LEVEL OF KNOWLEDGE AND ATTITUDE TOWARDS RECOGNITION OF DELIRIUM AMONG NURSES WORKING IN CRITICAL CARE UNITS AT KENYATTA NATIONAL HOSPITAL, KENYA

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Level of Knowledge and Attitude towards Recognition of Delirium among Nurses Working in Critical Care Units at Kenyatta National Hospital, Kenya

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other University.

Signature……Date…….

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This thesis has been submitted for examination with our approval as the University Supervisors

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Prof Sherry Oluchina, PhD

JKUAT, Kenya

DEDICATION

This work is dedicated to my entire family. To my sister Dr Lidya Nzomo for her love and constant guidance through the journey of life having taught me importance of education.

To my loving and ever supportive husband and children, Tracy and Mark for their love and understanding for the long hours I denied them while trying to balance family, work and studies.

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ACRONYMS AND ABBREVIATIONS

APACHE II	Acute Physiology and Chronic Health Evaluation
CAM-ICU	Confusion Assessment Method tool for Intensive Care Unit
CCU	Critical Care Unit
DDS	Detecting Delirium Scale
DRS-R-98	Delirium Rating Scale-Revised 98 version
DSM-IV-TR	Diagnostic and Statistical Manual of Mental Disorders. Fourth Edition. Text Revision
GCS	Glasgow Coma Scale
HRQoL	Health-Related Quality of Life
ICD-SC	Intensive Care Delirium Screening Checklist
ICU	Intensive Care Unit
KNH	Kenyatta National Hospital
KNH/UON-ERC	Kenyatta National Hospital/University of Nairobi - Ethics and Research Committee
MICU	Medical Intensive Care Unit
NACOSTI	National Council of Science and Technology
Nu-DESC	Nursing Delirium Screening Scale (Nu-DESC)
PICU	Pediatric Intensive Care Unit
SCCM	Society of Critical Care Medicine

DEFINITION OF OPERATIONAL TERMS

Delirium	It refers to not able to think, or express one carefully in speech, and failure to remember name, time or date.
Critically ill patient	This is a patient who is wholly dependent on a nurse for self-care activities during the stay in hospital.
Attitude	It refers to opinions, beliefs, and feelings expressed by nurses towards recognizing delirium
Knowledge	It refers to the degree of understanding and awareness of the nurses in recognizing delirium
Critical care units	This refers to a designated ward in a hospital with special equipment's and personnel where patients who require close monitoring and management round the clock are admitted.
Nurses	An individual who has undergone a prescribed training to take care of the sick

ABSTRACT

Delirium is a major barrier to the care of patients admitted in the intensive care units globally. The Society of Critical Care Medicine recommends regular delirium monitoring among patients admitted in ICU. Additionally, empirical research has documented a prevalence of up to 80% in all patients admitted in critical care units. Delirium has been linked to poor clinical outcomes such as higher mortality rates, longer mechanical ventilation periods and longer stays in ICU and hospital in general. The aim of the study was to assess the knowledge and attitude towards recognition of delirium among nurses working in critical care unit, KNH. A descriptive cross-sectional study design with both quantitative and qualitative approaches was utilized in the study. Census was used to recruit a sample of 166 nurses who participated in the study. Data was collected using a self-administered questionnaire. Quantitative data were analyzed with aid of SPSS version 24 using descriptive statistics and summarized in frequency tables, while qualitative data were analyzed using content analysis approach. Chi-square was used to test the factors associated with recognition of delirium. Results revealed that 80% of the studied nurses had high knowledge on recognition of delirium. While, 20% of them had low level of total knowledge on recognition of delirium. Majority (73.3%) of the critical care nurses had positive attitude towards recognition of delirium compared to 26.7% who had negative opinion towards the same. Binary logistics regression results revealed that critical care nurses aged between 41-50 years were likely to have high knowledge on delirium recognition than those aged below 30 years (AOR=2.462, CI 2.623-44.612, P-value<0.001). Critical care nurses with master degrees were likely to have higher knowledge on recognition of delirium compared to those with diplomas while nurses with between 20-24 years of experience were likely to have high knowledge compared to those with less than 6years of experience. critical care nurses who had received some professional training in critical care were more likely to have high level of knowledge compared to those whom had not (AOR=6.834, CI 4.271-26.091, P-value<0.001). Also, nurses aged above 41 years were less likely to develop negative attitude towards delirium recognition compared to those aged below 30 years (AOR=0.681, CI 0.036-0.983, P-value<0.001). Nurses with master's degrees were less likely to develop negative attitude towards recognition of delirium compared to those with diploma as the highest academic level (AOR=0.802, CI 0.027-0.892, P-value<0.001). The unit was also noted to lack guidelines on assessment/management of delirium by nurses. In conclusion, delirium is a common problem in CCU at KNH and that recognition of delirium bycritical care nurses is associated with some social demographic factors. High degree of clinical expertise is crucial to detect any acute change in patient's mental status presenting as the early sign of delirium.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Delirium is a condition with many distinct etiologies characterized by loss of consciousness followed by a cognitive shift. The syndrome's distinguishing features include: impaired short-term memory, impaired concentration, disorientation that occurs over a short period of time usually less than a week (Cavallazzi et al., 2012; *DSM-IV-TR*, 2000). There are numerous types of delirium: Hyperactive delirium (agitation, restlessness, and/or attempt to remove catheters), hypoactive delirium (flat effect, withdrawal, apathy, lethargy, and/or diminished responsiveness) or a combination of both may be present in patients.

Globally, delirium is becoming a major public health concern because it is under-recognized by health care professionals (Elliott, 2014). Curbing delirium through early recognition and treatment has become a major public health priority (Inouye *et al.,* 2015). The prevalence of delirium globally varies from institution to institution due to the different protocols they adopt with some not having any protocols (Anbu, 2014). However, the most affected patients are those admitted in the critical care units with a documented prevalence of up to 80% and have been linked to negative clinical outcomes (Zhang *et al.,* 2013). Delirium is associated with higher mortality rates, more complications, longer mechanical ventilation period and longer ICU and hospital stay in general (Mehta *et al.,* 2015; Zhang *et al.*, 2013). According to Speed, (2015), nurses' failures to understand delirium is caused by a lack of knowledge about assessment, risk factors, and preventative measures of delirium (Archer, 2017; Gesin *et al.*, 2012).

Delirium identification may be problematic with some of the specific symptoms, tending to coincide with those of both depression and dementia(Lawlor *et al.,* 2014; Leonard *et al.,* 2014). Under-recognition may also be associated with differing numerous professional opinions and institutional policy with inadequate knowledge of cognitive assessment an under-appreciation of nursing observations (Hosie *et al.,* 2014; Lawlor *et al.,* 2014). Additional challenges include: failure to incorporate

delirious symptom evaluation into the process of care delivery and a traditional pathway of care assisted by guidelines (Hosie *et al.*, 2014; Lawlor *et al.*, 2014); and failure to integrate a screening instrument (Hosie *et al.*, 2014)

1.2 Statement of the Problem

Critical care units (CCUs) in hospital setups are regarded as treatment areas reserved by health care practitioners for patients who need state-of-the-art care. They are set aside to treat and manage life-threatening health conditions (Lafi & Salem, 2018). Empirical research postulates that delirium is one of the most common complications in the CCUs and that it affects approximately 60% to 80% of CCU patients.

Studies postulate that; nearly, 30% – 40% of delirium cases are preventable (Inouye, 2006). Delirious ICU patients are more likely to die three times, and six and half times more likely to develop one or more complications than patients who are not delirious. Delirious ICU patients spend more than seven days longer in the ICU and are hospitalized more than six days longer than non-delirious patients(Zhang *et al.*, 2013). Increased morbidity, mortality and longer hospital stays and expenses have also been positively correlated with delirium. (Coyle, 2015; Duncan, 2011; Faught, 2014). It also has important extrapolative implications; apart from the high cost of prolonged mechanical ventilation of patients. Delirium is also a source of distress for patients and their caregivers and a strain on the country's economy.

Critical care nurses are crucial to identifying and controlling predisposing factors that may lead to development of delirium in critical care units. Early identification of predisposing risk factors and exclusion of precipitating delirium risk factors may elude catastrophic short- and long-term effects on critically ill patients (Coyle, 2015). Although studies indicate the high incidence of delirium in critical care units, research has shown that health care workers frequently ignore and often unrecognized it. It is on this account that this research delved into understanding level of knowledge and attitude towards recognition of delirium among nurses working in critical care unit, KNH.

1.3 Justification

Despite a very strong recommendation by the Society of Critical Care Medicine (SCCM) on the regular evaluation of delirium using a validated instrument because of the high incidence of delirium in patients with critical care (Barr *et al.*, 2013), the Critical Care Nurses do not regularly use any of the scientifically proven delirium monitoring tools in the recognition and management of critically ill patients.

In line with the Kenyatta National Hospital's Vision and Mission which is to provide its patients with specialized, quality care and engage in national health planning and policy making, it is in this regard that this study intended to assess level of knowledge and attitude towards recognition of delirium among nurses working in critical care unit, KNH. Investigation the factors amongst nurses that influences early detection of delirium in critically ill patients in CCU, are expected to improve the safety of service delivery of these patients. Thus, these patients will have an improved customer care which is in line with the Vision and Mission of KNH.

Therefore, gathering information on the level of knowledge and attitude towards recognition of delirium among nurses working in critical care unit, KNH may provide the hospital with valuable information on health planning and policy formulation. It may also aid in the prevention and management of delirium in critically ill patients in the CCU. This in turn, may enhance the provision of quality health care services to hospitalized ICU patients.

1.4 Research Questions

i. What is the level of knowledge of critical care nurses on the recognition of delirium among patients in critical care units, KNH?
ii. What is the attitude of critical care nurses towards recognition of delirium among patients in critical care units, KNH?
iii. What is the association between critical care nurses' socio-demographic characteristics and level of knowledge on recognition of delirium among patients in critical care units, KNH?

iv. What is the relationship between critical care nurses' socio-demographic characteristics and attitude toward recognition of delirium among patients in critical care units, KNH?
v. What are the hospital-related factors associated with the recognition of delirium by critical care nurses working in critical care units, KNH?

1.5 Objectives

1.5.1 Main Objective

To assess the level of knowledge and attitude towards recognition of delirium among nurses working in critical care units, KNH.

1.5.2 Specific Objectives

i. To assess the level of knowledge of critical care nurses on the recognition of delirium among patients in critical care units, KNH.
ii. To assess the attitude of critical care nurses towards recognition of delirium among patients in critical care units, KNH.
iii. To determine the association between critical care nurses' socio-demographic characteristics and level of knowledge on recognition of delirium among patients in critical care units, KNH.
iv. To determine the relationship between critical care nurses' socio-demographic characteristics and attitude toward recognition of delirium among patients in critical care units, KNH.
v. To explore the hospital-related factors associated with the recognition of delirium among critical care nurses working in critical care units, KNH.

1.6 Hypotheses

1. There is no association between critical care nurses' socio-demographic characteristics and level of knowledge on recognition of delirium among patients in critical care units, KNH.

2. There is no relationship between critical care nurses' socio-demographic characteristics and attitude toward recognition of delirium among patients in critical care units, KNH.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

2.1.1 Definition and Types of Delirium

Delirium is a condition with many distinct etiologies characterized by a loss of consciousness followed by a cognitive shift. The syndrome's distinguishing features include: impaired short-term memory, impaired concentration, disorientation that occurs over a short period of time usually less than a week (Cavallazzi et al., 2012; *DSM-IV-TR*, 2000). It can also be considered a sudden and severe change in mental function that can involve confusion, disorientation, and changes in perception, behaviour, and level of consciousness. Delirium is usually caused by an underlying medical condition, such as an infection, a metabolic disturbance, or substance abuse, and it can be life-threatening if not treated promptly (Khaing & Nair, 2021).

There are three delirium subtypes: hyperactive, hypoactive, and mixed delirium. Patients with Hyperactive delirium can be identified easily by Critical care nurses because they tend to be agitated and restless with a likelihood of self-extubating and self-removal of invasive devices(Girard et al., 2008a; Özsaban & Acaroglu, 2016). In contrast, hypoactive delirium may be difficult to recognize since the patients may look lethargic, withdrawn, apathetic with decreased responsiveness (Girard et al., 2008a).

Delayed identification of hypoactive delirium may transition to hyperactive and mixed delirium which becomes challenging to manage(Meagher & Leonard, 2008). However, patients with the delirium of mixed type display symptoms that vary between hyperactive and hypoactive delirium (Wells, 2012). The condition can happen within minutes or over a day. Symptoms in the initial phase may be mixed, the patient may present with difficulty concentration, understanding of the information or be hallucinating. The symptoms are most noticeable in the evening and night (Wyller, 2011).

According to a study by Holly et al. (2010); the hypoactive and mixed type of delirium has remained difficult to identify and challenging among the critical care professionals. Hypoactive delirium might progress to the hyperactive or mixed type of delirium if not identified early enough making the care management to be more challenging (Meagher & Leonard, 2008). The complications associated with hypoactive delirium include aspiration pneumonia, pressure ulcers and increased number of days in mechanical ventilation (Balas et al., 2009).

2.1.2 Risk Factors for Development of Delirium

A systematic review showed that 25 risk factors were related to delirium. It identified 4 predisposing factors which include old age, alcohol abuse, respiratory disease, and dementia. While the remaining twenty-one risk factors such as electrolyte imbalance, pressor requirement, presence of fever, high opiate dosage, and metabolic acidosis were recognized as precipitating factors (Van Rompaey et al., 2008; Zaal, Devlin et al., 2015).

A study conducted in India showed that higher Glasgow Coma Scale score, higher APACHE II score, hyperuricemia, hypoalbuminemia, acidosis presence, irregular alkaline transferase levels, mechanical ventilation use, higher total medication obtained and sedative, steroid and insulin use were considered predisposing risk factors for delirium. In addition , the research age showed that multiple organ failure, hypoactive delirium, and higher Delirium Rating Scale-Revised 98 (DRS-R-98) scores were major mortality risk factors in delirium ICU patients(Sharma *et al.,* 2012).

It has been estimated that nearly half of the environmental factors are responsible for development of delirium. The use of certain classes of medication especially benzodiazepines have been shown to contribute to the development of delirium (Pandharipande et al., 2006). Numerous studies have identified over-sedation can cause hemodynamic instability and extended period of intubation and ICU stay which promotes to development of delirium among ICU patients (Girard *et al.*, 2008b; Rowe & Fletcher, 2008). Therefore, a multi-component strategy addressing identified modifiable risk factors can minimize about a third of the incidence of delirium in hospitals. (Godfrey *et al.,* 2013). The use of dexmedetomidine has been associated

with a lower delirium prevalence with evidence showing that multiple organ failure as a risk factor for delirium (Zaal *et al.,* 2015).

2.1.3 Delirium Assessment Tools

The literature indicates that several delirium assessment tools exist with majority underscoring the identification of delirium and the use of specific validated assessment tools. In absence of a reliable delirium screening tool, delirium goes undetected in nearly two-thirds of Critically ill patients in ICU by both doctors and nurses ("Delirium assessment and management.," 2012; Page et al., 2009).

The most commonly used scoring scales used to assess delirium in intensive care units are Confusion Assessment Method tool for Intensive Care Unit (CAM-ICU), Intensive Care Delirium Screening Checklist (ICD-SC), Nursing Delirium Screening Scale (Nu-DESC) and the Detecting Delirium Scale (DDS) (Goranović, Adam, Tonković, Martinac, & Sakić, 2012; Luetz et al., 2010). The Confusion Assessment Method (CAM) has been considered to be the gold standard in delirium assessment in patients. The Confusion Assessment Method is the most widely used instrument to identify delirium, though, specific training is required to ensure optimum performance(De & Wand, 2015). It has been deemed to be a simple, reliable, and validated method of quickly identifying acute confused states. The Confusion Assessment Method centered around four behaviors: fluctuating cognition, attention disturbance, disorganized or incoherent thinking, and altered level of consciousness(Hagerling, 2015). Conversely, the CAM screening tool is not effective if it is not used consistently by critical care nursing staff.

The Intensive Care Delirium Screening Checklist (ICD-SC) assesses the patient's delirium symptoms using an 8-item checklist for 8–24 hours (Brummel et al., 2013). A patient is assigned a point either zero or one for each symptom that manifests during the specified time frame. Where zero points signify no manifestation of the symptom and one symptom manifestation (Brummel et al., 2013). The eight symptoms are: level of comprehension, inattention, disorientation, hallucinations-delusion, agitation or retardation of the psychomotor, inappropriate speech or mood, disruptions of the sleep-

wake cycle and fluctuation of the symptoms. A score greater than or equal to four demonstrates positive ICD-SC and delirium involvement (Brummel et al., 2013).

The psychometric properties of both the CAM-ICU and ICD-SC have been reviewed in two systematic reviews and meta-analyses(Brummel et al., 2013; Gusmao-Flores, Salluh, Chalhub, & Quarantini, 2012; Neto et al., 2012). The combined sensitivities and specificities of the Uncertainty Assessment System for the Intensive Care Unit were 75.5 percent and 95.8 percent for delirium identification in critically ill patients and 80.1 percent and 74.6 percent for the Intensive Care Delirium Screening Checklist, respectively(Neto et al., 2012). While the for Gusmao-Flores et al pooled sensitivity and specificity of the CAM-ICU was 80.0%and 95.9%, while for ICD-SC 74% and 81.9%, respectively (Gusmao-Flores et al., 2012).

2.1.4 Characteristics/ Signs and Symptoms of Delirium

Delirium is a sudden and severe change in brain function that causes a person to appear confused or disoriented, or to have difficulties maintaining focus, thinking clearly, and remembering recent events, typically with a fluctuating course (Arias *et al.*, 2022). Delirium can be triggered by a serious medical illness such as an infection, certain medications, and other causes, such as drug withdrawal or intoxication. Older patients, over 65 years, are at highest risk for developing delirium. People with previous brain disease or brain damage are also at risk. Some patients become agitated, while others may be quietly confused (Arias *et al.*, 2022).

According to Han *et al.* (2022), delirium is distinct from dementia because it develops suddenly, over hours to days, rather than months to years. And unlike dementia, delirium is usually temporary, resolving when the underlying cause is addressed promptly. Delirium also differs from the psychosis of psychiatric disease, in which orientation, concentration, and attention are usually less impaired; however, these features are not always reliable (Kalabalik, Brunetti & El-Srougy, 2014). There are many potential causes, with the most common including infections, medications, and organ failure (such as severe lung or liver disease). The underlying infection or condition is not necessarily a brain problem. However, occasionally delirium can be

due to temporary dysfunction arising in the brain, such as an epileptic seizure, a threatened stroke or a concussion.

The signs and symptoms of delirium can include: Confusion and disorientation which involves difficulty in concentrating, staying focused, or remembering recent events (Tyson *et al.,* 2022). The second sign and symptom is change in perception in characterised by hallucinations, delusions, or misinterpretations of sensory information. Also, the disease is characterised by agitation or hyperactivity which includes restlessness, irritability, and constant movement (Li, Zhao, Chem, Yue & Xiong, 2022). Moreover other symptoms includes; sudden changes in sleep patterns or difficulty sleeping, sudden changes in alertness and responsiveness, rapid mood swings, fear, or anxiety and difficulty expressing thoughts or finding the right words. These symptoms can appear rapidly and can change frequently over the course of a day or even an hour. It is important to seek medical attention if you or someone you know is experiencing symptoms of delirium (Li *et al.,* 2022).

2.1.5 Recognition of Delirium

A meta-analysis and systematic review by Salluh et al (2015) estimated that 31.8% of patients admitted to an intensive care unit experienced delirium and these patients were at elevated risk of death during admission, longer hospital stays, longer artificial ventilation and cognitive decline and death following discharge(Salluh et al., 2015). However, a study carried out in Japan reported the prevalence of delirium to be at 64% among the ICU patients (Tsuruta et al., 2014) in comparison to an Indian study that indicated the prevalence at 53.6% with an incidence rate of 24.4% (Sharma et al., 2012).

The longer delirium duration in the critical illness setting has been reported to be independently correlated with increased chances of impairment in everyday life tasks and worse motor-sensory control for manually ventilated patients the following year (Brummel et al., 2014). Among the survivors of critical illness, 37% were found to be delirious during their ICU stay and 18% of them succumbed within twelve months (Wolters et al., 2014). A research by Wolters et al showed that delirium during ICU stays for serious disease survivors was not correlated with long-term mortality or

health-related quality of life (HRQoL) after correction for uncertainty, including the seriousness of disease during the ICU stay (Wolters et al., 2014). Contrary to their other findings, delirium seemed to be an independent risk factor for long-term self-reported cognitive function problems (Wolters et al., 2014).

Delirious ICU patients are three times more likely to die, and six and a half times more likely to suffer one or more complications than non-delirious patients. Delirious ICU patients spent more than seven days longer in the ICU and are hospitalized more than six days longer than non-delirious patients (Zhang et al., 2013). Mechanically ventilated delirious patients stayed longer on the ventilator, were more likely to self-extubate and remove catheters compared to non-delirious patients(van den Boogaard et al., 2012).

2.2 Nurses' Knowledge and Recognition of Delirium

Delirium is a multifaceted neuropsychiatric condition which is often under-recognized by nurses. Empirical research postulates that nurses do detect delirium patient changes but these are hardly linked with an understanding or recognition of delirium (HealthTimes, 2017). Research has noted with concern the high incidence of delirium in patients within critical care units (ICUs) globally and is heavily related to increased morbidity and mortality. Poor or lack of knowledge among nurses to perform delirium assessment has led to significant under recognition of delirium by nurses' regardless (Choi et al., 2019).

Early detection of delirium requires an acquaintance with the available delirium screening tools to allow incorporating them in their nursing procedures for better assessment and observation of patients (Deasey, Kable, & Jeong, 2014; Holt, Young, & Heseltine, 2013; McCusker et al., 2011). Two studies indicate that there is lack of knowledge in delirium management and that most nurses are less knowledgeable on the validated delirium screening tools (Deasey et al., 2014; Grossmann et al., 2014). A study by McCusker et al reported that without using systematic observation forms; the nursing observations alone had a low sensitivity(McCusker et al., 2011).

Usage of established screening methods and competence to recognize delirium has been reported to be very essential (Grossmann et al., 2014; McCusker et al., 2011). Studies indicate that the nurses knowledge on the use of the validated screening tool is quite low (Grossmann et al., 2014; Holt et al., 2013). However, there is no Kenyan literature assessing the critical care nurses' knowledge on delirium management.

2.3 Nurses' Attitude and Recognition of Delirium

Regular ICU delirium screening was recommended by the Intensive Care Society (Barr, et al., 2013). A variety of delirium screening methods have been developed and are recommended, such as the Intensive Care Delirium Screening Checklist (ICDSC) and the Intensive Care Unit Confusion Evaluation System (CAM-ICU). These two have been explicitly recommended for regular delirium monitoring in adult ICU patients to be most valid and effective (Barr, et al., 2013). It has been stated that without a reliable screening instrument, up to two-thirds of ICU delirium cases can be missed. However, despite the high rate of occurrence and severe negative effects of delirium, as well as attempts to introduce delirium screening programs, delirium screening, as recorded in western countries, is still much less completed by critical care nurses or physicians (Jinyan, et al., 2017).

A research by Jinyan *et al,* (2017) reported that a high percentage (81.79 percent) of respondents used unique evaluation tools for ICU delirium screening, despite weak ICU delirium management, with only 18.21 percent (n = 167) of respondents reporting that they did not use screening tools, thus giving a positive attitude towards delirium management. In yet another report, it was identified that the attitude of the nurse towards delirium was low as they cited the need for high-risk patient dynamic observation as the key to achieving accurate and timely delirium identification in these patients. Split changes therefore interfered with reliable and consistent monitoring of the condition and mental state of the patient (Yue et al., 2015).

2.4 Hospital Related Factors and Recognition of Delirium

Researchers conducted by organizations interested in delirium such as Ovid Medline, Cumulative Index of Nursing and Allied Health Literature (CINAHL) have shown that

the secret to maintaining a sustainable competitive advantage is awareness. Measuring an organization's expertise as a unit facilitates, among other things, benchmarking it against other organizations and measuring the organization's growth over time. Furthermore, the assessment of awareness of individuals and groups helps to classify key workers and can also be used to hire a new workforce, assess the job performance of employees or track the path of adaptation of a new employee. While the area of measuring knowledge belongs to the less established areas of knowledge management compared to other subjects, many methods that can be used to quantify knowledge have been implemented. This study aims at presenting an overview of methods that can be applied when assessing the expertise of organizations, groups or individuals and thus providing a realistic list of methods mainly for practitioners and novices in this area in the literature. The research is based on a literature content analysis.

Nurses play a very important role in patient evaluation and triage on the basis of the information given (Nyen et al., 2010). It is therefore obligatory that the nurses should have good knowledge of delirium, about how it presents in critically ill patients and how it evolves. In case one suspects a patient as to being delirious they be able to elicit the triggering causes of delirium which must be recognized (Aghogho, 2016). Hence, the critical care nurses at the unit must therefore use their knowledge to determine whether the patient is at risk of developing delirium. For that reason, knowledge of validated and functional screening tools is very important in enabling the nursing staff to recognize delirium in critically ill patients(Thorstensen, 2016).

Delirium detection and management varies across the globe majorly depending on the development status of a nation. Whereas screening is a core procedure for delirium in ICU patients, a number of researches has shown that nurses' attitude towards daily screening vary broadly across the globe. In a study conducted by Xin et al (2017) in China, it was found that while most nurses (84.19%) believed that routine delirium monitoring should be carried out in the ICU environment, only 25.62% of respondents reported routine delirium screening. The study sought to understand the premise behind this discrepancy and established that nurses' perceived barriers to ICU delirium screening included; Lack of suitable screening equipment (49.18 percent), heavy

workload and lack of patient contact (48.53 percent), time consuming (47.33 percent) and inadequate ICU delirium awareness (46.01 percent) (Xing, et al., 2017).

2.5 Research Gap

In the recognition and successful treatment of delirious patients , nurses play a central role (Boot, 2012; Wells, 2012). There is, however a paucity of up-to-date data on the nurses' socio-demographic, knowledge, attitude and practice in the assessment of delirium among critically ill patients in CCUs in Kenya. Nurses, awareness of early detection and delirium control is essential to ensuring that there is quality of healthcare among delirious patients and reduced stress both on the family and the national healthcare system as a whole. (Boot, 2012; Meagher & Leonard, 2008; Wells, 2012).

2.6 Theoretical Framework

The study applied The Integrated Theory of Health Behavior Change. This is an extension of Albert bandura's Theory of Planned Behaviour. This theory has been selected as it acts as a foundation for intervention development. The use of theory or hypotheses in practice is an important feature of nursing practice. To provide or direct patient care, skilled care nurses apply the principle. Awareness of care procedures, technology, and pharmacology has far-reaching consequences for patient results in their function as caregivers impacting and promoting patient care. Theories are required to understand better how clinicians can promote improvements in health behavior.

The Integrated Theory of Health Behavior Change indicates that improvements in health behavior can be achieved by cultivating awareness and values, increasing skills and abilities in self-regulation, and strengthening social facilitation (Ryan, 2010). This hypothesis indicates that self-management practices are seen as the proximal outcome that affect the long-term distal outcome of improved health status. Using this principle facilitates better contact with other workers and increases social cohesion and thus facilitates the management of complex health conditions through the provision of systematic, coordinated treatment. (Bring in the aspects of application in nurses knowledge and attitude in management of delirium).

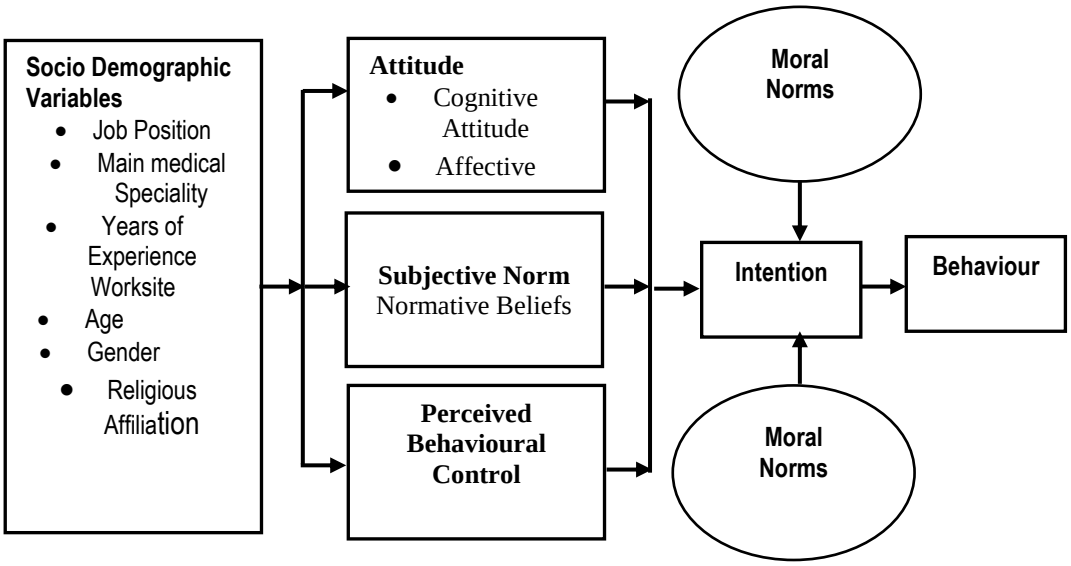

Figure 2.1: Theoretical Framework: Integrated Theory of Health Behaviour Change

Source (Lavoie, et al., 2015)

2.7 Conceptual Framework

The recognition of delirium among the critical care unit patients is the dependent variable while the nurses' Sociodemographic characteristics, knowledge, and attitude towards delirium form the independent variables. The nurses' knowledge encompasses the institutional policies, protocols, guidelines and educational initiatives on delirium which may influence the nurses' attitudes and practices on delirium assessment. The nurses' demographic characteristics may also affect the nurses' management capability on delirium assessment. Effective and efficient assessment of delirium will play a greater role in improving the quality of health care among the delirious patients thus, improving the clinical outcome.

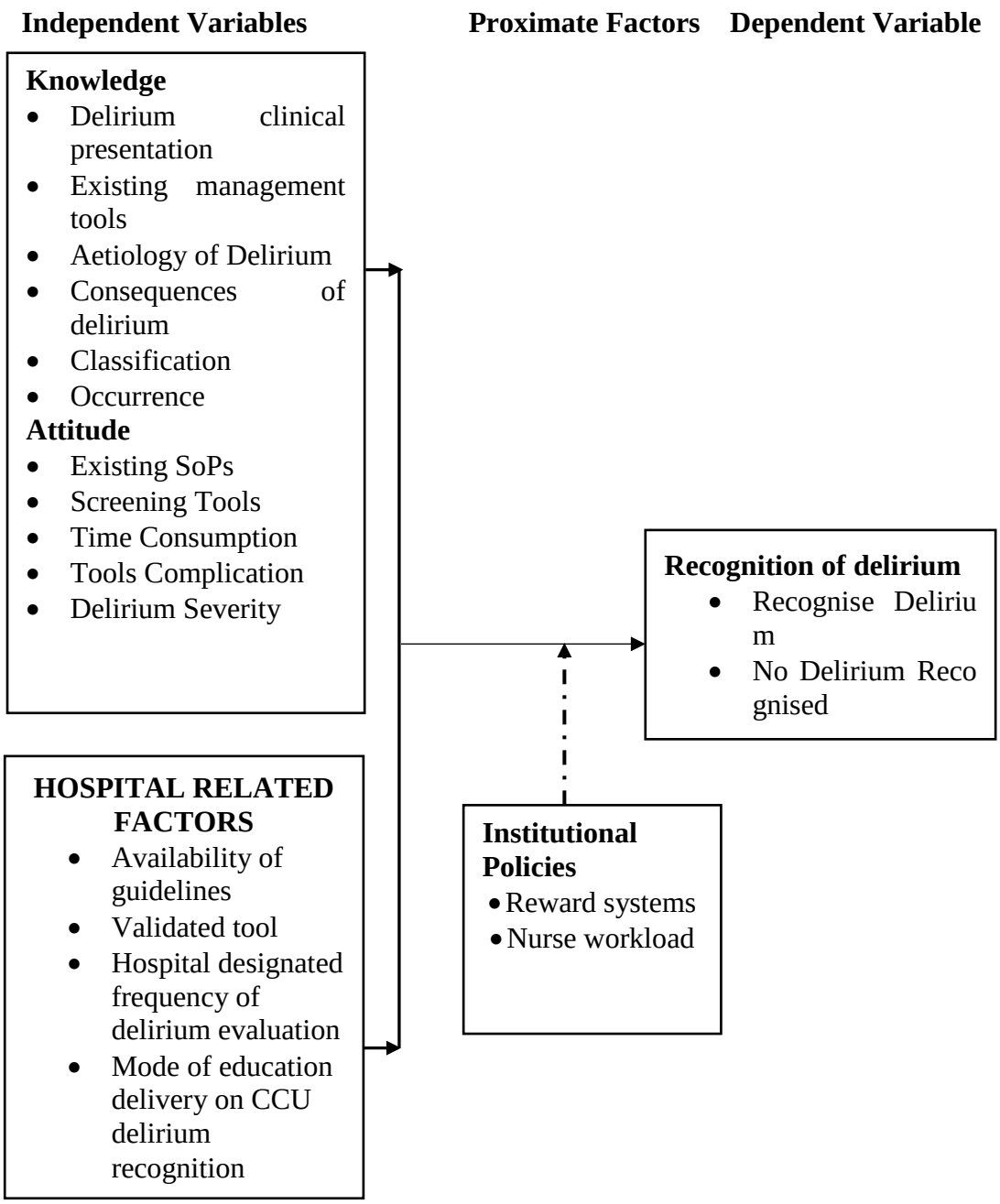

Figure 2.2: Conceptual Framework

CHAPTER THREE

METHODOLOGY

3.1 Study Design

An analytical cross-sectional study design utilizing both qualitative and quantitative approaches was used in the study. The data obtained were both quantitative and qualitative in nature and were collected at a fixed period of time hence making the design appropriate for the study.

3.2 The Study Area

Kenyatta National Hospital is situated in Nairobi County, Kenya. Its estimated terrain elevation above sea level is 1758 meters on Latitude: -1°18'1.94" Longitude: 36°48'25.02". The hospital is currently the largest National referral, teaching, and research hospital with an estimated ICU bed capacity of over 60 beds. Kenyatta National Hospital is a National Teaching and referral Hospital for Specialist Doctors, Medical Officers, Specializing Nurses, Nurses of various cadres and other health care practitioners. KNH is ISO 9001:2015 certified to provide quality care for the citizens of Kenya. A number of services are offered at KNH, these Include: Specialized Medical and Surgical Services i.e. CCU, Cancer Treatment Centre, Cardiology and Renal Services among others. The hospital has a total bed capacity of over 2000 beds with a percentage occupancy rate of 82.4%. KNH has many critical care units that is; Obstetric CCU, paediatric CCU, Neonatal CCU, Cardiothoracic CCU. The study was conducted in the main Critical care unit, medicine intensive care (MICU) and Neurological intensive care unit (NICU). Currently Main CCU has 103 nurses, Medical CCU has 44 nurses and neurological CCU has 18 nurses.

The Critical Care Units are fully equipped units with capacity of 21 beds in main CCU, MICU has 8 beds and NICU has 5 beds. The units are manned by dedicated healthcare personnel with nurses taking the leading role.

3.3 Study Population

3.3.1 Target Population

The study population composed of all qualified nurses working in main CCU, Medicine CCU and neurological CCU. This comprised of 103 nurses working in main CCU, 44 nurses working in Medicine CCU and 18 nurses working in neurological CCU as shown in table 1.1. These critical care units were chosen because; they admit intubated patients who were critically ill and had a greater risk for delirium development.

Table 3.1: Nurses Population in Main CCU, Medicine CCU and Neurological CCU

Unit	Total population
Main Critical Care Unit	103
Medicine Critical Care Unit	44
Neurological Critical Care Unit	18
Total	**165**

3.3.2 Inclusion Criteria

- Qualified Nurses who are employees of KNH working in the main CCU, med icine CCU and neurological CCU.

3.3.3 Exclusion Criteria

- Nurses who were on sick leave at the time of data collection.

3.4 Sample Size and Sampling Technique

The study was conducted among 165 qualified nurses working in Main Critical Care Unit, Medicine Critical Care Unit and Neurological Critical Care Unit within KNH. According to April 2021 nurses data availed by respective nurse managers of the three selected critical care units, Main CCU had 103 nurses, Medicine CCU 44 and

Neurological CCU had 18 nurses totaling 165 nurses. Therefore, the study targeted all the 165 qualified nurses working in these critical care units.

Table 3.2: Total Nurses in the Three Critical Care Units as per April 2021

Records

Unit	Total nurses population
Main Critical Care Unit	103
Medical Critical Care Unit	44
Neurological Critical Care Unit	18
Total	**165**

Census approach was used in recruiting the study participants. Only study participants who met the inclusion criteria and who gave a written informed consent participated in the study.

3.5 Data Collection

3.5.1 Data Collection Tool

Data was collected using semi-structured questionnaire. This tool was developed by the researcher informed by literature review and objectives of the study. Key Informant Interviews (KIIs) guide was used to collect in-depth qualitative data on hospital-related factors associated with the recognition of delirium among critical care nurses. The questionnaire had two sections; section 'A' contained information on respondent's socio-demographic factors while section 'B' contained information on nurses' knowledge about delirium and their attitudes which were categorised as Cognitive Attitude and Affective Attitude. Nurses' attitudes were measured using attitude towards existing sops, careening tools, time consumption, tools complication and delirium severity. KII guide was used to collect data from key informants who comprised of unit nurse managers, team leaders and clinical instructors.

3.6 Validity and Reliability of the Tools

Pretesting of the study tools was done in one of the satellite critical care units located in Accident and Emergency department, KNH. The pre-testing was done on 10% of

the total sample size - approximately 10 nurses. Pre-testing also helped the researcher to modify the study tool so as to capture all the information that helped in answering the research questions and study objectives. Validity is the degree to which the data analysis findings genuinely reflect the phenomenon under study (Mugenda &Mugenda, 2003). The questionnaire's content validity was checked by critical care nurse experts, whose inputs helped refine the tool. For face validity, 10 respondents were chosen for pre-testing of the questionnaires. Insights gained from the pretest were evaluated and used in refining the questionnaire. Mugenda and Mugenda (2003) define reliability as a measure of the extent to which a research instrument, after repeated trial, yields consistent results or data. Raw instrument data was subjected to a reliability analysis from which the coefficient alpha of Cronbach was systematically and accurately measured.

3.7 Data Collection Procedures

The researcher gained access to the three critical care units by introducing self to the respective unit nurse manager and provided evidence of approval from ethics to undertake the study. Eligible participants were all nurses recruited from main CCU (103), medicine CCU (44) and Neurological CCU (18), by adopting census approach. The process was done during the morning shift, afternoon shift and night shift since these were authorized working shifts by the hospital administration. Data collection was done for three months June, July and August 2022 Using both structured questionnaire and Key Informant Interviews.

The researcher introduced self to the study participants in the three selected critical care units who met the inclusion criteria. Study participants were given information on purpose of the study and benefits. They were also informed of no anticipated risks during the study. This was to ensure informed consent is obtained before participation. The process was repeated in every shift starting with Main CCU then medicine CCU and finally Neurological CCU.

Data was collected from all the 165 participants. The researcher administered the questionnaires by herself from one participant to the other in every shift; Morning, Afternoon and Night shifts until all the 165 questionnaires were correctly and

completely filled. Data verification was done concurrently with data collection. In addition to the questionnaire, the researcher had interviews with key informants.

3.9 Data Management and Analysis

All independent variables for the study objectives (socio-demographic, knowledge, and attitude factors) were analysed using descriptive statistics. Socio-demographic variables (Age, Gender, Education Level, Work Experience, Type of ICU - General, Surgical, or Medical) were reported using frequency distribution tables and percentages. Nurses' attitudes responses was scored as an overall score for each of the factors recorded in the questionnaire. Variables in the knowledge and attitude were quantitative analysed and correlated with age, gender and expertise.

Microsoft excel was used to clean the data, while the statistical package of social sciences (SPSS) version 24.0 was used for statistical analysis. Binary logistic regression was used to assess association between nurses' socio-demographic characteristics and level of knowledge and attitude among nurses working in CCUs. Confidence intervals (CI) of 95 per cent was used. Qualitative data was analysed thematically. From these themes, the researcher identified the dominant messages and reported them as verbatim to substantiate the qualitative data.

3.10 Ethical Considerations

Prior to the study, approval was obtained from Kenyatta National Hospital / University of Nairobi-Ethics and Research Committee (KNH / UON-ERC) and NACOSTI. Kenyatta National Hospital (KNH) Administration were asked for permission to carry out research. Informed consent was sought from the study participants. Confidentiality was maintained at all levels of research by using coded questionnaires and not the names of the study participants.

The researcher ensured data collected was stored in a safe manner, the respondents would remain anonymous in the records of the researcher. The already analyzed data was stored in the computer files for a period of time that the study will need to be reviewed or to follow-ups in case there will be need. The researcher ensured utmost

respect to the dignity of the participants by employing integrity during the period and process of investigation. This was done by ensuring that the participants are protected from any type of harm be it physical or psychological harm during the investigation. The possible risks that the participants are likely to go through was not exceeding the challenges they face in their normal lives. These included aspects of asking the participants to give detailed information on their feelings during the process of data collection.

CHAPTER FOUR

STUDY RESULTS

4.1 Introduction

This chapter presents the findings from the analysis as per the specific objectives.

4.2 Response Rate

The response rate for the study was established in order to ascertain the representation and the quality of responses for conclusion of the study. A total of one hundred and sixty five (165) questionnaires were administered to the sampled 165 critical care nurses in selected CCUS. Out of the 165 distributed questionnaires, one hundred and forty seven (147) were dully filled and returned. This translated to a response rate of 89.1%, which was way above the conventionally acceptable rate for surveys as earlier studies had shown. According to Holtom, Baruch, Aguinis and A Ballinger (2022), the average response rate for empirical studies was 65% of the sample. Similarly, this was in line with Orodho (2009) who observed that a response rate above 50% contributed towards gathering of sufficient data that could be generalized to represent the opinions of respondents about the study problem in the target population.

4.2 Socio-Demographic Characteristics of Participants

The study sought to determine nurses' socio-demographic factors. The socio-demographic characteristics evaluated included age, educational level, experience, training in CCU and type of CCU stationed. Socio-demographic data on Table 4.1 showed that majority (34%, n=50) of the study participants were aged between 31-40 years. The results also showed that a majority (87.8%, n=129) of the study participants had a higher diploma training. Regarding experience, the study revealed that more than a half of the study participants (55.8%, n=82) had worked in CCU for a period of less than 5 years. Majority of the study participants (88.4%, n=130) had not been trained in critical care nursing. Regarding work station, majority of the participants (61.9%, n=91) were stationed in the main CCU.

Table 4.1: Socio-Demographic Characteristics of the Respondents

Variable	Category	Frequency (n)	Percentage (%)
Age	Less than 30 Years	39	26.5
	31-40 Years	50	**34.0**
	41-50 Years	48	32.7
	Above 51 Years	10	6.8
	Total	**142**	**100**
Level of Education	Higher Diploma	129	**87.8**
	Master's	18	12.2
	Total	**147**	**100**
Experience	5 Years and below	82	**55.8**
	6-10 Years	28	19
	11-14 Years	17	10.3
	15-19 Years	15	9.5
	20-24 Years	2	1.4
	25 Years and Above	3	2.0
	Total	**147**	**100**
Training in critical care nursing	Yes	17	11.6
	No	130	88.4
	Total	**147**	**100**
CCU Stationed	Main CCU	91	**62.0**
	Medicine CCU	38	25.8
	Neurological CCU	18	12.2
	Total	147	100

4.3 Level of Knowledge of Critical Care Nurses on Recognition of Delirium

The results in Table 4.2 shows frequency and percentage distribution of the study subjects regarding their knowledge about the recognition of delirium in intensive care (N=147). The responses were categorized into two groups: correct and incorrect. Respondents who provided answers reflecting the actual situation at the hospital were classified as having answered correctly. In contrast, those who gave responses contrary to the actual state of affairs at the hospital were classified as having answered incorrectly.

Based on the results in Table 4.2, it is evident that majority 82.3%, n=121) of the respondents answered the question on delirium recognition guidelines correctly, while 17.7% (n=26) gave incorrect answer to the same question. Additionally, the nurses were asked how common delirium was among critically ill patients admitted in their CCUs and more than half of the respondents (53.7%, n=79) gave incorrect answer, while 46.3% (n=68) answered the question correctly. Moreover, majority 95.9%,

n=141) of the nurses were able to answer correctly the question on validated tool /instrument used to recognize presence of delirium, whereas minority of the respondents 4.1% (n=6) gave incorrect answer.

Similarly, more than half of the study participants (63.9%, n=94) answered correctly the questions on 'how often should you evaluate your patient for presence of delirium while admitted in CCU, while 36.1% (n=53) gave the incorrect answer to the question. Finally, the nurses were asked to indicate means through which they received education regarding CCU delirium recognition and majority (93.9%, n=138) of them were able to give the correct answers. These findings imply that majority of the critical care nurses at KNH are knowledgeable on the recognition of delirium. This indicate that the hospital has likely implemented comprehensive training programs and continuing education courses to ensure that the nursing staff is well-informed about delirium, its signs and symptoms, and appropriate interventions. Knowledgeable nurses are better equipped to identify delirium in patients and initiate appropriate interventions, leading to better patient outcomes and overall quality of care.

Table 4.2: Level of Knowledge on Delirium

Variable	Correct		Incorrect	
	N	%	N	%
Does your CCU have delirium recognition guidelines?	**121**	**82.3**	26	17.7
How common is Delirium among Critically ill patients admitted in your CCU?	68	46.3	79	53.7
Which validated tool /instrument do you use to recognize for presence of delirium in your CCU?	**141**	**95.9**	6	4.1
How often should you evaluate your patient for presence of delirium while admitted in CCU?	**94**	**63.9**	53	36.1
Indicate means through which you received education regarding CCU delirium recognition.	**138**	**93.9**	9	6.1

The study sought to determine the level of knowledge among the study subjects on recognition of delirium in which those who answered at least 60% of the questions under knowledge correctly, were considered to have high level of knowledge.

Whereas those who answered less than 60% of the questions correctly were deemed less knowledgeable (Papaioannou *et al.*, 2023). Figure 4.1 shows the distribution. The results in Figure 4.1 showed that, 80% of the study participants had high level of knowledge on recognition of delirium. While, 20% of the study participants had low level of total knowledge on recognition of delirium.

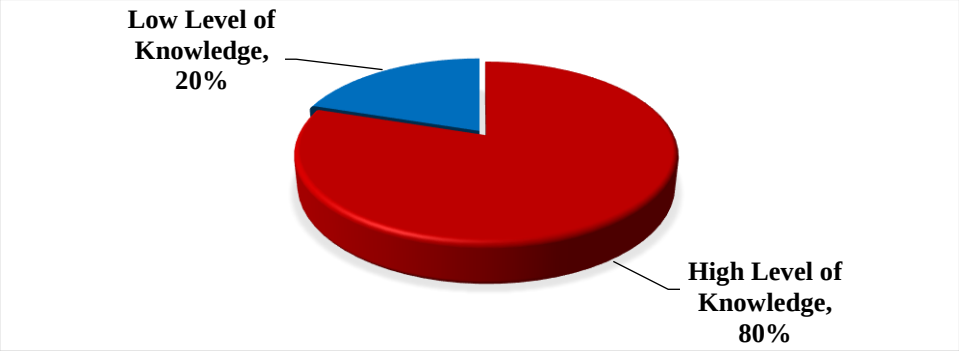

Figure 4.1: Critical Care Nurses' Level of Knowledge

The respondents were further asked to indicate the characteristics they would be assessing for the presence of delirium in a patient in CCU with regards to each of the diagnostic features. The findings were as shown in Table 4.3.

Table 4.3: Characteristics for Assessing the Presence of Delirium in a Patient in CCU

Diagnostic Feature	Characteristics	Frequency	Percentage (%)
Acute change in mental status	Sudden onset or fluctuating course, not explained by a pre-existing condition.	132	89.8
Inattention	Difficulty focusing, sustaining, or shifting attention; easily distracted.	125	85.0
Disorganized Thinking	Rambling, irrelevant, or incoherent speech; illogical flow of ideas.	110	74.8
Altered level of consciousness	Ranges from hyperalertness to drowsiness or stupor.	118	80.3

The results in Table 4.3 shows that the diagnostic feature of an acute change in mental status was recognized by 132 nurses, representing 89.8% of the respondents. This indicated that more tthe han half of the nurses were aware that a sudden or fluctuating change in mental status, unexplained by any pre-existing condition, was a key indicator of delirium. Inattention was identified by 125 nurses, which accounted for 85.0% of the respondents. This demonstrated a strong understanding among the nurses that difficulty in focusing, sustaining, or shifting attention, as well as being easily distracted, are significant markers of delirium.

Disorganized thinking was recognized by 110 nurses, making up 74.8% of the respondents. This showed that while a significant portion of the nurses understood that rambling, irrelevant or incoherent speech, and illogical flow of ideas were indicative of delirium, there was room for improvement in recognizing this characteristic. Altered level of consciousness was acknowledged by 118 nurses, representing 80.3% of the respondents. This indicates that majority of the nurses understood that changes in alertness, ranging from hyperalertness to drowsiness or stupor, were important indicators of delirium. The findings suggests that critical care nurses at KNH had a high level of knowledge in recognizing key characteristics of delirium. However, there were some gaps in the recognition of disorganized thinking, which could benefit from

further training and education. These results points to the importance of continuous professional development to ensure nurses are well-equipped to identify and manage delirium in critical care.

The nurses were further asked to indicate which diagnostic feature(s) would indicate presence or positive score of delirium in a patient in CCU with regards to the above characteristics. Table 4.4 shows the responses.

Table 4.4: Diagnostic Features Indicating Presence or Positive Score of Delirium

Diagnostic Feature	Yes	No
Acute change in mental status	81.6%	18.4%
Inattention	88.4%	11.6%
Disorganized Thinking	78.2%	21.8%
Altered level of consciousness	95.2%	4.8%

The study revealed that the majority of critical care nurses at Kenya National Hospital demonstrated a high level of knowledge in recognizing delirium. Specifically, 81.6% of the nurses identified an acute change in mental status as a key diagnostic feature of delirium, while 88.4% recognized inattention as an indicator. Disorganized thinking was identified by 78.2% of the nurses as a characteristic of delirium. The highest recognition rate was for altered level of consciousness, with 95.2% of the nurses indicating it as a diagnostic feature. These results highlighted that while there was a generally strong awareness among nurses regarding the critical signs of delirium, there remained a need for continuous education to ensure all nurses could accurately identify and respond to all diagnostic features effectively.

4.4 Attitude of Critical Care Nurses Towards Recognition of Delirium

The second objective sought to assess the attitude of critical care nurses towards recognition of delirium.

4.4.1 Descriptive Analysis on Attitude of Critical Care Nurses

This section presents the descriptive results on attitude of critical care nurses towards recognition of delirium at KNH. Table 4.5 shows descriptive analysis on attitude of

critical care nurses towards recognition of delirium. Results in Table 4.3 depicts that majority (68.7%) of the critical care nurses at KNH agreed that delirium is an under-recognized problem and thus had positive attitude towards delirium recognition. Additionally, more than half (83.7%) of the nurses agreed that delirium requires active interventions on the part of caregivers thus had positive attitude towards delirium recognition. Furthermore, majority (95.2%) of the nurses agreed that delirium is largely preventable if recognized early thus, positive attitude.

Moreover, the study found that above three quarters of the nurses (63.3%) agreed with the statement that delirium is related to over sedation drugs in ICU thus had positive attitude towards delirium recognition. Also. 59.2% of the nurses did have positive attitude towards delirium recognition by indicating that agree that delirium prolongs mechanical ventilation. 72.8% of the nurses agreed that Assessment tools/ Instruments to recognize delirium are complicated to use, thus had positive attitude towards delirium recognition.

Similarly, most (90.5%) of the nurses believed that using delirium assessment tools are very important in patients at risk of developing delirium, 98% agreed that It is not easy to assess sedated patients for delirium, 92.5% believed that screening for delirious patients is not a nursing responsibility, while 66.7% agreed that doctors are the ones who complete delirium assessment. Finally, more than half (74.1%) of the nurses agreed with the statement that it is not easy to assess intubated patients, thus had positive attitude towards recognition of delirium.

Table 4.5: Descriptive Analysis on Attitude of Critical Care Nurses

	Positive		Negative	
Variable	**N**	**%**	**N**	**%**
Delirium is an under-recognized problem	**101**	**68.7**	46	31.3
Delirium is a normal response to the ICU environment.	56	38.1	91	61.9
Delirium requires active interventions on the part of caregivers.	**123**	**83.7**	24	16.3
Delirium is largely preventable if recognized early	**140**	**95.2**	7	4.8
Delirium is related to over sedation drugs in ICU	**93**	**63.3**	54	36.7
Delirium prolongs mechanical ventilation	**87**	**59.2**	60	40.8
Assessment tools/ Instruments to recognize delirium are complicated to use.	**107**	**72.8**	40	27.2
Using delirium assessment tools are very important in patients at risk of developing delirium	**133**	**90.5**	14	9.5
Using delirium assessment tools does not improve patients' outcomes.	37	25.2	110	74.8
Delirium screening Tools increases nursing work load	49	33.3	98	66.7
It is not easy to assess sedated patients for delirium	**144**	**98.0**	3	2.0
Delirium assessment consumes too much time.	65	44.2	82	55.8
Screening for delirious patients is not a nursing responsibility.	**136**	**92.5**	11	7.5
Doctors are the ones who complete delirium assessment.	**98**	**66.7**	49	33.3
It is not easy to assess intubated patients	**109**	**74.1**	38	25.9

The study sought to determine the attitude of critical care nurses. Scoring system was that, each agree answer had (1) mark, disagree attitude had (0) mark. Total scoring was classified into two categories as follow: positive attitude with score of more than70% and negative attitude less than 70% (Shewasinad et al., 2017). Figure 4.2 showed the level of attitude of critical care nurses at KNH towards delirium recognition. Figure 4.2 indicated distributions of the critical care nurses' attitude toward recognition of delirium at KNH. The results indicated that majority (73.3%) of the critical care nurses had positive attitude towards recognition of delirium compared to 26.7% who had negative.

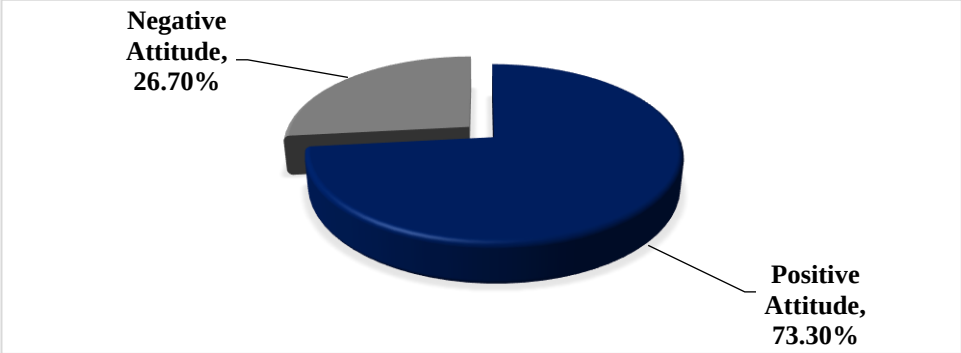

Figure 4.2: Attitude of Critical Care Nurses Towards Delirium Recognition

4.5 Association between Socio-Demographic Characteristics and Level of Knowledge

Binary logistics regression analysis was conducted to assess the association between critical care nurses' socio-demographic characteristics and level of knowledge on recognition of delirium. The use of binary logistic regression is justified here because the dependent variable, recognition of delirium, was coded in binary terms: 0 for not being able to recognize delirium and 1 for being able to recognize delirium. This type of regression was appropriate for modelling relationships between the variables and a binary outcome, allowing the researcher to estimate the probability of correctly recognizing delirium based on various socio-demographic factors. The results were as shown in Table 4.6. Based on the binary logistic regression results in Table 4.4, there existed a significant association between age of respondent, level of education, experience and knowledge on delirium recognition. The study found that critical care nurses aged between 41-50 years were 2.462 times more likely to have high knowledge on delirium recognition than those age below 30 years (AOR=2.462, CI= 2.623-44.612, P-value<0.001). Also, critical care nurses with master degrees were likely to have higher knowledge on recognition of delirium compared to those with higher diplomas (AOR=6.355, CI= 4.912-25.021, P-value<0.001).

In addition, it was established that nurses with between 20-24 and ≥25 years years of experience were 3.893 and 5.724 times more likely to have high knowledge compared to those with less than 6years of experience (AOR=3.893, CI=2.111-18.351, P-value <0.001 and AOR=5.724, CI =1.236-22.712, P-value <0.001) respectively. Regarding training, the study found that critical care nurses who had received some training in care were 6.834 times more likely to have high knowledge compared to those whom had not (AOR=6.834, CI 4.271-26.091, P-value<0.001).

Table 4.6: Association between Socio-demographic Characteristics and Level of Knowledge

				95% CI for AOR		
Categories	**B**	**df**	**AOR**	**Lower**	**Upper**	**P-value**
Age						
Less than 30 yrs.			Ref			
31-40 Years	0.114	1	1.121	0.923	12.043	0.261
41-50 Years	0.901	1	2.462	2.623	44.612	**<0.001**
≥51 Years	1.451	1	4.261	0.936	8.29	0.107
Level of Education						
Diploma			Ref			
Master's	1.850	1	6.355	4.912	25.021	**<0.001**
Experience						
5 years and below			Ref			
6-10 years	0.071	1	1.073	0.892	12.103	1.021
11-14 years	1.383	1	3.981	0.723	1.120	0.126
15-19 years	1.335	1	3.801	0.734	1.823	0.061
20-24 years	1.340	1	3.893	2.111	18.351	**<0.001**
≥25 years	1.746	1	5.724	1.236	22.712	**<0.001**
Training in Critical Care Nursing						
No			Ref			
Yes	1.922	1	6.834	4.271	26.091	<0.001
CCU Stationed						
Main CCU			Ref			
Medicine CCU	-0.087	1	0.917	0.291	1.027	1.032
Neurological CCU	-0.961	1	0.383	0.062	1.092	0.937

4.6 Relationship between Socio-Demographic Characteristics and Attitude

Binary logistics regression analysis was carried out to assess the relationship between critical care nurses' socio-demographic characteristics and attitude toward recognition of delirium at KNH and the findings were as shown in Table 4.7. The results in Table

4.7 showed that there was significant association between age of respondent, level of education, experience and training in critical care nursing and attitude towards delirium recognition. Specifically the results showed that nurses aged between 41-50 and ≥51 years were 32% and 75% less likely to develop negative attitude towards delirium recognition compared to those aged below 30 years (AOR=0.681, CI 0.036-0.983, P-value<0.001and AOR=0.256, CI 0.067-0.979, P-value<0.001). The study found that nurses with master's degrees were 20% less likely to develop negative attitude towards recognition of delirium compared to those with higher diploma as the highest academic level (AOR=0.802, CI 0.027-0.892, P-value<0.001).

Moreover, it was established that nurses with between 15-19 and ≥25 years years of experience were 16% and 55% less likely to have negative attitude towards delirium recognition compared to these with less than 6 years of experience (AOR=0.945, CI 2.781-12.832, P-value<0.001and AOR=0.456, CI= 0.127-0.838, P-value<0.001). Also, nurses who had been trained on care were 71% less likely to have negative attitude towards delirium recognition compared to those who had no training at all (AOR=0.292, CI 0.200-0.806, P-value<0.001).

Table 4.7: Relationship between Socio-Demographic Characteristics and Attitude

				95% CI for AOR		
Categories	**B**	**df**	**AOR**	**Lower**	**Upper**	**P-value**
Age						
Less than 30 Years			Ref			
31-40 Years	0.093	1	0.445	0.669	1.083	0.652
41-50 Years	1.940	1	0.681	0.036	0.983	**<0.001**
≥51 Years	0.845	1	0.256	0.067	0.979	**<0.001**
Level of Education						
Higher diploma			Ref			
Master's	-0.222	1	0.802	0.027	0.892	**<0.001**
Experience						
5 Years and below			Ref			
6-10 years	-0.728	1	0.483	0.152	2.632	0.921
11-14 years	-0.609	1	0.544	0.289	2.110	0.282
15-19 years	-0.057	1	0.945	2.781	12.832	**<0.001**
20-24 years	-0.385	1	0.681	0.200	8.921	0.553
≥25 years	-0.786	1	0.456	0.127	0.838	<0.001

Training in Critical Care Nursing						
No			Ref			
Yes	2.113	1	0.292	0.200	0.806	**<0.001**
CCU Stationed						
Main CCU						
Medicine CCU	-0.609	1	0.544	0.129	2.062	0.082
Neurological CCU	-0.412	1	0.662	0.823	12.412	1.003

4.7 Hospital Related Factors Associated with Recognition of Delirium

Qualitative data from key informants highlighted on the hospital-related factors associated with the recognition of delirium among critical care nurses. Six themes emerged from the key informant interviews as the hospital-related factors associated with the recognition of delirium among critical care nurses. These were protocols on recognition of delirium; training of health professionals, availability of adequate human, pharmaceutical and non-pharmaceutical resources, supervision of nurses, mentorship of nurses and research by health care professionals (Table 4.8).

Table 4.8: Hospital Related Factors Associated with Recognition of Delirium

Themes	Sub-themes
Protocols on recognition of delirium	Existence of protocols and guidelines for recognition of delirium. Regular updates of protocols and guidelines for recognition of delirium.
Training of health professionals	Training of nurses on symptoms and signs of delirium Continuous professional education on delirium
Availability of adequate human, pharmaceutical and non-pharmaceutical resources	Adequate human resources Accessibility and availability of adequate pharmaceutical and non-pharmaceutical resources
Supervision of nurses	Frequent supervision of nurses by nurse in-charges
Mentorship of nurses	Regular mentorship of nurses by more experienced nurses
Research by health care professionals	Clinical research on delirium

Theme 1: Protocols on Recognition of Delirium

The subthemes included existence of protocols and guidelines for recognition of delirium and regular updates of protocols and guidelines for recognition of delirium.

Existence of protocols and guidelines for recognition of delirium

The study participants reported presence of protocols and guidelines for recognition of delirium in ICU units. One participant said:

‘‘There are some protocols and work instructions that are in place to guide us in recognition of delirium” K1 1.

Another participant stated that:

” Yes, we do have existing guidelines for recognition of delirium but they are not adequate, there is need for clear guidelines to enhance detection of this condition in CCU’’. KI 5

Regular updates of protocols and guidelines for recognition of delirium

The study participants acknowledged need for regular updates of protocols and guidelines for recognition of delirium. One participant attested that:

‘‘The protocols and guidelines for recognition of delirium need to be updated regularly to enable us be able to use them to recognize delirium easily” K1 3.

Another participant added:

‘‘The hospital management need to constitute a task force that need to review regularly the protocols and guidelines for recognition of delirium” K1 6.

Theme 2: Training of Health Professionals

The subthemes included training of nurses on symptoms and signs of delirium and continuous professional education on delirium.

Training of nurses on symptoms and signs of delirium

The study participants reported that there was need for training on symptoms and signs of delirium. One participant attested that:

‘‘Much as there are guidelines and instructions to help nurses with recognition of delirium, there is need for a robust training on the symptoms and signs of delirium for easy and early detection of the condition” K1 6.

Another participant stated that:

"Training facilitate identification of the most effective and efficient clinician to conduct screening and management of delirium" KI 3.

Another participant added:

"''Healthcare professionals especially nurses play a key role in the identification and management of delirium and education can enhance recognition and treatment of the condition" K1 5

Continuous professional education on delirium

The study participants reported that there was need for continuous professional education training on delirium. One participant attested that:

''We need regular continuous professional education on delirium to improve our knowledge and skills on recognition of delirium" K1 1.

Another participant added:

''....Thanks to the management of the hospital for facilitating continuous professional education on delirium despite them not being done regularly" K1 4

Theme 3: Availability of Adequate Human, Pharmaceutical and Non-Pharmaceutical Resources

The subthemes included availability of adequate human resources and accessibility and availability of adequate pharmaceutical and non-pharmaceutical resources.

Adequate human resources

The study participants reported that adequate human resources were necessary for recognition of delirium. One participant said:

''....When we have adequate number of staffs recognition of delirium becomes easy since primary nursing can be practice. This enhances detection of delirium since one nurse spends more time with a particular patient" K1 2

Another participant added:

''....The hospital should employ enough staff to reduce work load. This will reduce work load strain on nurses and enable them to be able to recognize delirium" K1 5

Accessibility and availability of adequate pharmaceutical and non-pharmaceutical resources

The study participants reported that pharmaceutical and non-pharmaceutical resources need to be accessible and available within the critical care units to facilitate recognition of delirium. One participant said:

''To actively and effectively participate in the recognition of delirium, we as nurses who are at the forefront in the detection, need the necessary tools and supplies to enable us identify the condition at an early stage" KI 3

Another participant added:

''The hospital should provide all the necessary pharmaceutical and non-pharmaceutical resources to enable us accomplish recognition of delirium. The non-pharmaceutical resources that we need include gloves, masks, tools for assessment etc." KI 5.

Theme 4: Supervision of Nurses

The theme had only one sub-theme: frequent supervision of nurses by nurse in-charges.

Frequent supervision of nurses by nurse in-charges

The study participants acknowledged need for frequent supervision of nurses by nurse in-charges on recognition of delirium. One participant said that:

''Nurses play a key role in recognition of delirium because they spend more time at the bedside of the patients. So with good supervision they are able to observe fluctuations in patients' attention, level of consciousness, and cognitive functioning" K1 6.

Another participant added:

''....We need to continuously supervise nurses while on duty to improve their skills in recognition of delirium" K11.

Theme 5: Mentorship of Nurses

The theme had only one sub-theme: regular mentorship of nurses by more experienced nurses.

Regular mentorship of nurses by more experienced nurses

The study participants acknowledged need for regular mentorship by more experienced nurses on recognition of delirium. One participant attested that:

''Mentorship of nurses by their colleagues who have experience enhances them to recognize delirium. It is important that new and inexperienced nurses are assigned duties alongside more experienced nurses for them to be mentored ……..'' K1 2

Another participant stated that:

"Mentorship improves knowledge and skills of nurses on recognition of delirium…Oh God thanks to the seniors in critical care units" KI 5.

Theme 6: Research by Health Care Professionals

The theme had only one sub-theme: clinical research on delirium.

Clinical research on delirium

The study participants indicated that they would need more researches to be done by health care professionals to facilitate new knowledge and skills for prompt recognition of delirium in critical care units. One of the study participants said:

''Delirium increases the risk of developing frailty, dementia or even exacerbating dementia syndrome; unfortunately, the condition is often unrecognised, particularly hypoactive delirium. There is need for more researches in clinical practice about delirium" KI 3

Another participant stated that:

"The biggest support we as nurses need is for more studies to be carried out on detection of delirium and its management. This will provide more insight on recognition and management of the condition'' KI 1.

CHAPTER FIVE

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents discussion of key findings, conclusions derived from the findings and recommendations on the basis of the findings and conclusions.

5.2 Discussion

5.2.1 Knowledge of Critical Care Nurses and Recognition of Delirium

The first objective of the study was to assess the knowledge of critical care nurses on the recognition of delirium. The findings revealed that most (82.3%) of the respondents answer the question on delirium recognition guidelines correctly, while 17.7% gave incorrect answer to the same question. This finding is similar to findings by Hickin et al., (2020), which reported that 78% of ICU nurses demonstrated good knowledge of delirium recognition. The high percentage in both studies suggests that nurses generally have a good understanding of delirium recognition guidelines. Additionally, the nurses were asked how common delirium was among critically ill patients admitted in their CCUs and more than half of them (53.7%) gave incorrect answer, while 46.3% answered the question correctly.

Moreover, majority (95.9%) of the nurses were able to answer correctly the question on validated tool /instrument used to recognize for presence of delirium, whereas 4.1% gave incorrect answer. This result are in contrast to those found by Elliott (2019), where 62% of ICU nurses correctly identified the prevalence of delirium in critically ill patients. The lower percentage in the current study suggests that there might be a need for more education on the epidemiology of delirium in CCUs. Similarly, the study found that above three quarter of the nurses (63.9%) answered correctly the questions on ‘how often should you evaluate your patient for presence of delirium while admitted in CCU?’, while 36.1% gave the incorrect answer to the question. This result contrasts findings from Oosterhouse *et al*. (2016), where only 47% of ICU nurses correctly

identified the frequency of delirium assessment. The higher percentage in the current study suggests improved knowledge about delirium monitoring protocols.

Finally, the nurses were asked to indicate means through which they received education regarding CCU delirium recognition and most (93.9%) of them were able to give the correct answers. These findings imply that most of the critical care nurses at KNH are knowledgeable on the recognition of delirium. This indicate that the hospital has likely implemented comprehensive training programs and continuing education courses to ensure that the nursing staff is well-informed about delirium, its signs and symptoms, and appropriate interventions. Knowledgeable nurses are better equipped to identify delirium in patients and initiate appropriate interventions, leading to better patient outcomes and overall quality of care. These results are consistent with the findings of a study by Ramoo et al., (2018), which found that 85.7% of ICU nurses correctly identified validated tools for delirium assessment. Both studies indicate a high level of awareness among nurses about standardized delirium assessment instruments.

The study also found out that 80% of the critical care nurses at KNH had high knowledge on recognition of delirium, pointing to the fact that most of the critical care units' nurses at KNH are well-informed about delirium's signs, symptoms, and risk factors, which is essential for accurate and timely identification and management of this condition. High knowledge levels can contribute to better patient care and outcomes. However, there is still a significant minority (20%) of nurses with a low knowledge on recognizing delirium. This could mean they may not be able to accurately identify delirium in patients or may not fully understand the importance of early recognition and intervention. These nurses may require additional training or resources to enhance their knowledge and skills in delirium recognition and management.

The findings concur with the findings of Nyen *et al.*, (2010) who asserted that nurses play a very important role in patient evaluation and triage on the basis of the information given, it is therefore obligatory that the nurses should have good knowledge of delirium, about how it presents in critically ill patients and how it

evolves. The results are consistent with the assertions by a study by Brummel *et al.,* (2013) that delirium is a complex neuropsychiatric syndrome which is often under-recognized by nurses and that nurses do detect changes but these are not linked with an understanding or recognition of delirium. The results are in agreement with the assertions by Xing *et al.* (2017) that, nurses' perceived barriers to ICU delirium screening includes; lack of suitable screening equipment (49.18 percent), heavy workload and lack of patient contact (48.53 percent), time consuming (47.33 percent) and inadequate ICU delirium awareness (46.01 percent) and this leads to discrepancy in the identification of delirium.

Research has noted with concern the high incidence of delirium in patients within critical care units (ICUs) globally and is heavily related to increased morbidity and mortality. Poor or lack of knowledge among nurses to perform delirium assessment has led to significant under recognition of delirium by nurses regardless.

The findings were found to be contrary to the assertions by Nyen. *et al.* (2010) that, nurses play a very important role in patient evaluation and triage on the basis of the information given and it is therefore obligatory that the nurses should have good knowledge and guideline of delirium, about how it presents in critically ill patients and how it evolves. The results concur with the statement of Brummel et al.,(2014) that the longer delirium duration in the critical illness setting has been reported to be independently correlated with increased chances of impairment in everyday life tasks and worse motor-sensory control for manually ventilated patients the following year. Among the survivors of critical illness, 37% were found to be delirious during their ICU stay and 18% of them succumbed within twelve months (Wolters et al., 2014).

Delirium was found to be very common among critically ill patients admitted in their CCU as indicated by majority of the respondents. Almost none of the critical care nurses in CCU at KNH was confident that delirium was just common in critically ill patients in their CCU. With regards to recognition tools, the study established that majority of the respondents in CCU at KNH were very positive that in their CCU they were using Glasgow Coma Scale Chart to recognize the presence of delirium. A few of the critical care nurses, did not indicate the tools they used in their CCU, 17%

indicated that they did not have any tools for recognition of delirium in their CCU, a few of the respondents indicated that they used a combination of more than one of the given tools.

Moreover, for acute change in mental status, the most notable characteristics is hallucinations, confusion, restlessness, sluggishness, agitation, low GCS, hyper/hypoactive, violence and loss of memory. For inattention the most common characteristics is inappropriate verbal response, loss of interest, hyperactive, anxiety, decreased level of consciousness and stupor. The findings pointed out that, patients experienced change in cognitive process, fright of ideas, disorientation in time and place, confusion and confabulations. For altered level of consciousness, the patients experienced confusion, change in GCS, low level of consciousness, not opening eyes, they were lethargic and unresponsive to stimuli. All the diagnostic features indicated presence of delirium among the patients in CCU.

These results are consistent with the assertions by Zhang et al., (2013) that delirious ICU patients are three times more likely to die, and six and a half times more likely to suffer one or more complications than non-delirious patients. Delirious ICU patients spent more than seven days longer in the ICU and are hospitalized more than six days longer than non-delirious patients. Additionally, van den Boogaard et al., (2012) indicated that mechanically ventilated delirious patients stayed longer on the ventilator, were more likely to self-extubate and remove catheters compared to non-delirious patients.

These results are consistent with the conclusion made by Aghogho (2016) that, it is obligatory that the nurses should have good knowledge of delirium, its presentation, in critically ill patients, how it evolves and its recognition. These results are consistent with the conclusion made by Aghogho (2016) that, it is obligatory that the nurses should have good knowledge of delirium, about how it presents in critically ill patients and how it evolves and in case one suspects a patient as to being delirious they be able to elicit the triggering causes of delirium which must be recognized.

5.2.2 Attitude of Critical Care Nurses towards Recognition of Delirium

The study found that that majority (68.7%) of the critical care nurses at KNH agreed that delirium is an under-recognised problem and thus had positive attitude towards delirium recognition. This finding agrees with a study by Hamdan-Mansour *et al.* (2020), which reported that 72% of ICU nurses recognized delirium as an under-diagnosed condition. Both studies suggest a growing awareness among nurses about the prevalence and importance of delirium recognition. Additionally, most (83.7%) of the nurses agreed that delirium requires active interventions on the part of caregivers thus had positive attitude towards delirium recognition. This result is consistent with findings by Trogrlic *et al.,* (2017), where 85% of ICU nurses acknowledged the need for proactive delirium management. These studies indicate a positive attitude towards active involvement in delirium care. Furthermore, most (95.2%) of the nurses agreed that delirium is largely preventable if recognized early thus, positive attitude. This high percentage agrees with findings by Palacios-Ceña *et al.* (2016), which found that 89% of ICU nurses believed in the preventability of delirium through early recognition. Both studies highlight a positive attitude towards the potential for prevention.

Moreover, the study found that more than half of the nurses (63.3%) agreed with the statement that delirium is related to over sedation drugs in ICU thus had positive attitude towards delirium recognition. Also. 59.2% of the nurses did have positive attitude towards delirium recognition by indicating agreement that delirium prolongs mechanical ventilation. Seventy two point eight percent (72.8%) of the nurses agreed that Assessment tools/ Instruments to recognize delirium are complicated to use, thus had positive attitude towards delirium recognition.

Similarly, majority (90.5%) of the nurses believed that using delirium assessment tools are very important in patients at risk of developing delirium, 98% agreed that It is not easy to assess sedated patients for delirium, 92.5% believed that screening for delirious patients is not a nursing responsibility, while 66.7% agreed that doctors are the ones who complete delirium assessment. Finally, most (74.1%) of the nurses agreed with the statement that it is not easy to assess intubated patients, thus had positive attitude towards recognition of delirium. A study by Gesin et al, (2018) found

that only 25% of nurses held this belief. The results are thus inconsistent with those of the existing studies indicating a potential misunderstanding of roles in delirium management at KNH.

Additionally, the study sought to determine the percentage distribution of attitude of critical care nurses. Scoring system was that, each agree answer had (1) mark, disagree attitude had (0) mark. Total scoring was classified into two categories as follow: positive of attitude for nurse's toward patient with delirium more than70% and negative attitude less than 70%. The findings revealed that majority (73.3%) of the critical care nurses had positive attitude towards recognition of delirium compared to 26.7% who had negative opinion towards the same. This is an encouraging finding, as it implies that most nurses are aware of the importance of identifying delirium and are likely to be proactive in assessing and managing it in their patients. These result are in line with a study by Sinvani et al. (2018), which reported that 70% of ICU nurses demonstrated positive attitudes towards delirium assessment and management. Both studies indicate generally favourable attitudes among nurses, while also highlighting room for improvement. A positive attitude among nurses can contribute to improved patient outcomes and overall care quality. However, there is still a notable percentage (26.7%) of nurses who have a negative opinion towards delirium recognition. This could mean that they may not prioritize delirium assessment, are not confident in their ability to recognize it, or are unaware of its significance. This group may require additional education and training to enhance their understanding of delirium and its impact on patient outcomes.

Majority of critical care nurses at KNH exhibit a positive attitude towards the recognition of delirium, with 73.3% of nurses demonstrating a favourable perspective towards its identification and management, reflecting their acknowledgment of delirium as an under-recognized issue, the importance of early prevention, and the necessity for active interventions by caregivers.

Despite the overall positive attitude towards delirium recognition among the majority of nurses, there remains a notable number who exhibit a less favourable perspective on this matter, this is likely to affect their likelihood to engage proactively in delirium

assessment and management, indicating a need for targeted educational and training interventions.

5.2.3 Association between Socio-Demographic Characteristics and Knowledge

The third specific objective was to determine the association between critical care nurses' socio-demographic characteristics and knowledge on recognition of delirium. Binary logistics regression analysis was conducted to assess the association between critical care nurses' socio-demographic characteristics and knowledge on recognition of delirium. The study found a significant association between age of respondent and level of education. The study found that critical care nurses aged between 41-50 years were likely to have high knowledge on delirium recognition than those age below 30 years (AOR=2.462, CI 2.623-44.612, P-value<0.001). Also, critical care nurses with master degrees were likely to have higher knowledge on recognition of delirium compared to those with diplomas. These finding are in agreement to those of Ramoo et al. (2018), which reported that older nurses (>40 years) demonstrated significantly better knowledge of delirium compared to younger nurses. Both studies suggest that age and associated experience contribute to improved delirium recognition skills.

In addition, it was established that nurses with between 20-24 years of experience were likely to have high knowledge compared to those with less than 6years of experience (AOR=3.893, CI 2.111-18.351, P-value<0.001). These finding agrees with research by Detroyer et al. (2016), which reported that nurses with more than 10 years of experience had significantly better delirium knowledge scores. Both studies underscore the importance of clinical experience in developing expertise in delirium recognition.

Regarding training, the study found that critical care nurses who had received some training in care were more likely to have high knowledge compared to those whom had not (AOR=6.834, CI 4.271-26.091, P-value<0.001). These result are in line with a systematic review by Trogrlić et al. (2017), which found that educational interventions significantly improved nurses' knowledge of delirium. Both studies emphasize the effectiveness of targeted training programs in enhancing delirium

recognition skills. This indicate that nurses in the 41-50 age group have likely been working in the field for a longer period than their younger counterparts.

This additional experience can contribute to a better understanding of patient symptoms, including recognizing the signs of delirium. Moreover, older nurses may be more motivated to stay informed about the latest advances in their field, including delirium recognition and management, as they approach the later stages of their careers. This motivation could lead them to seek additional education and training opportunities, which in turn may enhance their knowledge in this area. The interpretation that additional experience leads to better understanding of patient symptoms, including delirium recognition, is supported by a study from van de Steeg et al. (2015). They found that nurses with more years of experience were better able to identify and manage delirium, consistent with the current study's findings.

5.2.4 Relationship between Socio-Demographic Characteristics and Attitude

The fourth objective of the study was to determine the relationship between critical care nurses' socio-demographic characteristics and attitude toward recognition of delirium. Binary logistics regression analysis was carried out to assess the relationship between critical care nurses' socio-demographic characteristics and attitude toward recognition of delirium at KNH. The findings revealed that nurses aged between 41-50 years were less likely to develop negative attitude towards delirium recognition compared to those aged below 30 years (AOR=0.681, CI 0.036-0.983, P-value<0.001). Additionally, the findings revealed that nurses aged at least 51 years were less likely to develop negative attitude towards delirium recognition as compared to those younger than 30 years (AOR=0.256, CI 0.067-0.979, P-value<0.001). This finding agrees with research by Hamdan-Mansour et al. (2020), which reported that older nurses (>40 years) demonstrated more positive attitudes towards delirium care. Both studies suggest that age and experience contribute to more favourable attitudes towards delirium recognition.

Level of education was also found to be significantly associated with attitude of critical care nurses towards delirium recognition. The study found that nurses with master's degrees were less likely to develop negative attitude towards recognition of delirium

compared to those with diploma as the highest academic level (AOR=0.802, CI 0.027-0.892, P-value<0.001). This result is consistent with findings from Zamoscik et al. (2017), where nurses with higher education levels showed more positive attitudes towards delirium assessment and management. These studies highlight the positive impact of advanced education on attitudes towards delirium.

Moreover, it was established that nurses with between 15-19 years of experience were less likely to have negative attitude towards delirium recognition compared to these with less than 6 years of experience (AOR=0.945, CI 2.781-12.832, P-value<0.001). Also, nurses who had been trained on care were less likely to have negative attitude towards delirium recognition compared to those who had no training at all (AOR=0.292, CI 0.200-0.806, P-value<0.001). This finding agrees with research by Selim et al. (2018), which reported that nurses with more than 10 years of experience had significantly more positive attitudes towards delirium care. Both studies underscore the importance of clinical experience in developing favourable attitudes towards delirium recognition.

5.2.5 Hospital Related Factors and Recognition of Delirium

The fifth objective of the study was to explore the hospital-related factors associated with the recognition of delirium among critical care nurses. In a focused group discussion, hospital management and other experts were asked to give their opinions on the magnitude of delirium in their CCU, most of them indicated that:

The study found that the main hospital related factors hindering recognition of delirium includes inadequate staffing levels which leads to nurses and other healthcare providers being overworked and having limited time to spend with each patient. This may result in insufficient assessment of patients and reduced ability to identify delirium symptoms. Additionally, poor communication between healthcare providers, particularly during shift changes or patient handoffs, was found to lead to important information about a patient's condition being missed, including potential signs of delirium. These findings are similar to findings by Palacios-Ceña et al., (2016), which reported that nurse understaffing was significantly associated with lower rates of

delirium detection. Both studies highlight the impact of workload on nurses' ability to recognize delirium.

There are some protocols and instructions that are in place to guide us in early recognition; however, the guidelines that are already existing are not enough and so there is need for more clear guidelines for us to enhance early detection of delirium in our CCU'. Delirium is characterised by new changes to baseline mental state. Speaking to an informed caregiver or family member to establish the patient's background cognitive function, physical function and independent ability to perform activities of daily living is therefore key to recognition. Screening tests attempt to identify key features of delirium without which it is unlikely to be present. This result is consistent with findings from Trogrlic et al., (2017), where communication barriers were found to be a significant obstacle in implementing delirium assessment and management protocols. These studies emphasize the importance of effective communication in delirium care. When asked to give their opinion on guidelines and instruction for identification of delirium, most of the respondents indicated that:

Much as there are some guidelines and instructions in place to help nurses with early detection, there is need for a robust training on the symptoms and signs of delirium for easy and early recognition. Further, one of the main aims of delirium screening is to identify the most effective and efficient clinician to conduct the screening and to determine how to integrate assessment and management of delirium into clinician workflow and the health system, thus nurses need robust guidelines and properly laid down steps on how to do this so as to recognize delirium early. This finding agrees with research by Sinvani et al., (2018), which reported that lack of clear, standardized protocols was a major barrier to effective delirium recognition and management. Both studies underscore the need for more comprehensive guidelines. In most cases I miss delirium when present, but I can't identify delirium when absent, which is attributable to the insufficient instructions and guidelines to recognize it. Recognition of delirium can be enhanced with education of nurses in delirium features, cognitive assessment, and factors associated with poor recognition, so there is need for proper guideline and instructions to enable nurses recognize delirium at an earlier stage.

The nurses were asked in an interview to give their opinions on how nurses recognize for delirium in a critically ill patient in CCU. In response, one of the participants indicated that: Nurses play a key role in recognition of delirium, yet delirium is often unrecognized by nurses. Nurses, who spend more time at the bedside than physicians, play a crucial role in the recognition of delirium. Because nurses have frequent and continuous contact with patients, they can better observe fluctuations in attention, level of consciousness, and cognitive functioning. This result is in line with a systematic review by van de Steeg et al., (2015), which found that educational interventions significantly improved nurses' ability to recognize and manage delirium. Both studies stress the importance of targeted training programs. The observations made by nurses are critical for the early detection of delirium symptoms and for the continuous monitoring of these symptoms that is essential to follow the patient's clinical course. With training and supervision, delirium symptoms can be monitored effectively by nurse.

5.3 Conclusion

Based on the findings summarized in the previous section, this study concludes that majority of critical care nurses at Kenyatta National Hospital (KNH) possess a high level of knowledge regarding the recognition of delirium in critically ill patients. This high level of expertise reflects the effectiveness of the hospital's training programs and educational initiatives. However, it is also concluded that there are gaps in the nurses' understanding of the prevalence of delirium, indicating areas where further educational efforts are needed to enhance overall knowledge.

In terms of attitudes towards delirium recognition, the study concludes that these attitudes improve with age and higher education levels among critical care nurses. The importance of experience and advanced training is highlighted, as these factors significantly contribute to more positive attitudes towards the recognition of delirium. This points to the need for continuous professional development to foster a more proactive and positive approach to patient care.

The study further concludes that there is a significant association between critical care nurses' socio-demographic characteristics, particularly educational attainment, and

their level of knowledge on delirium recognition. Nurses with higher educational qualifications, such as master's degrees, exhibit superior knowledge compared to those with diploma qualifications. Additionally, specialized training in delirium care markedly enhances nurses' knowledge, emphasizing the importance of targeted training programs in improving clinical expertise.

Moreover, the study concludes that socio-demographic characteristics, including experience and specialized training, are strongly associated with positive attitudes towards delirium recognition. This indicates that continuous education and professional development, tailored to the nurses' experience and educational background, are crucial for enhancing their attitudes and approach to delirium recognition.

Lastly, the study concludes that hospital-related factors such as inadequate staffing levels and poor communication significantly hinder the recognition of delirium in critical care units. This highlights the need for improved staff-patient ratios and better communication protocols. Additionally, the study underscores the critical gap in existing guidelines and the necessity for comprehensive and accessible training on delirium recognition, to ensure nurses are well-prepared for early detection and continuous monitoring of delirium symptoms in critically ill patients.

5.4 Recommendations

In view of the study findings, this study makes a number of recommendations:

1. KNH management should:

i. Implement comprehensive delirium recognition education training programs such as workshops. Seminars, e-learning modules that cover all aspects of delirium, including to address the gap in knowledge among a minority of nurses.

ii. Develop culture change initiatives and programmes aimed at changing staff altitudes to value and prioritize delirium recognition, addressing any existing negative attitudes towards delirium care among nursing staff.

iii. Introduce recognition and reward systems for nurses who demonstrate exemplary performance in the early recognition and management of delirium, to encourage positive attitudes and practices.

iv. The management of KNH should establish mentorship programs where more experienced nurses can share their knowledge and expertise with younger or less experienced staff, promoting knowledge transfer and professional development.

v. The management of KNH should address inadequate staffing levels by advocating for appropriate nurse-to-patient ratios, ensuring nurses have sufficient time to conduct thorough assessments and recognize delirium symptoms.

5.5 Suggestions for Further Research

This study makes a useful contribution to the advancement of academic knowledge on the recognition of delirium by critical care nurses among critically ill patients in critical care units in Kenya at large; however, the study is not exhaustive and so there are gaps. For instance, the study was only conducted at Kenyatta National Hospital and therefore the findings presented in this study may not give the exact picture of delirium situation in Kenya. It is therefore suggested that similar studies be carried out in other major referral hospitals in Kenya so that the findings can be compared.

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APPENDICES

Appendix I: Consent Form

Study Title: level of knowledge and attitude towards recognition of delirium among nurses working in critical care unit, KNH

Investigator: Purity Anampiu Phone number; 0721330378

School of nusring

College of Health sciences (COHES)

Jomo Kenyatta university of Agriculture and Technology

Introduction: Am a nursing student at the Jomo Kenyatta University of Agriculture and technology, pursuing a degree in Master of Science in nursing (critical care nursing). Am conducting a study to establish the level of knowledge and attitude towards recognition of delirium among nurses working in critical care unit, KNH.

. I invite you to participate in this study and the following information is important to help you make informed decision about participation. Am conducting this in partial fulfilment of the requirements for the award of degree of Master of Science in nursing (critical care nursing) of the Jomo Kenyatta of University of Agriculture and Technology.

What is the study about?

Delirium is a major barrier to the care of patients admitted in the intensive care units globally. Whereas in ICU patients, the Society of Critical Care Medicine recommends regular delirium monitoring. The empirical research has documented a prevalence of up to 80% in all patients admitted in critical care units. Delirium has also been linked to poor clinical outcomes such as higher mortality rates, longer mechanical ventilation periods and longer stays in ICU and hospital in general.

The purpose of this study is to establish determinants of recognition of delirium by critical care nurses among critically ill patients in critical care units at Kenya National Hospital.

What will happen if you decide to be in this research study?

If you agree to participate in this study, the following things will happen: You will be given a questionnaire to fill by researcher in a private area where you feel comfortable answering questions. The will last approximately 20 minutes.

Are there risks, Harms discomfort associated with this study?

Medical research has the potential to introduce psychological, social, emotional and physical risks. Efforts will be put in place to minimize the risks. One potential risk of being in the study is loss of privacy. Everything you tell us will be kept as confidential as possible. Questionnaire will be coded hence you will not be required to indicate your name and will be stored in a locked cabinet

Are there any benefits being in this study?

The information you give will be beneficial towards addressing the gaps hindering early delirium recognition by critical care nurses among critically ill patients admitted in the critical care units. The findings will be presented to the hospital management for guidance in policy and protocols formulation in terms of delirium recognition among critically ill patients admitted in critical care unit of the hospital.

Will being in study cost you anything?

It is 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;

Supervisors

Dr mutisya kyalo (0721484869)

Lecturer, School of Nursing, JKUAT

Dr Sherry oluchina (0724668425)

Lecturer, School of Nursing, JKUAT

OR

Secretary/Chairperson

Kenyatta National Hospital-University of Nairobi Ethics and Research Committee

Telephone No. 2726300 Ext. 44102

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 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 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 signature ……

Participants Thumbprint……

Date……

I confirm I have fully explained the relevant details of the study to the participant and he/her has voluntarily agreed to participate without coercion.

Investigators Name…….

Investigators Signature ……

Appendix III: Questionnaire

This study seeks to find out your views on the level of knowledge and attitude towards recognition of delirium among nurses working in critical care unit, KNH.

Serial Number…… Date…….

INSTUCTIONS

1. **Do not write your name on this form**
2. **Answer all questions**
3. **Do not leave any blanks**
4. **Tick (✓) all appropriate responses in the box**

SECTION A: Nurses demographic factors

1. What is your age in years?…….

2. How many years have you worked in CCU?.....

3. Do you have any training in critical care nursing?

a) Yes [ ] NO [ ]

b) If yes what is your level of training

Higher Diploma [ ] masters [ ]

4. Type CCU you are stationed

Main CCU [ ] Medicine CCU [ ] Neurological CCU [ ]

SECTION B: Nurses knowledge on delirium that influence its recognition among critically ill patients admitted in CCU?

5. Does your CCU have delirium recognition guidelines?

Yes [ ] No [ ] Not Aware [ ]

6. How common is Delirium among Critically ill patients admitted in your CCU?

Very common [ ] Common [ ] Not common [ ]

7. Which validated tool /instrument do you use to recognize for presence of delirium in your CCU?

Confusion Assessment Method for the Intensive Care Unit (CAM-ICU) [ ]
Nursing Delirium Screening Tool (NUDESC) [ ]
Intensive Care Delirium Screening Check List [ ]
Glasco coma scale chart [ ]
None [ ]
Any other [ ]

8. How often should you evaluate your patient for presence of delirium while admitted in CCU?

Never [ ] Rarely [ ] 4 hourly [ ] 2 hourly [ ] 12 hourly [ ] 24hourly [ ]

9. Indicate means through which you received education regarding CCU delirium recognition.

Delirium formal training [ ] IN- Hospital CME [ ] Out- Hospital CME [ ]
Never received education [ ] other [ ]

10. What are the predictors of delirium complications if recognition and intervention is not instituted?

…….

SECTION C: Nurses attitude influence on recognition of delirium in critically ill patients admitted in CCU

12. In your opinion, indicate the extent you agree with the following statements regarding delirium in CCU. Tick√ the column of the statement that aligns with your statement.

Statements	Positive	Negative
1. Delirium is an under-recognised problem.		
2. Delirium is a normal response to the ICU environment.		
3. Delirium requires active interventions on the part of caregivers.		
4. Delirium is largely preventable if recognized early		
5. Delirium is related to over sedation drugs in ICU		
6.Delirium prolongs mechanical ventilation		

13 In your own opinion, indicate to which extent you agree with the following statements regarding the nurses attitude in recognizing delirium in a patient admitted in CCU by showing a tick√ in the column of the statement that aligns with your agreement.

Statements	Agree	Disagree
1. Assessment tools/ Intruments to recognize delirium are complicated to use.		
2.Using delirium ssessment tools are very important in patients at risk of developing delirium		
3. Using delirium assessment tools does not improve patients' outcomes.		
4. Delirium screening Tools increases nursing work load		
5. It is not easy to assess sedated patients for delirium		
6. Delirium assessment consumes too much time.		
7. Screening for delirious patients is not a nursing responsibility.		
8. Doctors are the ones who complete delirium assessment.		
9.It is not easy to assess intubated patients		

Do you have any additional information you would like to share on delirium recognition in a CCU setting?.....

Thank you for completing the questions above.

KEY INFORMAT INTERVIEW GUIDE

I purity Anampiu, a nursing student at Jomo Kenyatta University of Agriculture and Technology pursuing a degree in master of science nursing in critical care will be carrying a study to establish the level of knowledge and attitude towards recognition of delirium among nurses working in critical care unit, KNH.

Am kindly requesting for your participation in this study through contribution of views and ideas? The information will be regarded as group contribution and confidentiality will be maintained.

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

Participants signature…….date……..serial number…….

In presence of researcher /research assistant

Investigators signature……date……

Appendix IV: Key Informant Interview Guide

Study Title: ***Level of Knowledge and Attitude towards Recognition of Delirium among Nurses Working In Critical Care Units, KNH.*** Am Purity Anampiu a nursing student at the Jomo Kenyatta University of Agriculture and technology, pursuing a degree in Master of Science in nursing (critical care nursing). Am conducting a study to determine the Level of Knowledge and Attitude towards Recognition of Delirium among Nurses Working in Critical Care Units, KNH The findings will be presented to the hospital management for guidance formulation of work instructions/ protocols for delirium recognition among critically ill patients admitted in critical care unit of the hospital. You are invited to this interview to give ideas regarding recognition of delirium among nurses in CCU. Information given will be confidential and will not be linked to you. Thank you

1. In your own opinion, what is the magnitude of delirium in your CCU?

   …….

2. What are the protocols or work instructions in practice to guide nurses in recognition of delirium among critically ill patients in CCU?

   ……
   ……

3. In your opinion, how do nurses recognize for delirium in a critically ill patient in CCU?

4. What would you say is the of level of confidence by nurses in recognition of delirium in patients admitted in CCU?

5 What additional support would you need for prompt recognition of delirium in this CCU?

6. Do you have anything to add in the recognition of delirium in this CCU?

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