.0% (1)	50.0% (1)	2	0.697	0.706
	Disagree	75.3% (55)	24.7% (18)			
	Neutral	76.9% (10)	23.1% (3)			
Delirium is a hysterical behavior	Agree	70.3% (26)	29.7% (11)	2	1.926	0.382
	Disagree	75.0% (30)	25.0% (10)			
	Neutral	90.9% (10)	9.1% (1)			
Delirium is associated with old age	Agree	75.9% (44)	24.1% (14)	2	0.88	0.644
	Disagree	71.4% (20)	28.6% (8)			
	Neutral	100.0% (2)	0.0% (0)			
Delirium is a 'normal' part of the ICU environment	Agree	73.3% (33)	26.7% (12)	2	2.148	0.342
	Disagree	73.0% (27)	27.0% (10)			
	Neutral	100.0% (6)	0.0% (0)			

4.4 Institutional factors that influence nurses' perception and practices in assessing delirium

4.4.1 Existence of a Delirium guideline in ICU

The participants were asked whether there is a delirium guideline within their unit. The results indicated that majority (71.6%, n = 63) of the respondents indicated that there is no delirium guideline within ICU. This might be because there is no established delirium guideline in the unit or the nurses are not aware if it exists.

During the interview, the interviewees were also asked whether there was a delirium assessment guideline within the ICU. All the interviewees indicated that there are no delirium assessment guidelines or protocols within the unit. "*We don't have a protocol but involve the neurologist, surgeons and physicians who came to review patients and we have also the neurological*

assessment tool that we use to assess the status of our patients every morning or after every shift (interviewee 3).

4.4.2 Frequency of delirium assessment specified in ICU sedation protocol

The participants were asked to indicate whether ICU sedation protocol specified the frequency of delirium assessment. Majority (58.0%, n = 51) of the respondents indicated that frequency of delirium assessment is not specified in the ICU sedation protocol.

The interviewees were asked to estimate the proportion of the delirious patients in their unit possibly based on sedated cases. They had these to say: "I *have not rated but some of them have delirium*" (interviewee 1). "*Not every patient but a few patients who are confused but not in comatose"* (interviewee 2). *Proportionally, you can say one out of 10 people admitted in ICU present with confusion at one time or the other"* (interviewee 3).

4.4.3 Frequency of evaluating patients for presence of delirium

The participants were asked to specify the frequency of evaluating patients for presence of delirium at the index admission. The response is presented in figure 4.1. This indicates that there is no set frequency of assessing delirium among ICU patients.

According to the interviews, two agreed that delirium assessment is done but there is no clear guideline on how it should be done. The other indicated that assessment is not done at index admission but it is noticed with time during management of a patient. They had these to say: "*Yes we do, through the presentation of the patient*" (interviewee 1). "*We don't have a tool for assessing the same, so as time goes by that is when we discover the patient has delirium"* (interviewee 2). "*Yeah….yeah we do but it is done at the entry point because every patients who is admitted to ICU has to be reviewed by several medical practitioners to include the nurse* (interviewee 3).

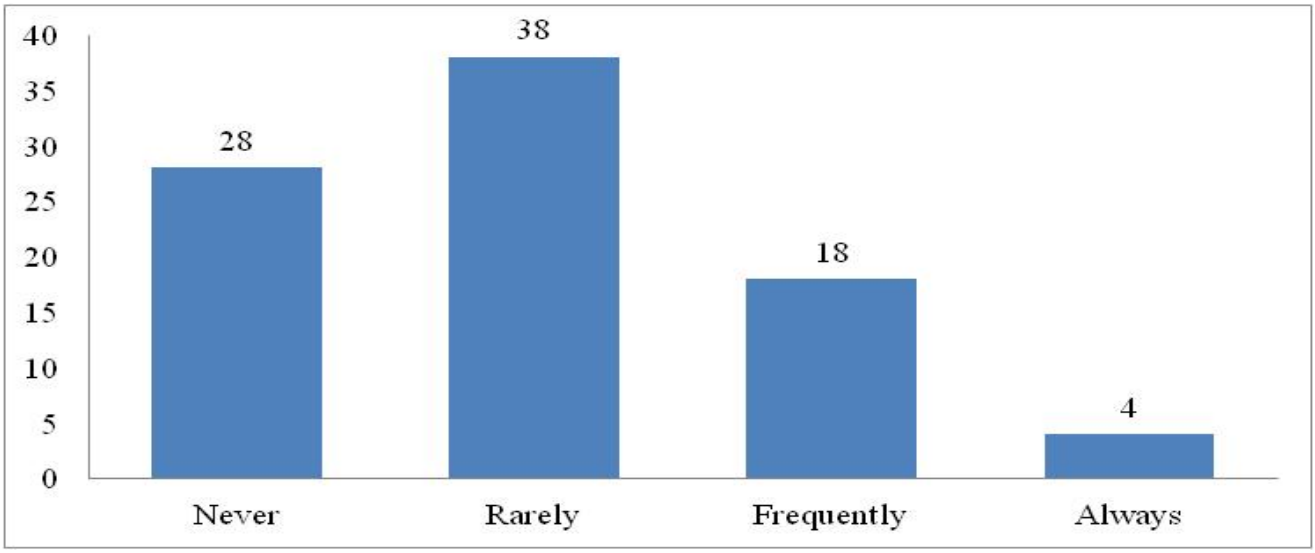

Figure 4.1: Frequency of evaluating patients for presence of delirium

4.4.4 Frequency of evaluation of delirium in a 12 hour shift

The participants were further asked how frequent they evaluate delirium in ICU patients in a 12 hour shift as a routine. 38.6% (n = 34) of the respondents stated that they never evaluate delirium on patients admitted in ICU in a 12 hour shift and another 34.1% (n = 30) respondents only do this once in a 12 hour shift.

Interviewees were asked about the frequency of assessing delirium on routine basis. They had this to say: *"Often….4 hourly"* (interviewee 1). *"Unless now the patient shows signs of delirium that is when we work on it, I think we should develop a tool for the same"* (interviewee 2). *"We do it periodically; at-least every shift. A nurse and a medical practitioner who is around have to do the head to toe examination which include even delirium assessment so, we can't miss it out we do it per shift"* (interviewee 3).

4.4.5 Assessment method and frequency of use of an assessment tool in a 12 hour shift

The participants were asked the type of method they know or they have heard of and whether they have used any of the methods before or are currently using to assess delirious patients and the results are illustrated in table 4.4. From the table, the most commonly used method, at-least twice in a 12 hour shift, is ability to follow commands (78.4%, n = 68), followed by agitated related events at 48.9% (n = 43).

The interviewees were asked on the methods used for assessment of delirium. They stated that there was no standard method or way of assessing delirium in their unit.

"We do not have a standard scale or check-list that we use. One assess how awake a patient is and for a long time we have always used Glasgow Coma Scale (GCS)" (interviewee 1).

"Mostly we check level of consciousness by using Glasgow Coma Scale to obtain how the patient is responding in terms of brain functioning" (interviewee 2).

This was explained further by the third interviewee as follows: *we do not have a documented tool to.....but they are taught since 99.9% of our nurses use GCS to assess patients.*

Table 4.4: Assessment method and frequency of use an assessment tool in a 12 hour shift

Assessment method	Assessment per 12 hour shift (Frequency, %)						
	Never heard of	Never used	Rarely	Twice	2-3 times	4-6 times	More than 6 times
Agitation related events	10 (11.4)	24 (27.3)	11 (12.5)	13 (14.8)	22 (25.0)	6 (6.8)	2 (2.3)
Confusion assessment method (CAM)-ICU	29 (33.0)	20 (22.7)	8 (9.1)	10 (11.4)	14 (15.9)	5 (5.7)	2 (2.3)
Intensive care delirium screening checklist	32 (36.4)	37 (42.0)	11 (12.5)	2 (2.3)	4 (4.5)	1 (1.1)	1 (1.1)
Ability to follow commands	5 (5.7)	10 (11.4)	4 (4.5)	16 (18.2)	21 (23.9)	21 (23.9)	11 (12.5)
Psychiatry consultation	10 (11.4)	28 (31.8)	38 (43.2)	2 (2.3)	6 (6.8)	0 (0.0)	4 (4.5)

4.4.6 Means of education on ICU delirium assessment

The participants were asked how they acquired education on delirium assessment. Slightly more than half (55.7%, n = 49) of the respondents reported that they had never received any form of training or education on ICU delirium assessment. Among those who had receiced the training or education, 23.9% (n = 21) received through live out of hospital CME lecture.

The interviewees were asked if they have been trained on delirium assessement, where they were trained and how they (and their staff) are mainitaning that knowledge or update themselves on delirium assessment. One of them expressingly said that he had not been trained with the other two agreeying that they had been trained. "*Learnt in mental health, in college"* (interviewer 1). "*We have been trained in Glasgow coma scale assessment and then the neurological assessment but not on delirium assessment* (interviewee 3).

On how they maintain the knowledge, they listed Continuous Medical Education (CME) as one of the ways they have been or will be using. They had these to say: "*Through CMEs and updates"* (interviewer 1) and "*The study you are conducting now is the only we have seen about delirium"* (interviewer 2).

4.4.7 Relationship between institutional factors and assessment of delirium for ICU patients

A chi-square test was done to ascertain a relationship between institutional factors that affect practices of assessment of delirium and frequency of delirium assessment. This was to test the hypothesis that the current practices of ICU nurses in KNH have no effect on assessment of delirium among critically ill patients. The institutional factors were: having a delirium guideline and frequency of assessment of delirium specified in ICU sedation protocol. The question about frequency on evaluation of patients for presence of delirium in 12 hour shift was used as the most appropriate dependable variable to depict assessment of delirium. Before a chi-square test

was run, some transformations were made on the variables of interest to ensure that the rule of the chi-square was not violated. The result is presented in table 4.5.

From table 4.5, it is shown that there was a relationship between the institutional factors and frequency on assessment of delirium. For example, 62.5% of those who indicated that they had delirium guideline frequently assessed for delirium on ICU patients as opposed to 22.2% of those who indicated that they do not have delirium guideline. Likewise, 61.1% of those who indicated that the frequency of delirium assessment is specified in a delirium protocol, frequently or always assessed for delirium on ICU patients. This is opposed to 15.7% of those who indicated that there is no mention of the frequency of assessment of delirium in a sedation protocol.

It was shown that there was a statistically significant relationship between having a delirium guideline and assessment of presence of delirium on ICU patients (chi-square = 6.749, df = 2 and $p < 0.05$). There was equally a very high statistically significant relationship between frequency of assessment of delirium specified in ICU sedation protocol and assessment of presence of delirium on ICU patients (chi-square = 15.793, df = 2 and $p < 0.001$). We therefore reject the null hypothesis and conclude that institutional factors have an effect on nurses' perceptions and practices in the assessment of delirium among critically ill patients.

Table 4.5: Relationship between institutional factors and assessment of delirium for ICU patients

Variable	Category	Frequency on evaluation of patients for presence of delirium in 12 hour shift		Degrees of freedom	Chi square – value	P - value
		Never or Once	Frequently or Always			
Institutional Factors						
Having a delirium guideline	Yes	37.5% (3)	62.5% (5)	2	6.749	0.034
	No	77.8% (49)	22.2% (14)			
	Not sure	82.4% (14)	17.6% (3)			
Frequency of Assessment of delirium specified in ICU sedation protocol	Yes	38.9% (7)	61.1% (11)	2	15.793	0.001
	No	84.3% (43)	15.7% (8)			
	Not sure	84.2% (16)	15.8% (3)			

CHAPTER FIVE: DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The purpose of the study was to determine the perceptions and practices of critical care nurses regarding delirium assessment in ICU at KNH. This chapter consists of the discussion on nurses' demographic factors, nurses' cultural factors, institutional factors, recommendation and conclusion.

5.2 Demographic factors that affect nurses' perception and practices in assessing delirium

The study established that majority of nurses working in ICU, KNH were aged 30-50 years. The majority had post graduate higher diploma as their highest level of education which could be explained by the high percentage of 98.8% of nursing specialization in critical care nursing which is a requirement. Majority of nurses had worked in ICU for more than 5 years, with the highest percentage having over 6 years of experience. In addition, degree and masters' level nurses were the least and this could be because KNH employs majorly nurses with higher diploma in Critical Care Nursing. It could also mean that nurses are not self-motivated to further their studies. In spite of there being no statistically significant relationship between the socio-demographic characteristics and the evaluation of patients for presence of delirium, there is a concern that most of the nurses trained in critical care and those with ICU experience more than 5 years were not assessing patients for delirium .

This concurs with the findings of Hanaa et al., (2013) where majority of the nurses had diplomas. However, some studies (Devlin et al., 2008; Aysel et al., 2015) found that most nurses involved in their studies had Bachelor's degrees yet only the least number assessed for delirium in ICU. Therefore, nurses' level of training does not influence the practices and perception regarding delirium assessment in ICU.

5.3 Nurses' cultural factors that affect perception and practices in assessment of delirium

The findings indicated that majority of the nurses associated delirium with depression, old age, 'normal' part of ICU environment and as a hysterical behavior. These findings could be due to the fact that the ICU environment has continuos lighting, noises from health care workers and machines that predisposes patients to develop delirium. However, majority of the nurses disagreed that delirium could be caused by supernatural forces and this could be due to the fact that they used evidence based nursing in evaluating ICU patients. However, this was in contrast to an earlier study by (Xing et al., 2017) where majority of the nurses reported that delirium is caused by prolonged mechanical ventilation and longer stay in ICU. In addition, Grover et al., (2011) indicated that majority of the nurses perceived that the symptoms of delirium had non-organic etiology like supernatural causation and depressions due to physical illness. A number of studies perceive that advanced age, underlying cerebral illnesses, chronic diseases, some medications and environmental factors are likely to predispose ICU patients to developing delirium (Bruno & Warren, 2010; Roberts, 2004; Wells, 2012). These differences in what can predispose development of delirium among ICU patients could be due to the fact that delirium has no specific cause (Kallenbach, T.F, 2017).

5.4 Institutional factors that affect nurses' perception and practices in assessing delirium

5.4.1 Delirium guideline and delirium assessment specified in ICU sedation protocol

Majority of the nurses in this study indicated that there was no delirium guideline within ICU. This findings in this study could be due to the fact that ICU management team have not recognized delirium as a problem that need to be assessed or nurses do not support establishment of the delirium guideline as they are probably not involved in its development. This concurs with the findings of Christensen (2013) in South East Asia where only 39% of nurses were

aware that a hospital guideline on delirium assessment existed. On the contrary, (Devlin et al., 2008; Khadija et al., 2018) indicated the presence of a sedation protocol that specified delirium assessment. However, more than half of the nurses indicated that delirium assessment is not specified in the KNH-ICU/ HDU protocol booklet and the remaining number of nurses either reported that delirium assessment was specified or were not sure if it was specified. Nurses further exposed this during the interview where the three interviewees stated that there was no delirium guideline in the unit. This finding could stem from the fact that some nurses do not know of or understand the sedation protocol or it could be that it is not a requirement for them to read and practice the guideline in it.

5.4.2 Frequency of evaluating patients for presence of delirium during admission and in 12 hour shift.

The study results indicated that half of the nurses occasionally assessed delirium during the first 24 hours of admission of ICU patients with almost half of the nurses indicating that they never assessed delirium. This could be due to the fact that patients do not show symptoms of delirium on admission or nurses are not aware about the manifestations of delirium or rather there is no set frequency on the assessment of delirium. This concurred with findings of Inouye, Milton & Beth (2016), which indicated that 32-66% cases of delirium were unrecognized by nurses. Whereas, in this study half of the nurses never assess delirium in a 12-hour shift and only less half of them assessed delirium once in every shift. This could be due to the time constraints of nurses or nurses miss the symptoms of delirium due to the fluctuation nature of delirium presentation or rather nurses are not aware of the symptoms of delirium. This concurs with the findings of a descriptive correlational study carried out by Aysel et al., (2015) where a quarter of the nurses assessed delirium hourly and only 8.6% did the same in every shift. In addition,

majority of the nurses never assessed delirium according to Hanaa et al., 2013. However, according to Meunier et al., 2010 delirium was assessed frequently or always 60% most of the time. According to the interviewees in this study, they stated that it was not easy to estimate the proportion of the delirious patients may be because it is less likely to assess mechanically ventilated ICU patients for delirium. However, the interviewees were divided on assessment of the delirium at index admission; two agreed that it was done but there was no clear guideline on how it should be done. The other indicated that assessment was not done at index of admission but it was noticed with time during management of a patient. In addition, one of the interviewee indicated that delirium assessment was done 4 hourly, the other simply talked of it being done every shift while another indicated that it was only done when there are signs of delirium. This finding could stem from the fact that there is harmonization on how frequent delirium should be assessed in ICU.

5.4.3 Assessment methods and frequency of use in a 12 hour shift

Concerning the method and frequency of delirium assessment, the current study indicated that majority of the nurses reported assessing patients on ability to follow commands and half of them assessed agitated related events at-least twice in a 12 hour shift. Whereas, some nurses reported occasional use of CAM-ICU, ICDSC and psychiatric consultation throughout the shift and claimed that they have seen the tool elsewhere for example Aga Khan Hospital. However majority of the nurses reported that they never heard or used CAM-ICU and ICDSC methods. This could be due to the fact that the hospital and the unit management have not established a delirium guideline that specifies the correct and easy method to use in the assessment of delirium. This was similar to the study conducted by Meunier et al., (2010), where more than three quarters of nurses reported assessing the ability of the patient to follow commands and

more than half assessed agitated related events at least four times in a shift. While the use of CAM-ICU, ICDSC and psychiatry were occasionally used in the assessment of ICU patients. In addition, Scelsi et al. (2011) and Van Eijk et al., (2008) reported that 12% and 7% of the nurses in used an assessment tool in screening delirium in ICU respectively. In addition, the interviewees stated that there was no standard method or way of assessing delirium in their unit. Instead the decision lies with individual nurses because they do have pre-requisite training to enable them assess a patient for delirium and plan for the patient's care.

5.4.4 Means of education received by nurses

Delirium was under-recognized due to lack of knowledge on delirium assessment according to Hamdan et al., 2010. Three quarters of the nurses involved in the study had never received training about assessing and handling delirious patients. While, more than half of those who had education on delirium assessment had received training out of hospital, a quarter received training at the bedside and the remaining were trained in college. This finding could be due to lack of institutional teaching or lack of clarity about the effective way to educate nurses about assessment of delirium. In addition, it could be due to the fact that decisions about nursing curriculum in training colleges are made by persons who either are not aware of delirium assessment in the ICU or who think that delirium assessment is not important. This finding was similar from Egypt and United Kingdom by (Hanaa et al., 2013, Elliott 2014) who reported nurses had not received training on the assessment of delirium at 100% and 44% respectively. According to the interview conducted, one of the interviewee expressingly said that he had not been trained with the other two agreeing that they had been trained. This could be because some nurses have been working in another instituition like Aga Khun which has a delirium protocol before they were deployed in KNH.

5.5 Association between variables

According to the study findings, there was a relationship between age of nurses and training in critical care nursing and frequency of assessment of delirium for ICU patients. Majority of the nurses aged 41 years and above frequently or always assess presence of delirium in ICU patients as opposed to those aged between 21 – 40 years. Similarly, nurses who had training on critical care nursing reported that they did assessment of delirium to ICU patients as opposed to none for those who had no training on critical care nursing. However, there was no statistically significant relationship between the socio-demographic characteristics and the evaluation of patients for presence of delirium (assessment of delirium).

In this study, it was shown that there was a relationship between the cultural factors and frequency on assessment of delirium. For example, those who agreed that delirium can be caused by supernatural forces assessed delirium frequently or always on ICU patients as opposed to those who disagreed. This could be due to the fact that those who agreed with this statement could have had no intention of assessing ICU patients for delirium since they believed that it was due to supernatural causes. Likewise those who agreed that delirium was associated with old age assessed delirium frequently or always as opposed to those who disagreed. It could be most likely that those who agreed to this statement may find it unnecessary to assessed old age ICU patients for delirium. On the contrary, those who agreed that delirium is caused by depression due to illness frequently or always assessed delirium in ICU patients as opposed to those who disagreed. This could be due to the fact that those who were of the opinion that depression is a contributing factor to delirium thought that if frequent assessment of delirium is done then an early intervention can be achieved and this reversed. However, there was no statistically significant relationship between the cultural factors and the assessment of delirium. We therefore

fail to reject part of the null hypothesis and conclude that the current perceptions of ICU nurses in KNH have no effect on assessment of delirium among critically ill patients.

There was a relationship between the institutional factors and frequency on assessment of delirium. For example, those who indicated that they had delirium guideline frequently assessed for delirium on ICU patients as opposed to those who indicated that they did not have delirium guideline. Likewise, those who indicated that the frequency of delirium assessment is specified in a delirium protocol, frequently or always assessed for delirium on ICU patients as opposed to those who indicated that frequency of assessment of delirium was not mentioned in a sedation protocol.

It was shown that there was a statistically significant relationship between having a delirium guideline and assessment of presence of delirium on ICU patients. In addition, there was a statistically significant relationship between frequency of assessment of delirium specified in ICU sedation protocol and assessment of presence of delirium on ICU patients. We therefore reject part of the null hypothesis and conclude that the current practices of ICU nurses in KNH have an effect on assessment of delirium among critically ill patients.

5.6 Conclusion

In conclusion, the study shows that majority of the nurses working in ICU Kenyatta National Hospital do not assess delirium among the critically ill patients.

Nurses demographic factors such as age, years of experience and level of training do not influence assessment of delirium among the critically ill patients in ICU.

Cultural factors of ICU nurses such as delirium is a ‘normal’ part of ICU environment, delirium is caused by depression of illness or associated with old age do not influence assessment of delirium among ICU patients.

Institutional factors such as delirium guideline, an appropriate assessment tool and training of ICU nurses on the assessment of delirium contribute to majority of the nurses not assessing for delirium in the ICU patients and therefore, has an influence on the assessment of delirium among critically ill patients.

5.4 Recommendations

There is a need to evaluate the relevance and adequacy of the KNH-1CU/HDU sedation protocol booklet to the current practice and awareness on these protocols on a regular basis with a view to improve standards of care in the ICU.

There is a need for a delirium guideline or protocol to enable a standardize approach to delirium assessment and the protocol should be preferably a nurse driven protocol indicating the frequency of delirium assessment.

Having a delirium guideline in KNH can be used in benchmarking to other County Referral Hospitals on the assessment of delirium among ICU patients.

There is need for a standard reliable tool or method that is easy to understand and use in the assessment of delirium among the ICU patients.

There is need for institutional or out of hospital nurse training on the assessment of delirium among critically ill patients in ICU.

5.5 Further research

A descriptive cross-sectional study design is recommended to acquire more information on perception and practices of nurses regarding delirium assessment. Though factors that influence delirium assessment in this study were found to be significant, further studies are necessary to ascertain whether there are barriers that hinder delirium assessment. In addition to whether

knowledge influences practices on delirium assessment in ICU. Therefore, more studies to be done in mission, public and private hospitals.

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APPENDICES

APPENDIX I: PARTICIPANT INFORMATION SHEET

Study title**: Perceptions and practices of nurses regarding assessment of delirium in the Intensive Care Unit of Kenyatta National Hospital.**

Investigator: Risper Matoke phone number; 0726950685

School of nursing sciences

University of Nairobi

P.O Box 19676, Nairobi

Introduction: am a nursing student at the University of Nairobi, pursing a degree in Master of Science in nursing (critical care nursing). Am conducting a study to establish perceptions and practices of critical care nurses regarding delirium assessment among critically ill patients in the General ICU at Kenyatta National Hospital. I invite you to participate in this study and the following information is important to help you make an informed decision about participation.

Purpose of the study: the purpose of this study is to identify factors that influence nurses' perceptions regarding the assessment of delirium and the existing practices regarding assessment of delirium in ICU. It aims at determining the demographic factors, cultural factors and institutional factors that influence perception of nurses in the General ICU. Also it aims in determining the use of delirium guideline and use of assessment tool in screening for delirium in ICU.

Am conducting this study in partial fulfillment of the requirements for the award of degree of Master of Science in nursing (critical care nursing) of the University of Nairobi.

Benefits of the study: the information you give me will help in identifying factors that contribute to poor assessment of delirium hence it will improve nurses' perception and their practices in assessing for delirium in ICU. The findings will be presented to the hospital management and other key policy makers to help restructure the environment to offer better care for the delirious patients.

Risks: there are no social and economical risks involved. However approximately 30 minutes of your time will be needed to answer the questions.

Participation: it's a voluntary participation. Confidentiality will be maintained, and the results will only be used for its intended purpose. Refusal to participate or withdraw from the study will not result in any penalty or consequences. You are free to ask questions or seek clarification at any point of the study

Compensation: there is no monetary compensation for participating in the study.

For more information or clarification; you can contact;

Supervisor: Dorcas Maina MScN,

Lecturer, School of Nursing, University of Nairobi.

Email address: dwaithira@ gmail.com Telephone number: 0724 440 843

OR

The Ethics Board: KNH-UON ERC

Tel : +254-020-2726300 extension 44355

Email: uonknh_erc@uonbi.ac.ke

APPENDIX II: PARTICIPANT INFORMED CONSENT FORM

I (participant's number) …… agree to participate in this study having been explained its purpose, benefits and risks involved. I also understand that my participation in the study is voluntary and the decision to participate or not to participate will not affect my stay at this facility in any way whatsoever. I may also choose to discontinue my involvement in the study at any stage without any explanation or consequences. I have also been reassured that my personal details and the information I will relay will be kept confidential. I confirm that all my concerns about my participation in the study have been adequately addressed by the investigator and the investigator have asked me questions to ascertain my comprehension of the information provided.

Participant's signature…….

Participant's thumbprint……..

Date……

I confirm that I have clearly explained the content of the study to the participant and he/her has voluntarily agreed to participate without coercion.

Investigator's signature ……. Date ……..

APPENDIX III: QUESTIONNAIRE

This study seeks to find out your views about your perceptions and practices of assessment of delirium in the intensive care unit of Kenyatta National Hospital.

Serial Number…….

I would like to know something about you. Please complete the questions below.

SECTION A: Nurses demographic factors

1. What is your age bracket? (In years)

   ☐ 20-30 ☐ 30-40 ☐ 40-50 ☐ above 50

2. Do you have training in Critical Care Nursing?

   ☐ Yes ☐ No

   If yes, at what level

   ☐ ECN ☐ KRN ☐ higher diploma ☐ masters

3. How many years have you worked in ICU _____years?

SECTION B: Institutional factors that affect nurses' perception and practices in assessing delirium

4. Does your ICU have a delirium guideline? (Tick) ☐ YES ☐ NO ☐ NOT SURE

5. Does your ICU sedation protocol specify a frequency by which delirium should be assessed? (Please circle)

   Yes ☐ No ☐ not sure ☐

6. For the ICU patients whom you care for, how often do you evaluate patients for presence of delirium? For example if you usually evaluate for the presence of delirium frequently then place a √ beside "presence of delirium" in the "frequently" column.

	Never	Rarely	Frequently	Always
Presence of delirium				

7. For the ICU patients for whom you DO evaluate for the presence of delirium, please indicate the frequency per every 12-hour shift that you conduct each evaluation. For example if you usually evaluate for the presence of delirium twice per shift then place a √ beside "x 2-3" in the "Presence of Delirium column."

Per 12-hour shift	Assessment of delirium
Never	
Once	
2-3 times	
4-6 times	
More than 6 times	

8. For ICU patients that are assessed for delirium, please indicate how often in your current practice do you use each of the following in a 12-hour shift. If you don't assess for delirium indicate 'never use 'under each column.

Per 12-hour shift	Agitation related events	Confusion assessment method (CAM)-ICU	Intensive care delirium screening checklist	Ability to follow commands	Psychiatry consultation	Other (please specify)
Never heard of						
Never used						
Rarely						
Twice						
2-3 times						
4-6 times						
More than 6 times						

9. Indicate through which means you received education regarding ICU delirium assessment (Please insert √ in ALL applicable boxes below) or never if no education received.

	Delirium assessment
Have never received education	
Live, out-of-hospital CME lecture	
Live, in-hospital lecture	
Teaching at the bedside	
Never	

Other_____

SECTION C: nurses' cultural factors that affect perception and practices in assessment of delirium

10. In your opinion indicate to what extent you agree with the following statements regarding the nurses' cultural factors in the assessment of delirium of the ICU patients by showing a tick √ in the column of the statement that aligns with your agreement.

	Strongly agrees	Moderately agrees	Strongly disagrees	Moderately disagrees	Neither agree or disagree
Delirium is caused by supernatural forces					
Delirium is caused by depression due to illness					
Delirium is a punishment from the gods					
Delirium is a hysterical behavior					
Delirium is associated with old age					
Delirium is a 'normal' part of the ICU environment					

11. Do you have any additional information you would like to share on delirium assessment in the ICU setting?_____

Thank you for completing the questions above

APPENDIX IV: NURSES KEY INFORMANT INTERVIEW CONSENT FORM

I Risper Matoke, a nursing student at the University of Nairobi pursuing a degree in Master of Science Nursing in critical care will be carrying out a study to establish perceptions and practices of critical care nurses regarding delirium assessment among critically ill patients in the General ICU at Kenyatta National Hospital. Am kindly asking for your participation in this study through contribution of views and ideas. This information will be regarded as group contribution and confidentiality will be maintained. Participation is voluntary and there are no consequences for refusal to participate.

I do hereby agree to participate, having been informed of the purpose, benefits and risks involved.

Participants' signature	date	serial number
……	……	……

In presence of researcher/research assistant:

Investigator's signature…… date……..

APPENDIX V: INTERVIEW GUIDE

Study title**: Perceptions and practices of nurses regarding assessment of delirium in the Intensive Care Unit of Kenyatta National Hospital.**

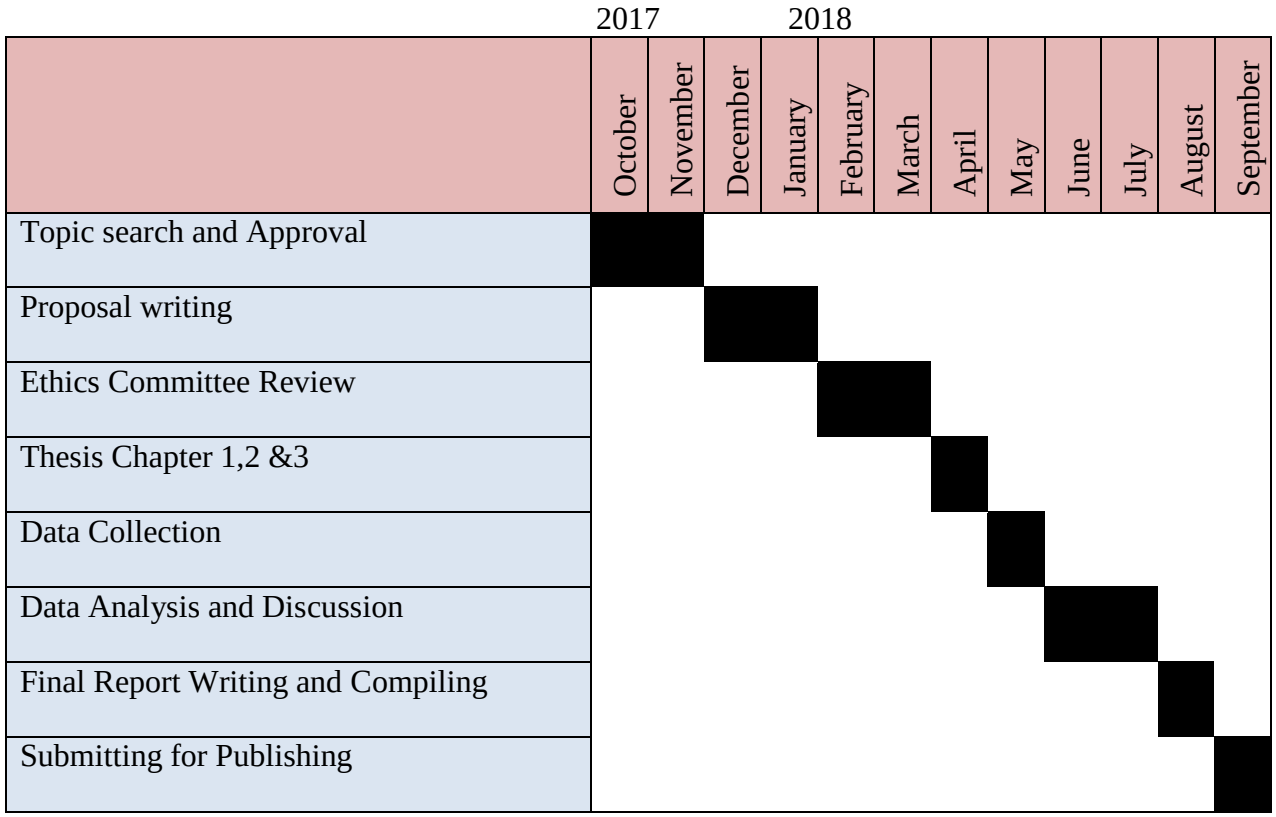
Am Risper Matoke, a postgraduate student pursuing Master of Science in Nursing (Critical Care Nursing) at the school of nursing, university of Nairobi. I am carrying out a study on nurses' perception and practices regarding delirium assessment in the General ICU at Kenyatta national hospital. Various factors have been mentioned to influence perception of nurses regarding assessment of delirium in ICU. The findings of this study will help in improving nurses' perception on the assessment of delirium which will lead to recognition of delirium and therefore management for a better outcome of delirious patients in ICU.

You are invited to this interview to talk about your opinion concerning assessing delirium in ICU. Information provided will be kept confidential and will not be linked to you. Thank you

1. In your opinion what is the magnitude of delirium in this ICU?
   ……
   ……
   ……
   ……
2. In your opinion how do your nurses assess delirium in this ICU?
   .....
   .....
   .....
   .....
3. How prepared are your nurses in the assessment of delirium?
   ……
   ……
   ……
   ……
4. Are there any additional supports your nurses need in the assessment of delirium in this ICU?
   .....
   .....
   .....
5. Do you have anything you can add in the assessment of delirium in this ICU?

Thank you so much for the cooperation and participation. The research findings will be shared with you at the end of the study.

APPENDIX VI: WORK PLAN



APPENDIX VII: BUDGET

Description	**Item**	**Unit of measurement**	**Unit Cost**	**Total**
Stationaries	A 4 note books	4	@300	1,200.00
	Photocopy papers	7realms	@400	3500.00
	Proposal printing	4 drafts	@350	1300.00
	Photocopying	60 pages- 3 copies	@5	1200.00
	Ethics fees			5,000
Pre-testing	Printing	10 copies	@10	1000.00
	Photocopy	200	@4	800.00
Questionnaires	Printing	10	@10	1000.00
	Photocopying	500 copies	@4	2,000.00
Data analysis is				20,000
Draft reports (3)	Printing	450 pages	@10	4,500.00
	Photocopying	3 copies	@600	1,800.00
Final reports	Printing	150 pages	@ 10	1,500.00
	Photocopying	5 copies	@ 300	1,500.00
	Binding	5 copies	@ 500	2,500.00
	Contingencies (10%)			**3205.00**
Grand total	Approximately			**49,800.00**

APPENDIX VIII: APPROVAL FROM KNH/UoN ERC

UNIVERSITY OF NAIROBI
COLLEGE OF HEALTH SCIENCES
P O BOX 19676 Code 00202
Telegrams: varsity
Tel:(254-020) 2726300 Ext 44355

KNH-UON ERC
Email: uonknh_erc@uonbi.ac.ke
Website: http://www.erc.uonbi.ac.ke
Facebook: https://www.facebook.com/uonknh.erc
Twitter: @UONKNH_ERC https://twitter.com/UONKNH_ERC

KENYATTA NATIONAL HOSPITAL
P O BOX 20723 Code 00202
Tel: 726300-9
Fax: 725272
Telegrams: MEDSUP, Nairobi

KENYATTA NATIONAL HOSPITAL APPROVED 13 SEP 2018 KNH/UoN-ERC P.O. Box 20723-00202 NAIROBI

Ref: KNH-ERC/A/236

June 13, 2018

Risper Matoke
Reg. No. H56/87787/2016
School of Nursing Sciences
College of Health Sciences
University of Nairobi

Dear Risper

RESEARCH PROPOSAL – PERCEPTIONS AND PRACTICES OF NURSES REGARDING ASSESSMENT OF DELIRIUM IN THE INTENSIVE CARE UNIT AT KENYATTA NATIONAL HOSPITAL (P194/03/2018)

This is to inform you that the KNH- UoN Ethics & Research Committee (KNH- UoN ERC) has reviewed and approved your above research proposal. The approval period is from 13th June 2018 – 12th June 2019.

This approval is subject to compliance with the following requirements:

a) Only approved documents (informed consents, study instruments, advertising materials etc) will be used.
b) All changes (amendments, deviations, violations etc) are submitted for review and approval by KNH-UoN ERC before implementation.
c) Death and life threatening problems and serious adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the KNH-UoN ERC within 72 hours of notification.
d) Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH- UoN ERC within 72 hours.
e) Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. (*Attach a comprehensive progress report to support the renewal*).
f) Submission of an *executive summary* report within 90 days upon completion of the study. This information will form part of the data base that will be consulted in future when processing related research studies so as to minimize chances of study duplication and/ or plagiarism.

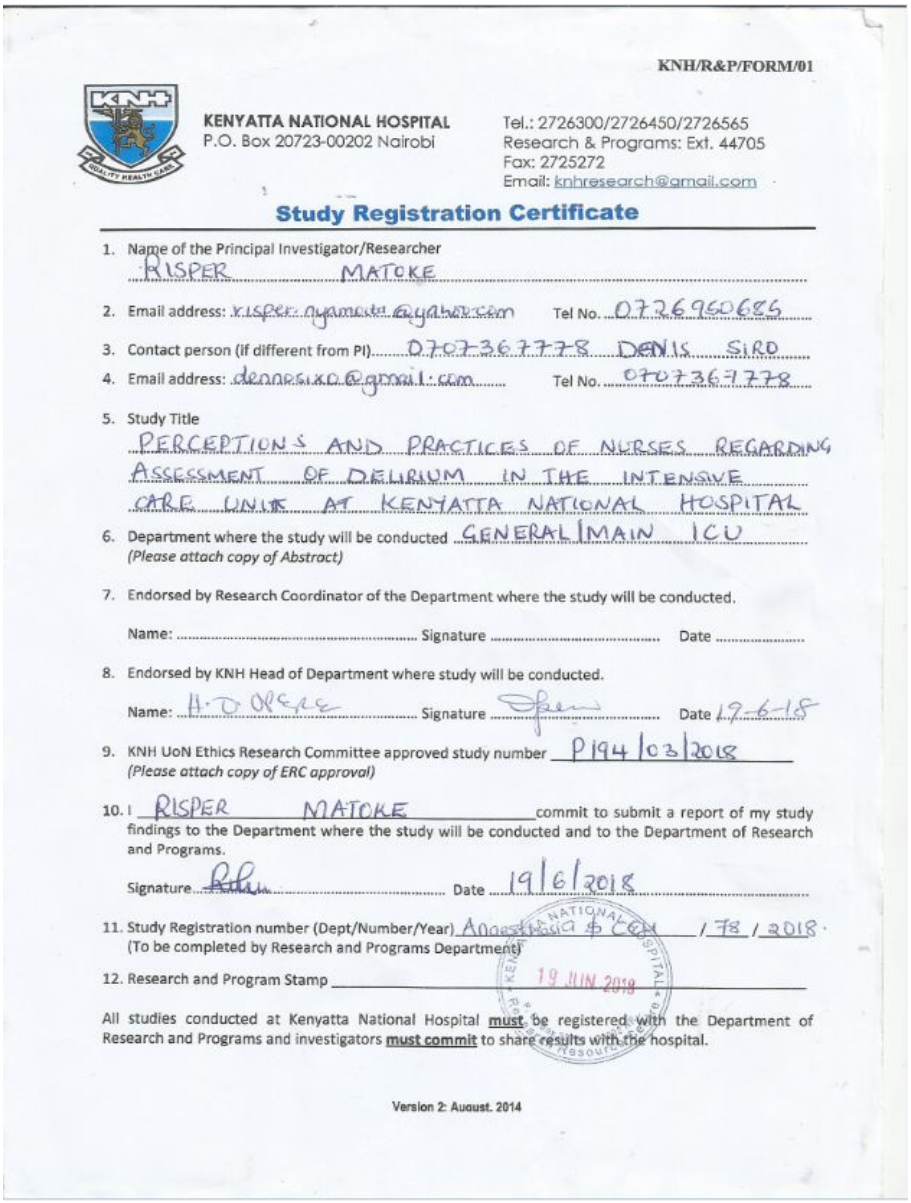
For more details consult the KNH- UoN ERC website **http://www.erc.uonbi.ac.ke**

Yours sincerely,

PROF. M. L. CHINDIA
SECRETARY, KNH-UoN ERC

c.c. The Principal, College of Health Sciences, UoN
The Deputy Director, CS, KNH
The Chairperson, KNH-UON ERC
The Assistant Director, Health Information, KNH
The Director, School of Nursing Sciences, UoN
Supervisors: Dorcas Maina, Dr. Eunice Omondi

APPENDIX IX: APPROVAL FROM KNH



KNH/R&P/FORM/01

KENYATTA NATIONAL HOSPITAL
P.O. Box 20723-00202 Nairobi

Tel.: 2726300/2726450/2726565
Research & Programs: Ext. 44705
Fax: 2725272
Email: knhresearch@gmail.com

Study Registration Certificate

1. Name of the Principal Investigator/Researcher
   RISPER MATOKE
2. Email address: risper.nyamoti@yahoo.com Tel No. 0726960686
3. Contact person (if different from PI) 0707367778 DENIS SIRO
4. Email address: dennsiro@gmail.com Tel No. 0707367778
5. Study Title
   PERCEPTIONS AND PRACTICES OF NURSES REGARDING ASSESSMENT OF DELIRIUM IN THE INTENSIVE CARE UNITS AT KENYATTA NATIONAL HOSPITAL
6. Department where the study will be conducted GENERAL/MAIN ICU
   (Please attach copy of Abstract)
7. Endorsed by Research Coordinator of the Department where the study will be conducted.
   Name: ..... Signature ..... Date .....
8. Endorsed by KNH Head of Department where study will be conducted.
   Name: H.O ORGLE Signature ..... Date 19-6-18
9. KNH UoN Ethics Research Committee approved study number P194/03/2018
   (Please attach copy of ERC approval)
10. I RISPER MATOKE commit to submit a report of my study findings to the Department where the study will be conducted and to the Department of Research and Programs.
    Signature ..... Date 19/6/2018
11. Study Registration number (Dept/Number/Year) Anaesthesia & CCM /78/2018
    (To be completed by Research and Programs Department)
12. Research and Program Stamp 19 JUN 2018

All studies conducted at Kenyatta National Hospital **must** be registered with the Department of Research and Programs and investigators **must commit** to share results with the hospital.

Version 2: August. 2014