Critical Care Nurses' Knowledge regarding Nursing Care for Comatose Patients in Babylon Governorate Hospitals

A Thesis Submitted

by

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To

The Council of College of Nursing/ University of Babylon in Partial fulfillment of the requirements for the Degree of Master in Nursing Sciences

Supervised by

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

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صَدَقَ اللَّهُ الْعَلِيُّ الْعَظِيمُ

سورة المائدة – اية (٣٢)

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Dedication

I dedicate this humble work:

To the grandson of the Holy Prophet and our guide and leader **Al-Imam Al-Mahdi** pless upon him.

★ ★ ★ ★ ★ ❋ ★ ★ ★ ★ ★

To my **father's soul.**

★ ★ ★ ★ ★ ❋ ★ ★ ★ ★ ★

To the sun that bent over to light her younger planet **my mother.**

★ ★ ★ ★ ★ ❋ ★ ★ ★ ★ ★

To my **brothers, sisters, and friends** who supported me in this work.

With my love and respect.

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Abstract

Background: Nursing care for comatose patients admitted to critical care units requires carrying out essential care tasks aimed at enabling patients to perform daily tasks of life and prevent complications. The comatose patients are entirely dependent on critical care nurses for recovery, and it is the nurse's responsibility always to think critically before intervening. Thus, critical care nurses working in these areas must have sufficient knowledge to perform assessment and intervention.

Objectives: The objectives of this study were to assess the critical care nurses' knowledge of nursing care for comatose patients and to investigate the statistical differences in critical care nurses' knowledge of nursing care for comatose patients with regard to their demographic variables and professional characteristics.

Methodology: A descriptive study (cross-sectional) was conducted to accomplish the objectives of this study from the period between 19th September 2021 up to 6th July 2022. A non-probability (purposive) sample consisted of (178) critical care nurses who worked in the CCU and ICU in the six hospitals at Babylon Governorate. The data were collected by using a self-report questionnaire. Then statistical analysis was done by using the SPSS (version-20) program and Microsoft Excel program (2010) for collected data.

Results: The results of this study showed that the highest percentage (74.2%) of critical care nurses were aged ranging between 22 and 29 years old, about half (51.1%) were females, and (61.2%) of them were married, in addition, more than half of the participants (53.9%) were holding bachelor's degrees in nursing.. The overall findings of critical care nurses's knowledge demonstrated that (78.7%) of them expressed a moderate level of knowledge related to nursing care for comatose patients. In addition, there was a significant statistical differences between critical

care nurses' knowledge regarding nursing care for comatose patients and some demographic and professional data at a p-value ≤ 0.05 (gender, educational level, and training courses). While, the other demographical and professional data demonstrated no significant statistical differences at a p-value > 0.05.

Conclusions: The overall findings illustrated that the majority of critical care nurses expressed a moderate level of knowledge about nursing care for comatose patients. Moreover, there was a significant statistical differences between the total knowledge of critical care nurses and some demographic and professional data.

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List of Abbreviations

Acronym	Full term
AACN	American Association of Critical Care Nurses
ABC	Airway, Breathing, Circulation
ABGs	Arterial Blood Gases
ANOVA	Analysis of Variance
ARAS	Ascending Reticular Activating System
BLS	Basic Life Support
C	Closed
CACCN	Canadian Association of Critical Care Nurses
CCU	Critical Care Unit, Coronary Care Unit
CT	Computed Tomography
CVA	Cerebrovascular Accident
D	Dysphasia
df	Degree of Freedom
DIC	Disseminated Intravascular Coagulation
DOC	Disorder Of Consciousness
DVT	Deep Vein Thrombosis
EEG	Electroencephalogram
e.g.	exempli gratia: a Latin phrase that means (for example)
ED	Emergency Department
EMR	Eastern Mediterranean Region
et al	Et alia (others)
Freq.	Frequency
GCS	Glasgow Coma Scale
GI	Gastrointestinal
HCPs	Health Care Providers
HICs	High-Income Countries
HTN	Hypertension
ICH	Intracerebral Haemorrhage
ICP	Intracranial Pressure
ICU	Intensive Care Unit
IQR	Interquartile Range
KSA	Kingdom of Saudi Arabia
LIS	Locked-In Syndrome
LMICs	Middle-Income Countries
LOC	Level of Consciousness
M.S	Mean of Score
MCS	Minimally Conscious State
MRI	Magnetic Resonance Imaging
N.S	Non-Significant

NG tube	Nasogastric Tube
No.	Number
p-value	Probability Value
RAS	Reticular Activating System
ROM	Range of Motion
RTAs	Road traffic accidents
SD	Standard Deviation
Sig.	Significant
SPSS	Statistical Package for Social Science
T	Tube
TBIs	Traumatic Brain Injuries
TPN	Total Parenteral Nutrition
US	United States
UTI	Urinary Tract Infection
VAP	Ventilator-Associated Pneumonia
VS	Vegetative State
WHO	World Health Organization
&	and

List of Statistical Symbols

Symbols	Meanings
Σ	Summation of
X	The value in the data set
≤	Less than or Equal
>	More than
%	Percentage

Chapter One

Introduction

Chapter One

Introduction

1.1. Background

The brain is the core unit that regulates all body activities, and it cannot function without the help of neurons. The normal functioning of the brain and its link with the outside environment is known as consciousness. Consciousness is being awake, alert, and aware of one's environment. Altered level of consciousness (LOC) is defined as impaired degree in one or both of wakefulness and awareness. This alteration is gauged on a continuum from full alertness and full cognition (consciousness) up to deep coma. Coma is described as condition of full unresponsive to external or internal stimuli and marked by a lack of arousal. The comatose patients do not open their eyes spontaneously and do not respond to sensory cues (Hoesch *et al.,* 2008; Teles *et al*., 2013; Shalaby *et al*., 2019).

On the other hand, a coma is a sleep-like condition in which the patient exhibits no purposeful response to the environment and cannot be aroused. The eyes are closed and do not spontaneously open. A patient does not talk, and his or her face or limbs do not move purposefully. No response is elicited by verbal stimulation. The spinal cord or brainstem pathways may evoke no response or unintentional reflex movements in response to painful stimulation. A malfunction of the brainstem (reticular activating system), or both cerebral hemispheres causes a coma (Simon *et al*., 2018).

Coma is one of the main results of brain damage. After a coma caused by a severe brain injury (structural or non-structural), patients may deteriorate with gradual neuronal damage progressing to brain death (complete cessation of all brain activity) or improve with initial signs of eye-opening without behavioral response. Coma that does not resolve with

a complete restoration of consciousness gives rise to the vegetative state, the minimally conscious state, and other clinical syndromes associated (Squire, 2009; Mandeep, 2012).

Furthermore, patients who survived from the coma may advance to one or more of these syndromes over time. True coma is no longer existent once sleep/wake cycles are formed. It is essential to distinguish these syndromes from a true coma to administer proper therapy and aid in prognosis determination (Berger, 2016).

There are several causes of coma, which are classified as structural or surgical and non-structural or medical. Ischemic stroke, intracerebral haemorrhage (ICH), trauma, and brain tumors are all structural causes of coma. In contrast, a non-structural coma is a variety that includes drug overdose, infectious diseases, endocrine abnormalities, and poisonings (Januszewicz & Buesch, 2016).

When a patient enters the critical care units, the nursing professionals come in continuous contact with a patient, and they have to continuously assess and monitor the patient and instruct the relatives regarding the patient's status and prognosis (Teles *et al.*, 2013).

Critical care nurses need to be well associated with theoretical and practical to provide high-quality patient care, including a comprehensive and ongoing patient assessment. Continuous assessments conducted by nurses frequently include neurological patients, especially the level of consciousness, which is considered the main assessment criterion. Numerous tools are available for determining a patient's neurological condition. The Glasgow Coma Scale (GCS) is a universally accepted tool. Health care providers (HCPs), particularly critical care nurses used the GCS to determine patients' level of consciousness. If a patient is in a coma,

the Glasgow Coma Scale is the most often utilized neurological assessment tool in clinical care (Jaddoua *et al.*, 2013; Albougami, 2019).

The Glasgow Coma Scale (GCS) is a tool used to determine a patient's level of consciousness in response to certain stimuli. This scale is a reliable clinical method to determine the intensity of neurological damage. The GCS assesses three essential neurological functions in a detailed manner: eye-opening, verbal responsiveness, and motor responsiveness. This scale can guide HCPs, particularly those working in critical care units, to quickly implement appropriate diagnostic measures and initiate appropriate nursing interventions for patients (Mattar *et al.,* 2013; Mattar *et al.*, 2015).

A patient is assessed against the criteria of the Glasgow Coma Scale, and the resulting give a patient score ranging from 3 to 15, where a score of 8 or below indicating coma and a score of 15 indicating full consciousness (Sedain & Bhusal, 2019).

Usually, most patients in the critical care setting are on mechanical ventilation and are comatose or disoriented. Thus, administering essential nursing care to patients demands an empowered nursing staff equipped with modern knowledge, attentiveness, and experience. The critical care unit is one of the specialties and mechanized of the healthcare setting designed exclusively, equipped, and staffed with qualified workers who use novel approaches to providing adequate and advanced care for critical care patients (Shuaib, 2018).

Nevertheless, critical care nursing offers specialized care to patients suffering from life-threatening illnesses or critical conditions. It is a complicated, intense, and continual form of care. A sophisticated knowledge, critical thinking, advanced problem solving, decision-making,

advocacy, and judgment are necessary for practice (Arrar & Mohammed, 2020).

In order to meet the physical, cultural, psychosocial, and spiritual requirements of the patient and family, the care plan's of critical care nurses organize and implement care in collaborate with the others health care team. The critical care nurse must balance the requirement for a technologically advanced environment and the requirement for protection, privacy, respect, and comfort (Canadian Association of Critical Care Nurses [CACCN], 2017).

Furthermore, providing nursing care to comatose patients involves carrying out essential care tasks aimed at enabling patients to perform daily tasks of life, moreover, advanced effective care functions that will allow health recovery. Patients admitted to critical care units require effective nursing care to achieve one's essential needs. This nursing care is being integrated into critical care units as a way to measure patient outcomes and the quality of care (Carrascal & Ramírez, 2015).

However, patients in the critical care unit are at high risk of malnutrition due to their illness and deteriorating metabolic state. The body's immune system is disrupted, so they are at greater risk of infection and bacteremia. Among the contributing factors to the duration of stay in the critical care units is a delay in recovery and disease, which leads to an increase in mortality and morbidity rates and an increase in treatment costs. So, good nutrition from the beginning of admission is essential (Blackburn *et al.,* 2010).

One of the most challenging tasks a nurse encounter is caring for a comatose patient. This task requires skills, good judgment, and the capacity to make assessments and solve issues based only on objective data. The targets of care for the patient with coma are to initial and follow-

up assessment of the patient's status, maintaining a clear airway, protecting the patient from injury, achieving fluids balance, maintaining an intact oral mucous membrane, maintaining normal skin integrity, preventing corneal irritation, achieving effective thermoregulation, and to achieve effective urinary elimination. Additionally, continence of bowels elimination, correct perception of environmental cues, preservation of an intact familial support, and prevention of complications. Due to the impaired reflexes of comatose patients, the quality of nursing care offered can literally mean the difference between life and death. The nurse should assume care for the patient until the patient regains fundamental reflexes (coughing, blinking, and swallowing) and becomes aware and oriented. As a result, the basic nursing goal is to compensate for the lack of these defensive responses (Hinkle & Cheever, 2018).

1.2. Importance of the Study:-

Many comatose patients are admitted to hospitals every day, particularly in critical care units, who require specialized, high-quality critical care (Scholtz *et al.,* 2016).

Today, the global rate of brain injury has risen quickly, where roughly two million individuals in the United States suffered from brain damage each year (Tavangar *et al.,* 2015).

Worldwide, traumatic brain injuries (TBIs) are one of the main reasons of coma. TBI is a significant public health concern of enormous magnitude. Each year, almost 50 million TBIs occur worldwide. TBI has grown more significantly among older people in high-income countries (HICs) than may be expected from demographic ageing, while greater use of motorized vehicles has resulted in an increase in TBI from road traffic accidents in low- and middle-income countries (LMICs). TBI accounts for 30–40 percent of all injury-related mortality across all age groups, and

neurological injury is anticipated to continue to be the leading cause of disability from neurological illness through 2030. TBI costs the worldwide economy around US$400 billion every year, which equals nearly 0.5 percent of the expected average gross world product of US$73.7 trillion (Hoseinzadeh *et al.,* 2017 ; Maas *et al.*, 2017).

Moreover, patients suffering from non-traumatic causes which do not recover rapidly have an even worse prognosis than the TBI patients. Non-traumatic coma has a mortality rate of 25 to 87 percent. The outcomes of non-traumatic coma are incredibly diverse depending on the cause (Bauer *et al.*, 2021).

According to the World Health Organization (WHO), 5 million deaths occur each year, most caused by neurological deficits. Each year, over 3.2 million admissions occur in India. In which 80 percent of patients are in coma, and 48000 death occur (Thakur *et al.*, 2016).

In Kingdom of Saudi Arabia (KSA), the burden of TBI is unknown despite the fact that injury is the leading cause of death and a major cause of disability. Every year, over 1.8 million individuals seek medical care following TBI, and traumatic brain injuries account for 17.8% of all deaths and 8.5% of emergency department (ED) visits (Alghnam *et al.,* 2017).

Road traffic accidents (RTAs) and violence have been the main causes of TBI and have associated high mortality. According to a WHO data from 2013, Iraq has the second highest road traffic mortality rate in the Eastern Mediterranean Region (EMR) after India about (5789 deaths). In addition, according to the WHO study from 2015, Iraq is ranked 18th out of 180 nations based on total traffic accidents. Between 2002 and 2015, approximately (29415) people died in Iraq, and (106259) people suffered from morbidities as a result of the RTA. From 2002 to 2015, the annual

average numbers of mortalities and morbidities were (2101) and (7590), correspondingly (Albayati & Lateif, 2018; Dunne *et al.,* 2020).

Despite several medical and surgical interventions, comatose patients remain to have a high rate of morbidity and mortality. If patients are not managed appropriately, they may develop long-term disabilities, resulting in economic hardship and decreased quality of life for individuals, families, and communities (Varghese *et al.*, 2021).

The fundamental nursing activities are performed to provide care and comfort to the patient, and it must always be remembered that a comatose patient is entirely dependent on nurses for recovery, and it is the critical care nurse's responsibility to always think critically before intervening. Thus, every nurse working in the critical care units must have sufficient knowledge to perform assessment and intervention. There must be sufficient personnel to monitor the patient carefully, and adequate supervision by a charge nurse is required to ensure that patients get good care. By increasing their knowledge, nurses may significantly influence their patients' lives (Khemnar, 2016).

One of the most significant issues in today's healthcare systems is obtaining a competent nurse in a globalized world that increasingly needs the professional to be capable of independent thought and critical thinking, as well as creative, educated, and knowledgable. Critical care nurses have a unique chance to assist patients in examining their lifestyle, identifying risks and possible areas for change, advising on a focused, tailored strategy, and assisting them in achieving their goals. That cannot be done without well-trained, knowledgeable nurses, especially in critical care settings like in the sample of our study (critical care nurses), since they need to be able to assess and evaluate their patients, especially those with a disturbing level of consciousness (Jaddoua *et al.*, 2013).

Continuous learning and an inquiry spirit are vital for developing professional abilities and nursing practice for critical care nurses. Capacity of the critical care nurse to make appropriate clinical nursing decisions is on the basis of a solid of knowledge and experience (CACCN, 2017).

1.3. Problem Statement

The critical care nurses that provide care for comatose patients should have adequate knowledge, in order to mitigate comatose patients' morbidity and mortality because these patients are fully dependent on nurses. Therefore, it is necessary to assess the knowledge of critical care nurses.

1.4. Objectives of the Study are to:-

1- Assess critical care nurses' knowledge regarding nursing care for comatose patients.

2- Investigate the differences between critical care nurses' knowledge regarding nursing care for comatose patients with regard to demographic data and professional characteristics (age, gender, marital status, educational level, years of experience in the nursing field, work unit, years of experience in the current workplace, work shift, and training courses).

1.5. Research Questions

1- What is critical care nurses' knowledge regarding nursing care for comatose patients?

2- Are there statistical differences between critical care nurses' knowledge regarding nursing care for comatose patients with regard to demographic data and professional characteristics?

1.6. Research Hypothesis

H0: There are no statistical differences between critical care nurses' knowledge regarding nursing care for comatose patients with regard to demographic data and professional characteristics.

H1: There are statistical differences between critical care nurses' knowledge regarding nursing care for comatose patients with regard to demographic data and professional characteristics.

1.7. Terms Definition

1.7.1. Critical Care Nurses

1.7.1.a. Theoretical Definition:

"A critical care nurse is a licensed professional nurse responsible for ensuring that acutely and critically ill patients and their families receive optimal care" (Perrin, 2018, P.6).

1.7.1. b. Operational Definition:

A professional nurse who works in critical care units and provides care to patients in critical condition.

1.7.2. Knowledge

1.7.2. a. Theoretical Definition:

Knowledge is defined as an awareness of reality gained via education or research. Each individual gathers, organizes, and arranges information in order to create a knowledge base appropriate to his or her unique reality (Taylor *et al.,* 2011).

1.7.2. b. Operational Definition:

Is information that affects something or someone, either by providing justification for actions or enabling an individual to take different or more effective actions regarding nursing care for comatose patients at critical care units.

1.7.3. Nursing Care

1.7.3.a. Theoretical Definition:

Nursing care is defined as care that is planned and implemented with consideration for the needs of individuals, families, and groups representing varied populations within community and provide nursing care that accepts the importance of cultural factors in health and disease (Taylor *et al.,* 2011).

1.7.3.b. Operational Definition:

Nursing care is defined as any service offered by a critical care nurse for comatose patients that involving (provision of care, the planning, and supervision or delegation of provision care) in order to improving, maintaining and restoring their health status.

1.7.4. Comatose Patient

1.7.4.a. Theoretical Definition:

A comatose patient is a person who has substantial consciousness impairment, which often manifests as an unarousable condition in patients with their eyes closed and is caused by a malfunction of the neuronal systems governing arousal and awareness and denotes a neurological emergency (Oddo, 2015).

1.7.4.b. Operational Definition:

A patient who is in a coma is alive but is unable to move at will. He cannot think, speak, or respond to his environment. In addition, comatose patients are very dependent on the nurse for supporting and maintaining all basic functions to meet their actual and potential needs, as well as the prevention of complications.

Chapter Two

Review of Literatures

Chapter Two

Review of Literatures

This chapter provides an insight about a coma and nursing care for a comatose patient, and previous studies about nursing care provided for comatose patients.

2.1. Critical Care Nursing

Critical care nursing provides special and intensive care to critically ill patients, who have life-threatening diseases or injuries. Such patients may be unstable, have complicated demands, and need extensive and cautious nursing care. The followings are some of the most frequent diseases and injuries observed in patients in critical care units (gunshot wounds, traumatic injuries, cardiovascular disorders, surgeries, respiratory disorders, GI and hepatic disorders, renal disorders, cancers, and shock) (Manacci, 2012).

Moreover, critical care nurses are characterized to be skilled professionals because they need to be very alert, clever, utilize their intellect and cognition to go beyond their duties to gather numerous information rapidly to make judgments on subtle and/or worsening issues. Furthermore, critical care nurses do technical tasks using theoretical knowledge (Urden, 2014).

However, Critical care nurses work in all settings where they handle critically ill patients involving adult, pediatric, and neonatal CCUs, coronary care units, emergency departments, and post-anesthesia care units (Manacci, 2012).

Nevertheless, Critical care patients have a significant risk of developing actual or potentially fatal conditions. Patients who are seriously

ill require more extensive and diligent nursing care. Over 500,000 nurses in the US provide care for critically ill patients (Urden, 2022).

According to the "American Association of Critical-Care Nurses (AACN), the critical care nurse's role responsibilities includes the following: first, supporting and respecting the patients autonomy and informed decision making. Second, intervening when it is questionable about whose interest is served. Third, helping the patient to obtain the necessary care. Fourth, respecting the values, beliefs, and rights of the patient. Fifth, educating the patient/surrogate in decision-making. Sixth, representing the patient's right to choose. Seventh, supporting decisions of patient/surrogate or transferring care to an equally qualified critical care nurse. Eighth, interceding for patients who cannot speak for themselves and who require emergency intervention. Ninth, monitoring and ensuring quality care, and tenth, acting as liaison between the patient/significant others and others on the health care team" (Terry & Weaver, 2011).

2.2. Overview of Coma and Impaired Consciousness

Consciousness is the state of being aware of oneself and one's surroundings and the capacity to react appropriately to stimuli. Both normal arousal and complete cognition are required for full consciousness. Arousal, or wakefulness, is controlled by the reticular activating system (RAS), a diffuse system of neurons located in the pons, midbrain, thalamus, and hypothalamus. Cognition is a complicated process encompassing all mental operations regulated by the cerebral hemispheres, such as thinking processes, memory, perception, problem-solving, and emotion. These two components of consciousness are dependent on normal physiologic functioning and connectivity between the reticular formation's arousal mechanisms and the cerebral hemispheres' cognitive capabilities. Because arousal and cognition are autonomous components of consciousness, they

may respond to stimuli independently. For instance, the (RAS) awakens an individual in the middle of the night in response to the distress generated by a full bladder. Nevertheless, when awake, the frontal cortex notifies the individual that their bladder is full and pushes them to go to the bathroom and empty it (LeMone *et al.,* 2011).

Alteration of consciousness may occur due to deficiencies in awareness, arousal, or both. Alteration of consciousness occurs on a continuum ranging from an alert cognitively intact condition to one in which there is full unresponsiveness to all external stimuli (i.e., coma). The disorders of consciousness encompass (confusion, disorientation, obtundation, stupor, vegetative state, minimally conscious state, locked-in syndrome, and coma) (Hoesch *et al.,* 2008; Bansal *et al.,* 2014; Braine, 2014).

Chamberlain and McGloin (2015) defined coma that a condition of unresponsiveness from which the patient, who seems to be asleep, cannot be woken by verbal and physical stimulation to make any meaningful response. Hence, the diagnosis of coma entails the absence of both arousal and content of awareness. Coma is considered a symptom with various etiologies and several management modes.

The comatose patient does not have the sleep-wake cycles that may be seen in the vegetative state (VS). Coma must last at least 1 hour to be differentiated from syncope, concussion, or other states of brief unconsciousness. Comatose patients who survive begin to awaken and recover progressively after 2–4 weeks. This recovery may stop at (VS) or minimal conscious state (MCS), or it may be a series of phases (short or extended) on the way to a full return of consciousness (Squire, 2009).

2.3. Pathophysiology of Coma

The reticular formation, which extends from the medulla to the midbrain and is the physiologic basis of consciousness, is a network of neurons and fibers that make up a large part of the brainstem. Reticular neurons have especially long axons that branch out to cells in the hypothalamus, thalamus, cerebellum, and spinal cord. To excite the cerebral cortex into alertness, a system of reticular neurons inside the (RAS) sends constant flows of signals via thalamic relays. The sensory tracts of the body interact with (RAS) neurons; this interaction helps regulate the rousing impact of the (RAS) on the cerebrum (LeMone *et al.,* 2011).

consciousness is a state of arousal, or being awake, and awareness. The comatose patient has neither of these essential functions. Arousal is maintained as an autonomic function by ascending fibers of the reticular activating system (ARAS) in the pons, hypothalamus, and thalamus. Awareness is controlled by neurons in the cerebral cortex. Coma can be caused by the widespread failure of both cerebral hemispheres, as well as diffuse or localized dysfunction of the (RAS). Most structural causes involve compression or malfunction in the ARAS area, while most medical causes can cause widespread failure in both cerebral hemispheres. Trauma, hemorrhage, and tumors can all cause the (ARAS) to malfunction, resulting in a coma. Convulsions or viral agents may cause large parts of the bilateral cerebral hemispheres to be destroyed. Toxic drugs, poisons, or metabolic disorders can impair the brain (Edlow *et al.,* 2014; Traub & Wijdicks, 2016).
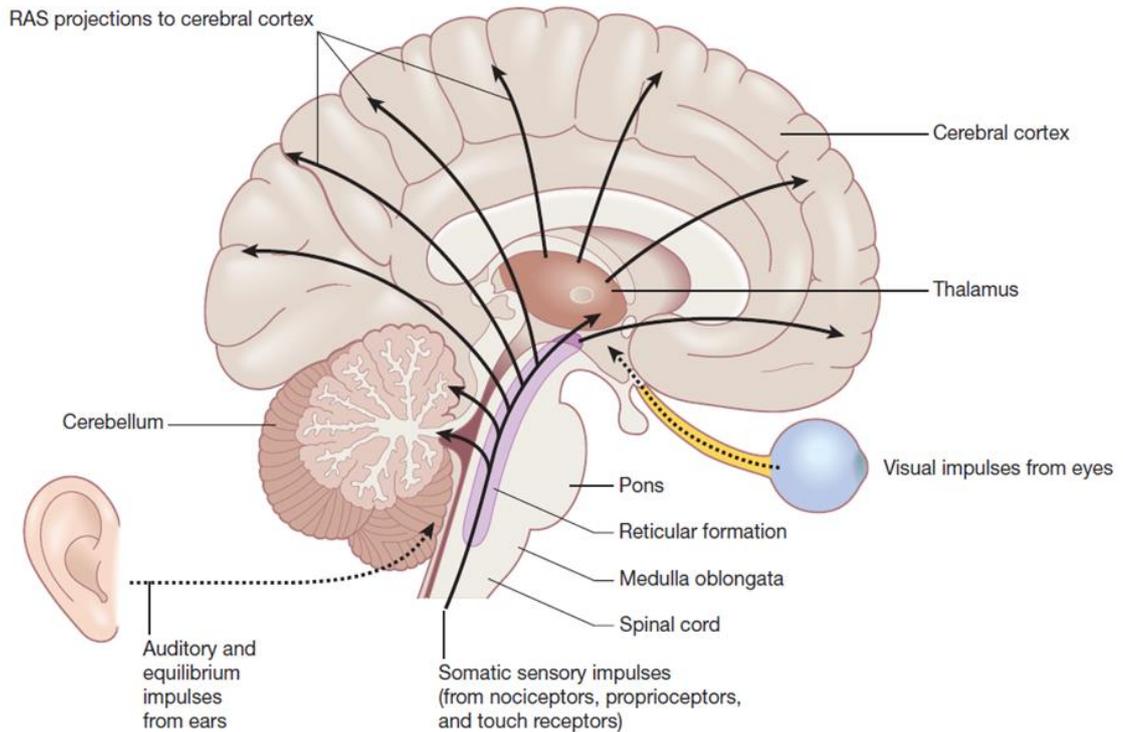
Figure (2-1) The Reticular Activating System (RAS) (Braine, 2014).

2.4. Causes of Coma

According to Richards and Edwards (2012), the etiologies of coma are many and may reflect the amount of time necessary for recovery. The nurses must be informed of the cause of the coma and be vigilant for the symptoms of worsening in the patient's state. The common causes of coma are poisons and drug overdose (e.g., alcohol, gases, and lead poisoning), vascular causes (e.g., post-cardiac arrest, ischemia, hemorrhage, and hypovolemia), infectious causes (e.g., septicemia, encephalitis, HIV and meningitis), as well as seizures and metabolic disorders (e.g., hyperglycemia, hypoxia, hypoglycemia, renal failure and hepatic failure). In addition, other reasons (e.g., neoplasm, trauma, heart failure, tetanus, and degenerative disorders).

Ropper (2010) reported details that the following are the most common causes of coma: First, lesions affecting the RAS in the upper midbrain or its projections. Second, significant portions of both cerebral

hemispheres are destroyed. Third, drugs, toxins, or metabolic derangements such as hypoglycemia, anoxia, uremia, and hepatic failure may inhibit reticulocerebral activity.

Greenberg (2016) illustrated that there are several etiologies of coma, which are classified as metabolic and structural causes. The metabolic causes of coma include electrolyte imbalance, endocrine problems, toxic, infectious, hepatic encephalopathy, DIC, and Wernicke's encephalopathy. Whereas, the structural causes of coma include herniation, subdural or epidural hematoma, ischemic stroke, trauma, and tumor.

On other hand, Oddo (2015) added that causes of coma are classified classically as primarily caused by intracerebral diseases (e.g., traumatic brain injury, subarachnoid hemorrhage, intracerebral hemorrhage, acute ischemic stroke, hypoxic-ischemic encephalopathy following cardiac arrest, immune-mediated or infectious encephalitis, status epilepticus), or as secondary caused by systemic disorders affecting brain function (e.g., septic, metabolic and toxic encephalopathies).

2.5. Clinical Manifestations of Coma

According to Sutter *et al.* (2013) coma is the most severe manifestation of a spectrum of gradually deteriorating impairments in consciousness, which also includes somnolence, lethargy, obtundation, and stupor. The comatose patient is unresponsive, closed eyes, and lost all postural stability and sleep-wake cycles. There is no alertness in response to noxious stimuli, but reflexive grimacing and flexion or withdrawal movements may be preserved. Loss of cortical inhibition of brain stem and spinal motor pathways may result in to decorticate or decerebrate posturing responses.

Also, Blissitt (2018) added that the comatose patient is unresponsive to his or her own surroundings and exhibits no signs of

alertness (wakefulness, vigilance) in response to any stimulus lasting more than one hour. There is an abnormality of the cerebral cortex and/or the RAS. Typically, the patient appears with closed eyelids that are non-purposeful, or unresponsive to any stimulation.

Alterations in respiratory patterns such as hyperventilation, Kussmaul, Cheyne-Stokes breathing, agonal breathing, and apnea should be noted and may suggest toxic or metabolic imbalance or primary central nervous system abnormalities. Marked hypotension or hypertension should be addressed immediately, even if the underlying cause is unknown. However, it can be noted that in case of Cushing syndrome response, bradycardia may result from increased intracranial pressure and suggests a state of hypoperfusion. Tachycardia may also result in hypoperfusion and can result from toxic, metabolic, or primary cardiac causes. Temperature is crucial because both hypothermia and hyperthermia can cause coma from infectious, structural, environmental exposure, or toxic or metabolic causes. In addition, breath odors may be helpful in diagnosis causes of coma including the smell of alcohol and ketones (diabetic or alcoholic ketoacidosis). Abdominal findings include ascites, hepatosplenomegaly, and ecchymosis. Lesions on the skin such as rashes, signs of drug use (needle tracks, medication patches) (Adams *et al.,* 2013).

2.6. Assessment and Diagnosis of Comatose Patient

Traub and Wijdicks (2016) reported that the clinical diagnosis of the comatose condition is straightforward when the level of consciousness is assessed. However, a complete health history and physical examination are required to determine the full nature and etiology of a coma. In addition, when assessing a coma, the patient's medical history is crucial. The time of deterioration can provide valuable clues as to what may be the etiology of a coma. Furthermore, Mclaughlin (2019) stated that an abrupt decline is more likely caused by stroke, seizure, or cardiac event. A gradual

decline occurs more often with metabolic or infectious processes. Other information to gather includes medications, exposures, and alcohol history.

While the patient's history and physical examination results often reveal the reason for the coma. Furthermore, numerous diagnostic tests may be necessary to confirm the diagnosis. Both radiographic (CT, MRI), EEG and laboratory tests such as (blood glucose, serum electrolytes, ABGs, and liver function test) are utilized to assess for probable metabolic, toxic, or drug-induced disorders (Lemone-Koeplin *et al.,* 2017).

2.6.1. Neurological Examination

The neurologic examination of the comatose patient is composed of five components. The nursing assessment of the patient is prioritized according to five criteria: 1) level of consciousness; 2) motor function; 3) respiratory function; 4) pupil and ocular movement function; and 5) vital signs (Burke, 2014).

Moreover, a baseline neurological examination along with ongoing assessments assists critical care nurses in monitoring the patient condition and reaction to treatments and nursing interventions (Stewart-Amidei & Klein, 2013).

2.6.1.1. Level of Consciousness

The level of consciousness is composed of two components: arousal and awareness. Arousal relates to the state of wakefulness, while awareness refers to the content and quality of environmental interactions. Arousal is a sign of the reticular activating system and brain stem functioning, while awareness signifies the cerebral cortex functioning. All patients are an assessed level of consciousness unless they are pharmacologically sedated and paralyzed. The essential indicators of neurologic deterioration are a change in level of consciousness, which the healthcare team responds to quickly. The first phase in determining the patient's level of consciousness

is to observe his or her behavior, appearance, and capacity to communicate. A patient is classified as an alert if he or she reacts meaningfully to the examination without the need for stimulation. When stimulation is necessary, auditory stimuli are first employed. If the patient does not respond to auditory stimulation, tactile stimuli such as a light touch or shake are used to induce a response, followed by painful stimuli if required (Mahanes, 2014).

Squeezing the trapezius or other major muscle groups is a recognized technique for producing painful central stimulation. An effort is made to prevent tissue trauma. Although supraorbital pressure is a suitable pain stimulus, it should not be performed if there is even the slightest possibility of a facial fracture. The use of a sternal rub can produce a motor response that is challenging to understand and frequently results in bruising. One frequent cause of peripheral pain is the pressure on the nail bed. The response to central stimuli is more indicative of cerebral function than the response to peripheral stimuli (Bazil & Olson, 2019).

Coma scales, such as the Glasgow Coma Scale (GCS), are used to help critical care nurses communicate, trend, and predict prognosis by objectifying outcomes (Bauer *et al.,* 2021).

2.6.1.1.1. Glasgow Coma Scale (GCS)

In accordance with Wijdicks (2016) stated that Teasdale & Jennett established the Glasgow Coma Scale (GCS) in 1974 to simplify communication between nurses, junior, inexperienced physicians, and especially non-neurologic professionals working in other medical or surgical departments. The scale was demonstrated to be more useful in communication than any previously utilized descriptive term for a reduced level of consciousness. Subsequent studies, however, emphasized that

clinical experience in using GCS is essential. Moreover, substantial errors may occur with inexperienced observers.

The Glasgow Coma Scale (GCS) is the most extensively used instrument for determining the level of consciousness. This scale is based on a three-category evaluation. The first is an eye-opening response, the second is a verbal response, and the third is a motor response (Burke, 2014).

The eye-opening response is graded on a scale of 1 to 4, with 1 representing no response and 4 representing spontaneous eye-opening. The verbal response is on a scale of 1 to 5, with 1 indicating no reaction and 5 indicating a fully oriented patient. Typically, the intubated patient receives a verbal score of 1T, which should be added to the total score. In this manner, the patient's incapacity to talk is recognized due to the endotracheal tube's placement. The motor response is measured on a scale of 1 to 6, with 1 indicating no motor response and 6 indicating a patient who moves all extremities in response to order. Only awake and aware individual may get a maximum total score of GCS is 15 (Winkelman & Hilton, 2018).

Additionally, Stewart-Amidei and Klein (2013) stated that the Glasgow Coma Scale (GCS) is a commonly used standardized technique for assessing arousal and awareness. The patient's capacity to speak, open his eyes, and develop a motor response to verbal orders or noxious stimuli is assessed. Firm pressure on the nail bed, a trapezium squeeze, supraorbital pressure, or sternal pressure are all examples of unpleasant stimuli. When noxious stimuli are used, caution is taken to avoid injury. The eye-opening, verbal response, and motor response are the three categories that are assessed separately, and the three values are collected. The GCS is ranging from 3 (deep coma) to 15 (normal consciousness).

Coma is indicated by a GCS of 8 or less. Numerous factors, including drugs and concurrent injuries, such as spinal cord damage, limit the application of the GCS. It is important to realize that the GCS is a measure of arousal and awareness and does not substitute for neurological assessment of particular brain function.

Test	Score	Patient's response
Eye opening response		
Spontaneously	4	Opens eyes spontaneously
To speech	3	Opens eyes when told to
To pain	2	Opens eyes only on painful stimulus
Never	1	Doesn't open eyes in response to stimulus
Motor response		
Obeys commands	6	Shows two fingers when asked
Localizes pain	5	Reaches toward painful stimulus and tries to remove it
Withdraws	4	Moves away from painful stimulus
Abnormal flexion	3	Assumes a decorticate posture (in which the hands are toward the cord, shown below)
Abnormal extension	2	Assumes a decerebrate posture (shown below)
None	1	No response; just lies flaccid (an ominous sign)
Verbal response		
Oriented	5	Tells correct date
Confused conversation	4	Tells incorrect year
Inappropriate words	3	Replies randomly with incorrect words
Incomprehensible	2	Moans or screams
None	1	No response
Total score		

Figure (2-2): The Glasgow Coma Scale (Manacci, 2012).

2.6.1.2. Motor Function

A comatose patient cannot understand and obey basic commands, and noxious stimuli are required to evaluate motor responses. To assess individual extremity function, the stimulus is administered to each extremity independently. Peripheral stimulation is a technique for assessing motor function. Motor responses evoked by noxious stimuli are interpreted differently from those evoked by voluntary demonstration (Burke, 2014).

The term decorticate posturing refers to abnormal flexion. When painful stimuli are applied to the upper extremities, the arm, wrist, and fingers flex while the limb adducts. Extension, internal rotation, and plantar flexion are all characteristics of the lower extremities. Lesions above the midbrain, located in the region of the thalamus or cerebral hemispheres, cause decorticate posturing. The abnormal extension also is defined as decerebrate rigidity or posturing; when the patient is induced, teeth clench, and the arms are stiffly stretched, adducted, and hyperpronated. The legs are rigidly stretched, with the feet in plantar flexion. Lesions in the midbrain and pons cause decerebrate posturing (abnormal extension). Due to the similar appearance of abnormal flexion and extension in the lower extremities, the upper extremities are employed to confirm the existence of these abnormal movements. The patient may display abnormal flexion on one side of the body while exhibiting abnormal extension on the other (flaccid posturing) may be seen with medulla injury. According to studies, abnormal flexion has a less catastrophic prognosis than an abnormal extension or decerebrate posturing (Burke, 2014).

2.6.1.3. Respiratory Function

The respiratory pattern and rate are assessed as part of the neurological examination. Respiratory pattern changes may indicate neurological impairment. However, these patterns are hidden in patients who are intubated or mechanically ventilated (Stewart-Amidei & Klein, 2013).

Additionally, abnormal respiratory patterns may aid in distinguishing structural from metabolic causes of coma. Patients with cerebral hemisphere malfunction or metabolic inhibition exhibit Cheyne-Stokes respirations. Central neurogenic hyperventilation, or Kussmaul breathing, occurs in the presence of metabolic acidosis or midbrain or

upper pons damage. Apneustic breathing may develop due to pons injury, hypoglycemia, or anoxia. Ataxic breathing arises as a result of medulla injury. Agonal breathing happens when the medulla's respiratory centers fail (Stacy, 2022).

To examine the gag reflex in a comatose patient, employ a biting block to hold the patient's teeth apart, followed by a suction catheter or tongue blade stimulation of the back of the throat. Forward thrusting of the tongue and, sometimes the head indicates an intact gag reflex. Additionally, cranial nerves IX and X govern the cough reflex, which may be tested by noting spontaneous coughing or coughing in response to suctioning (Mahanes, 2014).

2.6.1.4. Pupil and Ocular Movement Function

Pupil size and sensitivity to light are evaluated in a comatose patient to ascertain the function of cranial nerves II (optic) and III (oculomotor). Pupils are evaluated for size, shape, and response to light (Mahanes, 2014).

The regions of the brainstem that regulate arousal are located near regions that regulate the pupils and ocular movement in the anatomically. As the level of consciousness declines into a coma, pupillary and ocular movement functions follow a predictable pattern. Pupillary response changes may assist in determining the location of a lesion. If an injury occurs in the midbrain, for example, pupils will become a little dilated and light insensitive. When the cranial nerve III is pressed, it causes a fixed and dilated pupil on the same side as the neurologic injury. The pupillary reflexes are generally retained when the cause of coma is metabolic. The difference between structural and metabolic causes of coma is often determined by pupillary light responses (Januszewicz & Buesch, 2014).

Oculocephalic or oculovestibular examination of eye movement may offer cranial nerves III, IV, VI, and VIII information. In general, patients with normal brainstem function should react to these maneuvers normally (Bauer *et al.,* 2021).

To examine the oculocephalic reflex (doll's eyes), the examiner holds the patient's eyelids open, and the head is quickly rotated from side to side. If the eyes turn in the opposite direction from the direction in which the head is rotated, the pons is intact. When the eyes do not move or move asymmetrically, this is a sign of pontine dysfunction. In patients with a suspected cervical spine injury, the oculocephalic reflex is never assessed (Mahanes, 2014).

In comatose patients, evaluating the oculovestibular reflex (cold calorics) is a systematic method of determining brain stem function. After examining the external canal for cerumen or tympanic membrane rupture, a bolus of cold water (iced water) is injected into the ear. The quantity of water used varies, but it is often between 30 to 50 ml. Conjugate deviation of the eyes toward the irrigated side happens in a patient with normal brain stem function. Patients with brain stem function disrupted either do not respond or have dysconjugated eye movement (Mahanes, 2014).

The corneal reflex may be examined by stimulating the cornea and monitoring for blinking through the test cranial nerve (V); if it is intact, the patient blinks when touched with a wisp of cotton or when a drop of normal saline is put in the eye (Morton & Fontaine, 2013).

2.6.1.5. Vital Signs

Cerebral auto-regulation ensures that cerebral blood flow is maintained throughout a broad range of arterial and perfusion pressures. The brainstem regulates blood pressure, heart rate, and respiration. The Cushing reflex is a physiological nervous system reaction to increased

intracranial pressure that results in hypertension/widening pulse pressure, bradycardia, and irregular breathing (e.g., Cheyne-Stokes or central neurogenic hyperventilation). Cushing syndrome is often a late symptom of neurological impairment, occurring just before or during herniation. Changes in the vital signs of the patient may indicate the presence of further medical concerns. Fever, hypotension, or hypoxia can potentially affect a comatose patient and result in secondary brain damage (Bell *et al.,* 2021).

2.7. Differential Diagnosis of Coma

Coma must be distinguished from vegetative state, minimally conscious state (MCS), the locked-in syndrome (LIS), stupor, akinetic mutism, and brain death (Godoy, 2013).

Coma is a profoundly depressing state of arousal and awareness. Coma may resolve to wakefulness or may progress to a vegetative state (VS) or a minimally cognitive state (MCS). As with coma, patients in VS exhibit no evidence of environmental or self-awareness and may exhibit stereotyped reflexive movements spontaneously or in response to stimuli, however, they do demonstrate cyclic periods of eye opening without visual fixation or pursuit. MCS is a term that refers to patients who have a severe alteration in consciousness and exhibit intermittent but inconsistent self or environmental awareness. In VS, corticothalamic/corticocortical systems function is severely impaired, whereas in MCS, some residual connectivity within these systems exists, indicating a more significant potential for recovery. Additionally, Another level of consciousness is locked-in syndrome must be differentiated from a coma that is a condition associated with injury to the ventral pons. Locked-in syndrome is characterized by intact wakefulness and awareness but with quadriplegia and expressive anarthria; thus, the afflicted individual has preserved consciousness, but

because of an inability to produce behavioral responses, it falls within the altered levels of consciousness (Gawryluk *et al.,* 2010; Stevens & Kornbluth, 2016).
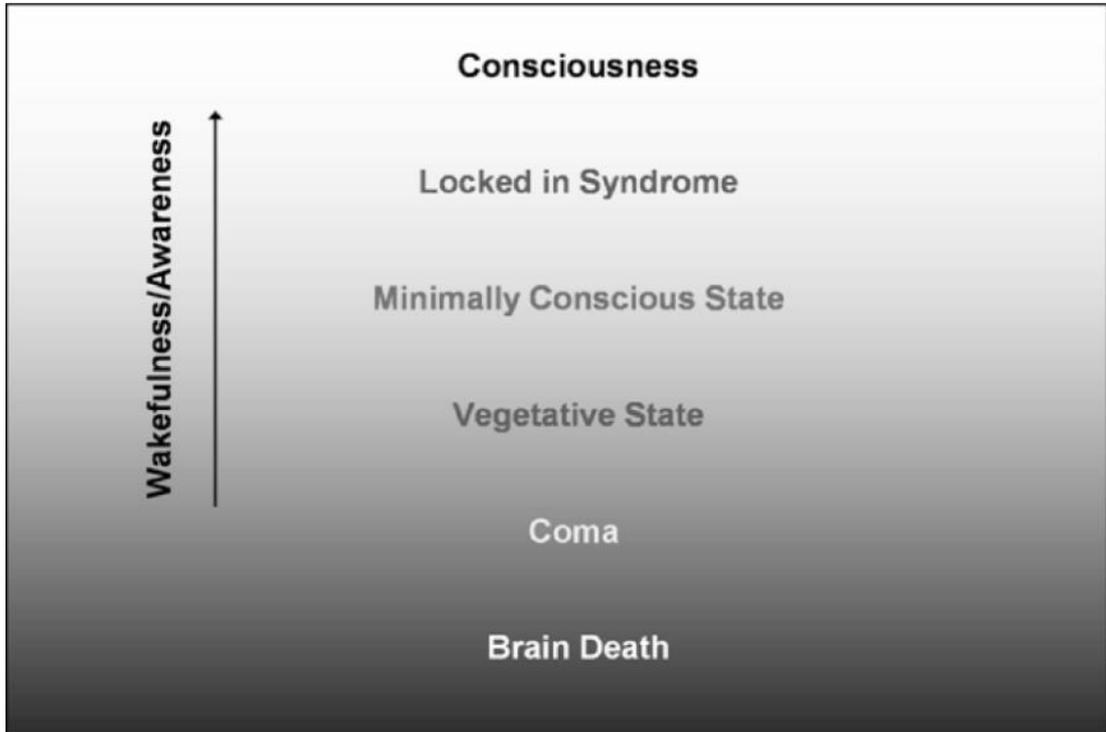
Figure (2-3): States of Consciousness by Level of Wakefulness/Awareness (Gawryluk *et al.,* 2010).

Furthermore, it should be distinguished between coma and stupor. In contrast, stupor refers to a higher degree of arousability in which the patient can be awakened only by vigorous stimuli, accompanied by motor behavior that leads to avoidance of uncomfortable or aggravating stimuli (Ropper, 2010).

In addition, Stevens and Kornbluth (2016) confirmed that brain death which is the irreversible loss of all brain activity and is clinically shown by the apparent lack of consciousness, brainstem reflexes, respiratory control, and motor responses, must be differentiated from a coma. Also, akinetic mutism is a state differentiated from a coma. It is a waking condition in which individuals are unable to move (akinesis) or speak (mutism) and seem to be unable to react to stimuli. Bilateral damage

to the anterior cingulate gyrus, the dorsal or central thalamus, the basal forebrain, or the midbrain is often the cause.

According to Mclaughlin (2019) reported that some resources distinguish between light coma and deep coma. During an examination of the motor system, in a light coma, the examiner can elicit a posturing motor response, while, in a deep coma, the examiner is unable to elicit a response.

The differential diagnosis of altered mental status and coma is extensive. Fortunately, there are several differentiating signs on the physical examination that when combined with information acquired from the patient's history of the current illness, prior medical history, and response to treatment (i.e., dextrose, naloxone), point to a specific etiology and are frequently of more incredible diagnostic value imaging, electrocardiograms (ECGs), and laboratory tests. However, a systematic approach is preferable since it decreases the possibility of missing an important indication (Adams *et al.,* 2013).

2.8. Complications of Coma

A complication of coma is that some patients are unable to maintain effective full eyelid closure. These patients natural protective defences for the cornea are compromised. Therefore, when the cornea is not covered, the danger of dehydration, abrasion, and infection increases (Perry, 2016).

Also, comatose patients present difficulties due to the danger of oral cavity changes caused by drying the mucous membrane, thick secretions, and inability to drink or eat. They are susceptible to infection due to the altered normal flora of the oral cavity and are at risk of infection as a result of increased plaque formation caused by the dry mouth and reduced salivation. Mouth breathing and oxygen treatment can also cause dryness of the oral mucosa. Respiratory secretions are often thick, putting patients at risk of ineffective airway clearance. Additionally, the comatose patient is

unable to swallow salivary secretions that collect in the mouth, which often include gram-negative bacteria that may cause pneumonia if aspirated (Painter & Crane, 2020).

According to Koutoukidis and Stainton (2020), prolonged immobility and inactivity may result in various complications, including pulmonary and urinary stasis, venous stasis, decubitus ulcers, constipation, and atrophied muscles.

2.9. Prognosis of Coma

It is difficult to predict a comatose patient's prognosis since the possible outcomes vary from complete recovery to vegetative or minimally conscious states to brain death (Davis & Khot, 2011).

The etiology of coma is the most crucial factor in determining the prognosis. The most favorable prognosis is usually coma due to metabolic reasons and drug intoxication, followed by coma due to trauma, and the least favorable prognosis is coma due to hypoxic ischemic encephalopathy. The result of prognosis is determined by the severity of the brain injury, the region of brain tissue destruction, the duration of the coma, and the severity of medical complications (Forsberg *et al.,* 2010; Rana & Morren, 2013).

Comatose patients have varying prognoses depending on the underlying etiology and disease process. The result is also influenced by the patient's age and general health. After a deep coma caused by a brain injury, a drug overdose, or another reason, young adults may be able to recover completely. A positive result is related to the recovery of consciousness within two weeks. Patients who do not have pupillary responsiveness or reflex eye movements 6 hours after coma onset have a bad prognosis (Lemone et al., 2014).
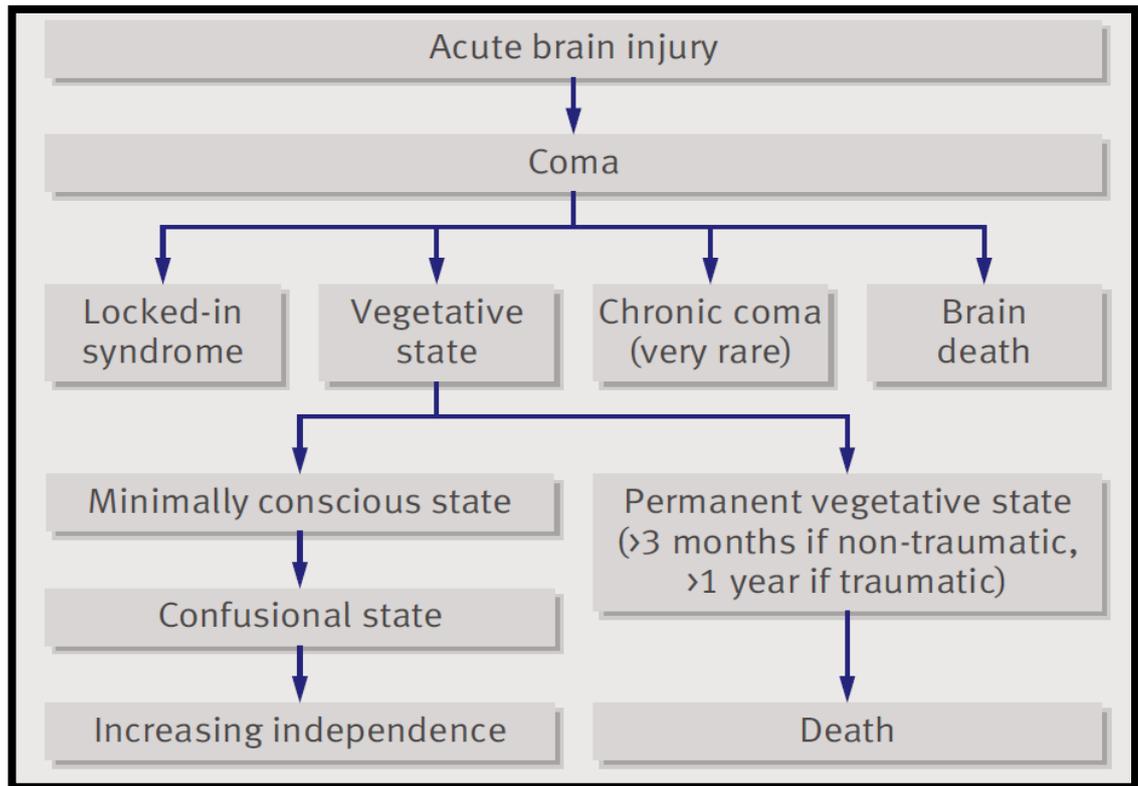
Figure (2-4): Flow Chart of Cerebral Insult and Coma (Monti *et al.,* 2010).

2.10. Medical Management of Coma

Januszewicz and Buesch (2016) stated that the diagnosis and treatment of the underlying cause of a coma patient's condition is the objective of medical care. Emergency interventions are included in the first medical therapy to maintain essential functions and avoid further neurologic deterioration. Airway protection and ventilator support are often required.

Furthermore, Hinkle and Cheever (2018) clarified that obtaining and maintaining a patent airway is the primary goal of treatment for a patient who is in a comatose state. A tracheostomy or oral or nasal intubation of the patient can be performed. A mechanical ventilator is used to provide appropriate oxygenation and ventilation while the patient's capacity to breathe is being assessed. To provide appropriate perfusion to the body and brain, the circulatory status (blood pressure, heart rate) is monitored. Intravenous fluids and drugs are administered through the

insertion of an intravenous (IV) catheter. Neurologic care concentrates on the specific neurologic pathology if recognized. As soon as feasible, nutritional support is started via a feeding tube or a gastrostomy tube. Other medical treatments focus on pharmacologic administration and the avoidance of complications in addition to measures intended to identify and address the underlying causes of coma.

2.11. Nursing Care for a Comatose Patient

Nursing is a dynamic and developing profession in which knowledge is key to its responsibility. Nurses must possess a broad variety of theoretical and practical knowledge in order to offer patients with the best possible care (Al-Quraan & Aburuz, 2016).

Puggina *et al.* (2012) showed that nursing care for patients with disorders of consciousness (DOCs) requires unique knowledge, competence, and abilities from the nurse, as well as precise planning and actions geared toward the care of these non-communicative patients.

Furthermore, Holbery and Newcombe (2016) clarify that comatose patients are incapable of expressing or meeting their own basic requirements, and their low levels of consciousness indicate impaired brain function, which is indicative of serious illness and poses an immediate threat to essential functions. Consequently, nurses have a crucial role in assessing, caring, and protecting such vulnerable patients.

Although specific common interventions are used, the nursing management strategy for comatose patients combines many nursing diagnoses and is determined by the specific etiology of coma. The comatose patient depends entirely on the health care team. The nurse is in charge of keeping track of neurological changes and signs of coma, as well as maintaining all body functions, monitoring complications, providing comfort and emotional support, and starting rehabilitation efforts.

Maintaining pulmonary hygiene, skin integrity, starting range-of-motion exercises, monitoring bowel and bladder functions, and providing proper dietary support are all examples of measures to support body functions (Stacy, 2022).

2.11.1. Maintaining the Airway

According to Braine (2014), supporting the airway and respirations is crucial in a comatose patient who faces challenges such as ineffective airway clearance and the danger of aspiration. To preserve airway patency, more severe changes in consciousness may need endotracheal intubation or a tracheostomy. Because of the depression of the medullary centers, the comatose patient may have a depressed or non-existent gag and swallowing response, which poses a high risk of aspiration and pneumonia.

Likewise, Gooley and Moniz (2016) added that the secretions accumulation in the pharynx is a major source of worry. Due to the patient could not swallow and has no pharyngeal reflexes, the secretions should be removed to avoid aspiration, by lifting the head of the bed to 30 degrees to prevent aspiration. When the patient is in a lateral or semi-prone position, the mouth and tongue slide forward, enabling secretions to drain more freely. Positioning alone is not always enough. Suctioning and oral hygiene may be required for the patient. Suctioning is used to remove secretions from the upper trachea and posterior pharynx. Suctioning is confined to fewer than 10 seconds and two suctioning passes with elevated ICP to avoid hypoxia. Before and after suctioning, the patient is hyper oxygenated using an Ambu-bag set at 100 percent oxygen; this helps to avoid hypoxia. In addition to these interventions, chest physiotherapy and postural drainage may be utilized to improve pulmonary hygiene, unless the patient's underlying illness prevents it. In addition, at least once every 8 hours, the chest should be auscultated to detect any adventitious breath

sounds or the cessation of breath sounds. Despite these attempts, owing to their level of impairment, comatose patients often need endotracheal intubation or a tracheostomy and mechanical ventilation. For patients who are mechanically ventilated, nursing interventions include ensuring the patency of the tracheostomy or endotracheal tube, giving regular oral care, observing arterial blood gas values, and maintaining ventilator settings.

2.11.2. Maintaining the Blood Circulation

Patients with low or changing degrees of consciousness should be observed frequently and may need invasive blood pressure monitoring. Cardiovascular observations should be made on a consistent basis with neurological observations (Holbery & Newcombe, 2016).

A critical care nurse measures blood pressure and palpates peripheral pulses for strength and symmetrical when assessing the circulation of a comatose patient. Auscultation of the apical pulse determines the rate, rhythm, and quality of heart sounds. The colour, temperature, lesions, and edema of the skin provide much information regarding the cardiovascular system (Berman *et al.,* 2016).

Immobility has a negative impact on cardiovascular function. Blood accumulates in the veins of the lower extremities, while the calf and leg muscles are not active. Blood clots may form as a result of the stagnant (sluggish) blood flow (venous thrombosis) (Doucette, 2018).

Preventing venous stasis is a crucial nursing strategy for decreasing the risk of complications. Mechanical measures such as positioning, leg exercises, and sequential compression devices or compression stockings assist in avoiding venous stasis (Berman *et al.,* 2016).

2.11.3. Protecting the Patient from Injury

The nurse utilizes critical thinking skills while employing the nursing process and is responsible for assessing the patient and the surroundings for dangers that harm safety, as well as planning and intervening appropriately to ensure a safe environment (Rebeiro *et al.,* 2013).

When the patient is unattended, the nurse should keep side rails up and the bed in a low position, pad side rails if seizure activity or restlessness indicates that they are needed, position carefully, protect extremities from contact with side rails, maintain correct body alignment, protect from thermal injury, and use hand mitts to prevent injury from dislodging tubes (Dewit & Kumagai, 2013).

Furthermore, the nurse must move the patient very carefully because he is unable to express his feeling or the pain. When moving or rotating the comatose patient, make sure the limbs and head are well supported. It is essential to always turn comatose patients toward nurse or someone else to avoid falls (Stewart-Amidei, 2019).

2.11.4. Maintaining Fluid Balance and Managing Nutritional Needs

The state of hydration is assessed by measuring intake and output patterns, examining mucous membrane, tissue turgor, and analyzing laboratory data. Initial hydration requirements are provided by giving the Intravenous appropriate fluids. Intravenous solutions (and blood component treatment) must be administered slowly for intracranial disorders. Intracranial pressure (ICP) might be increased if they are administered too quickly. To reduce the risk of cerebral edema, the amount of fluids supplied may be limited. A feeding or gastrostomy tube will be implanted to deliver fluids and enteral feedings if the patient does not

recover fast and adequately enough to consume necessary fluids and calories by mouth. Most the studies revealed that patients who are fed within 48 hours following an injury have better results than those fed later (Hinkle & Cheever, 2018).

The comatose patient is in danger of nutritional deficiency as a result of diminished or whole incapacity to eat, this is particularly true for patients in a coma due to infection or trauma, both of which raise metabolic needs. Managing nutritional status via daily weight measurements (on bed scales) and laboratory data collection. Weight the patient simultaneously each day, using the same scales and ascertain that the patient is dressed identically to ensure accuracy. Laboratory data changes associated with inadequate nutrition include reducing serum albumin and serum transferrin levels. Collaborate with a dietician to determine the necessity for other modalities of nutritional support (tube feeding or total parenteral nutrition (TPN)). Patients who are unable to consume food orally need parenteral nutrition or liquid feedings administered by a nasogastric, gastrostomy, or jejunostomy tube (Lemone-Koeplin et al., 2017).

Nasogastric tubes are used to feed comatose patients who need short-term feedings and have acceptable gastric emptying. They are not indicated for feeding patients without intact gag and cough reflexes. The danger of unintentional insertion of the tube into the lungs is significantly greater in those patients, while gastrostomy and jejunostomy have been used for long-term use nutritional support, usually for more than 6 to 8 weeks. Tubes are inserted through the abdominal wall into the stomach (gastrostomy) or the jejunum (jejunostomy) through surgery or laparoscopy (Berman *et al.,* 2016).

2.11.5. Mouth Care

Comatose patients need mouth care because they are more vulnerable to infection because of the changes in the oral cavity's normal flora, increased plaque accumulation from dry mouth, and reduced salivation. Mouth breathing and oxygen treatment may also cause dryness of the oral mucosa. Because many comatose patients have a decreased or absent gag reflex so, providing mouth care requires protecting these patients from aspiration and choking (Perry, 2020).

The lips, tongue, and gums are cleaned and lubricated at regular intervals since mouth breathing causes them to become overly dry. This may be done by turning the patient to one side, turning on the oral suction device, and cleansing the oral surfaces with a toothbrush or a tongue depressor with gauze taped to it. Moisten the gauze with a solution of 50% water, 50% mouthwash, or water with a small quantity of hydrogen peroxide and sodium bicarbonate. Excessive foaming will occur after the use of too much hydrogen peroxide. Using an irrigation syringe loaded with water in one hand and an oral suction device in the other allows for mouth cleaning and preventing liquid aspiration (Dewit & Kumagai, 2013).

These techniques aim to eliminate plaque and clean the mouth cavity. The best instruments to use are a toothbrush and toothpaste. These should be used at least twice a day to clean teeth, tongue, and gums, preferably with a soft brush with pediatric bristles. Swabs are inefficient at cleaning debris between the teeth and gums (Giusti *et al.,* 2018).

Felix *et al.* (2021) stated that mouth care is daily nursing care administered to comatose patients that promotes comfort, minimizes microbial colonization of the oropharynx, and leads to a lower incidence of infection, such as ventilator-associated pneumonia (VAP). According to national and international guidelines, an oral care program is one of the

techniques used to prevent VAP. The gold standard of intervention in intubated patients' mouth care is observation with oral health assessment instruments, the use of 0.12% chlorhexidine gluconate, and tooth brushing procedures.

Abd EL-Aziz (2014) mentioned that chlorhexidine is the most efficient antiplaque agent. The positively charged chemical chlorhexidine acts by binding to negatively charged locations on tooth enamel and mucosal cells. This mechanism decreases microbial adhesion to dental and mucosal surfaces. Chlorhexidine inhibits both Gram-positive and Gram-negative organisms. Finally, chlorhexidine has delayed release characteristics, ensuring that it retains antimicrobial effectiveness for 12 hours.

2.11.6. Maintaining Skin and Joint Integrity

Prolonged pressure, shearing forces, irritation, and immobility cause skin impairment. Pressure ulcers raise the risk of infection and may make the healing process more difficult. As a result, maintaining skin integrity is an essential aspect of nursing care (Rebeiro *et al.,* 2013).

Kushner (2015) showed that the most common locations of pressure ulceration are the skin overlaying bony prominences. The procedures to preserve skin integrity include regular skin examination, gentle routine cleansing, protection from moisture, proper hydration and nourishment, and frequent turning and repositioning of the patient. Skin pressure, friction, and shearing should all be avoided. Additionally, appropriate pressure relief mattresses must be used.

Moreover, Clement (2012) mentioned that the comatose patient should be placed on a ripple mattress with taut and dry bed linens, with the patient's position changed every two hours and compression location

massaged. Any sign of redness or injury to the skin must be noted or assessed.

Comatose patients are unable to sustain normal musculoskeletal motion, therefore they are exposed to increased the risk of contractures associated with diminished mobility and unable to maintain skin integrity. Flexor and adductor contractures developed fast without preventative measures because the flexor and adductor muscles are more potent than the extensors and abductors. Passive range of motion (ROM) exercises must be done on a regular basis (unless contraindicated) to maintain muscle tone and function, to avoid increased disability, and to aid in the restoration of compromised motor function. Under the direction of the physiotherapist, the use of removable orthosis to keep limbs in place, such as a wrist splint or ankle foot orthosis to prevent limb plantar flexion, may be used (Braine, 2014).

Nurses must give complete care to patients, including a daily bed bath with skin cleansing and light massage to promote blood circulation, emphasizing pressure points while the patient is lying in bed. To avoid infection, the skin must be dehydrated after a bed bath. While, to avoid dryness and cracking, use a paraffin oil or lanolin cream to hydrate the skin (AL-Hroub & Ycaza, 2017).

2.11.7. Eye Care

The comatose patient's eye care is very vital, and it should never be neglected. They are at an increased risk of developing ocular problems. Attempts should be made to standardize eye care in the CCU via staff education, the use and implementation of eye care algorithms, and the establishment of general eye care standards (Giusti *et al.,* 2018).

Patients may have eye defense mechanism damage, as well as corneal dryness, abrasion, corneal perforation, and infection. They admitted

to the critical care unit are at an increased risk of developing an ocular surface disease or microbial keratitis. Corneal abrasion is reported to occur in around 60% of patients, with a peak incidence between two and seven days after CCU admission. Interventions for the eye is essential by protecting the eye with a layer that covers the ocular surface and routinely inspecting the patient's eye in the CCU (Puspasari, 2019).

When a comatose patient's corneal response is weakened, it is crucial to provide eye care to maintain the exposed regions of the cornea moist. Every 2 to 4 hours, must moist the patient's eyes. Clean the eyes with a saline solution and cotton balls, wiping from the inner to the outer canthus, this approach keeps debris out of the nasolacrimal duct. To avoid spreading infection from one eye to the other, use a new cotton ball for each eye. In addition, apply ophthalmic ointment or artificial tears to the lower lids as directed. Continue to check the eyes for redness, exudates, or ulcers (Buck, 2018).

Likewise, Dewit and Kumagai (2013) stated that when a patient is unable to close his eyes, the nurse must take precautions to avoid keratitis or corneal ulcers. The eyelids are cleaned with warm sterile water or normal saline every few hours to eliminate discharge and debris. To avoid dryness, artificial tears or a lubricant are instilled as directed. If the corneal reflex is missing, an eye patch is put over the eye. Before applying the patch, the eyelid is closed. Each day, the eyes are inspected for signs of inflammation.

Cleaning patients' eyes with saline-soaked gauze and dispensing eye-specific lubricants is the nursing staff's responsibility. Three grades were assigned to incomplete eyelid closure: grade 0 (totally closed eyes), grade 1 (open eyes with sclera or conjunctiva visible), and grade 2 (open eyes with cornea visible). No action was recommended for grade 0,

lubrication was necessary for grade 1, and lubrication and taping of the lids with the tape along the lash margin were required for grade 2 (Agency for Clinical Innovation [ACI], 2021).

2.11.8. Maintaining Body Temperature

Temperature is a fundamental observation that is used to determine the severity of fever in CCU patients, so when the body temperature rises, significant physiologic changes occur in a heartbeat, muscle tissue contractions that cause rigors, affect on the depth and rate of respiration, oxygen demand, and carbon dioxide production (Kiewiet, 2019).

A comatose patient may develop fever due to infection of the respiratory or urinary systems, pharmacological interactions, or disturbance of the hypothalamic temperature-regulating center. Dehydration may result in a slight increase in temperature. Based on the patient's state, the environment can be modified to maintain a suitable body temperature. Cool the room to 18.3°C (65°F). A warmer environment is necessary if the patient is an older adult without an elevated temperature. Comatose patients often have excessive temperatures as a result of injury to the brain's temperature-regulating center or severe intracranial infection. These temperature variations must be managed since the brain's higher metabolic needs may surpass cerebral circulation and oxygen supply, possibly raising ICP due to increased blood flow. Brain stem damage and a poor prognosis are associated with persistent fever with no recognized clinical cause of infection. Therefore, to reduce fever, remove all bedding from the patient (except for a light sheet), administer acetaminophen or ibuprofen as recommended, give cold sponge baths, and use a hypothermia blanket. Regularly check the patient's temperature to assess their reaction to therapy and prevent an extreme temperature decrease and shivering (Gooley & Moniz, 2016).

Hypothermia is defined as a core body temperature below the usual range. Hypothermia is caused by three physiological mechanisms: first, excessive heat loss. Second, insufficient heat generation compensates for heat loss, and third, disturbing hypothalamic thermoregulation. Hypothermia is managed by removing the patient from the cold and rewarming his or her body. To rewarm a patient with mild hypothermia, blankets are used, while to rewarm a patient with severe hypothermia, a hyperthermia blanket is applied (an electronically controlled blanket that maintains a certain temperature) and warm intravenous fluids are given. Wet clothes should be changed with dry clothing to prevent heat loss due to the high conductivity of water (Berman *et al.,* 2016).

2.11.9. Preventing Urinary Retention

Comatose patients are most often incontinent or have urine retention. To assess if urine retention is present, intake and output are monitored, and the bladder is palpated or scanned periodically. Overflow incontinence may be caused by a full bladder, which is often overlooked. A portable ultrasound bladder scanner is an invaluable tool for bladder management and urination. An indwelling urinary catheter is placed and linked to a closed drainage system if the patient is not urinating. During the acute phase of sickness, a catheter may be placed to monitor urine output. Because catheters are a common source of urinary tract infection, the patient is assessed for fever and turbid, intense or foul-smelling urine. Drainage is inspected in the region around the urethral orifice. If the patient's cardiovascular system is stable and there is no diuresis, the urine catheter is usually removed. Although many comatose patients' urine spontaneously following catheter removal, the bladder should be palpated or examined with a bladder scanner regularly for urine retention. To ensure complete bladder emptying at regular intervals, an intermittent catheterization plan may be begun if necessary. However, an external

catheter (condom catheter) for the male patient and absorbent pads for the female patient may be used for comatose patients and urinate spontaneously. As soon as the patient regains consciousness, a bladder training program is started. In patients with incontinence, skin irritation and skin breakdown are routinely monitored.. To avoid these issues, proper skin care is performed (Gooley & Moniz, 2016).

2.11.10. Promoting Bowel Function

Assessment of abdominal distension involves listening for bowel sounds and measuring the circumference of the abdomen using a tape measure. Infection, antibiotic usage, and hyperosmolar fluids are all potential causes of diarrhea. For patients who have fecal incontinence, commercial fecal collecting bags are available. Constipation may result from a lack of exercise and dietary fiber. The nurse checks for signs of fecal impaction as well as consistency and frequency in the patient's bowel motions. On occasion, a tube feeding will come with a prescription for a stool softener. A glycerin suppository could be used to help in bowel emptying. Every other day, the patient could need an enema (Hinkle & Cheever, 2018).

2.11.11. Meeting the Family Needs

Family members of patients in a coma often experience extreme anxiety. The family may find it difficult to cope with the patient's unclear prognosis. They may feel a variety of contradictory feelings, like guilt and anger. Reinforce the physician's information and urge the family to speak to the patient as though they are capable of understanding. Although this communication may seem unpleasant at first, it will become natural with time. Assess the family's receptiveness to receiving information about the patient's treatment and care. Numerous tubes (intravenous line, catheter, ventilator, etc.) might confuse the family. They may be unaware of the

seriousness of the issue if an adequate explanation is not provided. Include family members in the patient's care to the extent they want. When feasible, allow essential relatives to remain with the patient. Inform family members of the importance of self-care by promoting proper food and relaxation (LeMone *et al.,* 2011).

2.12. Previous Studies

Many studies worldwide have focused on the care of comatose patients to improve and develop staff nurses' knowledge, prevent negligence, and reduce the mortality rate.

2.12.1. The First Study

Sedain and Bhusal (2019) conducted a study under title **Knowledge Regarding Glasgow Coma Scale among Nurses Working at Selected Hospitals of Chitwan, Nepal**. The aimed of this study was to determine nurses' knowledge of the Glasgow Coma Scale at a selected hospital in Bharatpur, Chitwan. A descriptive cross-sectional study was conducted among 154 nurses who worked at Bharatpur's multiple critical wards (ICU, CCU, and NICU) utilizing convenient sampling. Data was collected using a structured, self-report questionnaire. According to the findings, the average age of the nurses was 23.24 years. The majority ages of participants (72.1) percent were are between the ages 20 and 24 years, (69.5) percent had a proficiency certificate (PLC) in nursing, (90.9) percent had received their education in a private institution, (89.6) percent of them had experience less than 3 years in nursing , (74) percent had have a less than 1 year experience (working in that unit), and (57.8) percent had received in-service education (professional training or staff development program). Only 33.1 percent of the nurses had a good knowledge of the subject. Similarly, 66.9 percent of nurses had good knowledge of the eye-opening component, 33.0 percent of nurses had good knowledge of the motor

component, and 66.2 % of nurses had good knowledge of the GCS verbal response. Institute of acquiring education (p-value=0.028), availability of protocol on GCS (p-value=0.048), and habit of self-directed learning (p-value=0.036) are statistically significant influencing variables for the level of knowledge. Basis on the results the they found that the majority of nurses had an unsatisfactory level of knowledge concerning GCS.

2.12.2. The Second Study

A study carried out by Alghamdi *et al.* (2018), "**Assessment of Intensive Care Nurse Knowledge and Perception of Eye Care Practice for Unconscious and Mechanically Ventilated Patients in Intensive Care Units in Saudi Arabia**". The study aimed to determine intensive care nurses' knowledge of eye care for unconscious and mechanically ventilated patients and assess nurses' perceptions of eye care practice for unconscious and mechanically ventilated patients. A descriptive cross-sectional design was used in the research, with a well-structured questionnaire distributed to interested nurses with implicit permission attached. A total of 55 nurses from medical and surgical intensive care units participated in the study. According to the study results, the overall score of nurses' knowledge in eye care, fewer than half of intensive care unit (ICU) nurses (46.7) percent had adequate knowledge, while (40) percent had inadequate knowledge. On two subtotal items (p=0.045), medical and surgical ICU nurses had statistically significant differences in knowledge. The total nurses' perception on eye care practice was (95.6) percent high acceptance perception, with 98.2 median and 5.6 IQR. On the other hand, there was no significant difference in total and subtotal perception scores between medical and surgical ICU nurses, According to the results of the study, the researchers concluded that ICU nurses' knowledge of mechanically ventilated patients' eye care fluctuated between adequate and inadequate, and did not reach a satisfactory level. Furthermore, nurses' perceptions of

eye care practice for mechanically ventilated patients revealed a high degree of acceptance, but this result does not mean that the clinical practice for eye care was good.

2.12.3. The Third Study

The study conducted by Ali (2011) was titled "**Assessment of Nurses Knowledge Regarding Care of Unconsciousness Patients in El-mak Nimer University Hospital**." The study's objective is to assess nurses' knowledge of the unconscious patients. The study was a descriptive, the study included all nursing staff in the hospital of 40 nurses, and the data were analyzed using SPSS program. According to the results, 57.5 percent of participants had satisfactory knowledge about the causes of unconscious patients, and more than half of the study sample (60 percent) had good knowledge about preventing complications in unconscious patients. Furthermore, the survey revealed that two-thirds of nurses (63 percent) had a good knowledge of how to apply the Glasgow Coma Scale. The study recommended the hospital should establish a regular training program and workshops about nursing care for unconscious patients and increase practical skills in collaboration with the ministry of health, the hospital director should determine a unified plan to identify and address the problems of unconscious patients as important.

Chapter Three

Methodology

Chapter Three
Methodology

This chapter presents all methodological and procedural principles approved in an organized method to reach the study's objectives.

3.1. Study Design

A descriptive study (cross-sectional) was conducted to accomplish the objectives of this study concerning critical care nurses' knowledge regarding nursing care for comatose patients in Babylon governorate hospitals from 19th September 2021 up to 6th July 2022.

3.2. Administrative Arrangements

The formal administrative agreements have been achieved before data collection, which is required for conducting the study are presented in **Appendix (A1-9)** as follows:

1- The first approval was obtained from the Babylon University, Nursing College, Adult Health Nursing Department to conduct this study after the presentation of the seminar about study title, objectives and importance of the study.

2- The study protocol was approved by the ethical committee in the Babylon University, Nursing College.

3- The official paper was sent from the Babylon University, Nursing College to the Ministry of Health – Babylon Health Directorate - Training and Human Development Center to obtain a formal agreement to use their health institutions as the study setting to collect the necessary data.

4- Finally, formal permission was obtained from Babylon Health Directorate- Training and Human Development Center to six hospitals at Babylon governorate to facilitate data collection.

3.3. Setting of the Study

The study was conducted in critical care units (CCUs) at six hospitals in Babylon Governorate Hospitals (Imam Al-Sadiq General Teaching Hospital, Al-Hilla General Teaching Hospital, Shaheed Al-Mihrab Center for Catheterization and Cardiac Surgery, Imam Ali Hospital, Dhul-Kifl General Hospital, and Marjan Teaching Hospital), these units located in these hospitals as shown in **table (3-1).** The hospitals' work shift systems for nursing staff are morning shift for 6 hours and evening shift for 18 hours.

Babylon governorate is one of the rich governorates in health care facilities, it contains (16) hospitals and (6) specialized centers. The hospitals included in the study are (6) hospitals containing CCU & ICU, as shown in **table (3-1).**

Table (3-1): Setting of the Study

No.	Hospital Name	Name of Unit	No. of Bed
1	Al-Hilla General Teaching Hospital	ICU	12
2	Imam Al-Sadiq General Teaching Hospital	CCU	16
		ICU	18
3	Shaheed Al- Mihrab Center for Catheterization and Cardiac Surgery	CCU	8
4	Imam Ali Hospital	CCU	3
5	Dhul-Kifl General Hospital	CCU	6
6	Marjan Teaching Hospital	CCU	16
	Total	ICU	30
		CCU	49

3.4. Sample of the Study

A non-probability (purposive) sample consists of (178) critical care nurses from the CCU and ICU of Babylon Governorate hospitals were chosen based on certain criteria to assess their knowledge regarding nursing care for comatose patients **table(3-2).** The study sample was selected according to the following:

3.4.1. Inclusion Criteria

1- Nurses who agreed to participate in the study.

2- Either gender of nurses, male and female, have one year or more experience in nursing.

3- Nurses who work at hospitals in critical care units (CCU and ICU) .

4- Nurses who work both morning and evening shifts.

3.4.2. Exclusion Criteria

The sample that was excluded from the study is:

1- Nurses who refuse to participate in the study.

2- The nurse who did not complete the answers to the questionnaire items.

3- The nurses were selected for a pilot study.

4- The nurses had less than one year of nursing experience.

Table (3-2) Distribution of Sample

No.	Hospital Name	Name of unit	No. of nurses	No. of participants
1	Al-Hilla General Teaching Hospital	ICU	76	62
2	Imam Al-Sadiq general teaching hospital	CCU	32	22
		ICU	54	43
3	Shaheed Al- Mihrab Center Catheterization and Cardiac Surgery	CCU	18	11
4	Imam Ali Hospital	CCU	8	7
5	Dhul-Kifl General Hospital	CCU	13	10
6	Marjan Teaching Hospital	CCU	31	23
	Total	ICU	130	105
		CCU	102	73
		ICU & CCU	232	178

3.5. Study Instrument:

The questionnaire was constructed from various previous literature reviews and articles related to this topic in order to meet the objectives of the current study, and it consists of two parts **(Appendix B)** and includes the following:

Part I: Demographic and Professional characteristics

This part contains demographical and professional characteristics of the critical care nurses constitutes from (9) elements that include (age, gender, marital status, educational level, years of experience in the nursing field, work unit, years of experience in the current workplace, work shift, and a number of training courses).

Part II: Critical Care Nurses' Knowledge regarding Nursing Care for Comatose Patients

This part consists of (46) multiple-choice questions, which were divided into (12) sub-domains that includes:-

First Part: Critical care nurses' knowledge in relation to general information about coma, consists of (4) items.

Second Part: Critical care nurses' knowledge regarding Glasgow Coma Scale (GCS), consists of (8) items.

Third Part: Critical care nurses' knowledge concerning maintaining the airway patency of comatose patients, consists of (3) items.

Fourth Part: Critical care nurses' knowledge regarding maintaining the blood circulation of comatose patients, consists of (3) items.

Fifth Part: Critical care nurses' knowledge about maintaining fluid balance of comatose patients, consists of (3) items.

Sixth part: Critical care nurses' knowledge regarding maintaining nutritional needs of comatose patients, consists of (3) items.

Seventh Part: critical care nurses' knowledge in relation to mouth care of comatose patients, consists of (3) items.

Eighth Part: Critical care nurses' knowledge regarding protecting the patient from injury, maintaining skin and joint integrity of comatose patients, consists of (4) items.

Ninth Part: Critical care nurses' knowledge concerning eye care of comatose patients, consists of (3) items.

Tenth Part: Critical care nurses' knowledge regarding maintaining body temperature of comatose patients. This part consists of (3) items.

Eleventh Part: Critical care nurses' knowledge in relation to maintaining the bladder and bowel elimination of comatose patients, consists of (6) items.

Twelfth Part: Critical care nurses' knowledge regarding meeting family needs of comatose patients, consists of (3) items.

Before the questionnaire reached its final form, it went through the following stages:

1- Determining the data that will be collected through the questionnaire according to the study questions.

2- Determining the method and format of the questionnaire.

3- Determining the type of criterion that determines the type of answer in the questionnaire.

4- Presenting the questionnaire to a number of the panel of experts to express their opinions and observations in developing the questionnaire and modifying it based on what they submitted.

5- Conducting a reliability test by distributing the questionnaire to a sample of (20) nurses who were selected from ICU and CCU.

6- Writing the questionnaire in its final form, then printing, reviewing, and distributing it.

3.6. Pilot Study

This study carried out from (6th February/ 2022) to (15th February/ 2022). It is done in order to:

1- Determine the instrument's reliability.

2- Ascertain the instrument's clarity, relevancy and adequacy.

3- Identify barriers that may be experienced.

4- Estimate the time needed for data gathering.

Results of the Pilot Study:

1- The questionnaire is reliable.

2- The time required for answering the questionnaire ranged from (15-30) minutes.

3- The instrument items was clear and could be easily understood.

3.7. Validity of the Instrument

The validity of the questionnaire was obtained by reviewing the questionnaire by (13) experts to estimate the clarity and relevance of the questionnaire about critical care nurses' knowledge regarding nursing care for comatose patients. Multidisciplinary field experts with more than (10) years of experience in nursing colleges from Babylon University/ College of Nursing (2) experts, Baghdad University/ College of Nursing (3) experts and Kufa University/ College of Nursing (4) experts, Kerbala University/ College of Nursing (3) experts, and Hilla University College (1) expert. A deep review of the questionnaire and some changes were performed according to their comments and opinions **(Appendix C).**

3.8. Reliability of the Instrument

The reliability of the study instrument entails making sure that the outcome will be almost the same even if it is presented to the same persons at different times. After confirming the study tool's apparent validity, the researcher used it in a randomly selected exploratory sample of (20) nurses, or roughly 10% of the total sample. Later, the participants in this sample were not included in the original sample used to conduct the final study. Reliability coefficient utilizing the "Cronbach's Alpha" tested coefficient, as indicated in the **table (3-3)**.

Table: 3-3: Reliability of the Studied Questionnaire (*n=20*)

Variable	Reliability Coefficients	Accepted value	No. of Items	Actual value	Assessment
knowledge	Cronbach's Alpha	0.70	46	0.786	Pass

3.9. Ethical considerations through the data collection

Ethical Considerations are essential to protect the rights of persons regarding the collected data and confidentiality and to promote the professional study conducted. The following ethical issues are applied depending on:

❖ Voluntary agreement of the participants.

❖ Respect the exclusiveness of the participants.

❖ Phrasing the questions is easily understandable according to the educational level of nurses and cultural background.

3.10. Methods of the Data Collection

The data were collected from the date (21st February 2022 to 7th April 2022) by using the designed tested questionnaire in Arabic version filled by the nurses after acquiring the institution's permission. The

researcher took oral and written agreements from each nurse to participate in this study. The time to answer the instrument's questions with each participant took approximately (15-30) minutes.

3.11. Methods of Statistical Data Analysis

The researcher used the Statistical Package for Social Sciences (SPSS-version 20) and Microsoft Excel (2010) programs to statistically analyze the data obtained from the study sample in order to arrive at the results, find the differences between the variables, and obtain the research's final findings based on a series of statistical tests.

3.11.1. Descriptive Approach

Descriptive statistics includes a set of mathematical and statistical methods adopted to describe the main features of a data quantitatively by using tables and charts. Descriptive statistics aim to present and describe the data required to be processed, organized, summarized, categorized, and presented simply and clearly, making it easier for the recipient to recognize and understand its content. The analysis was performed through the use:

A. Statistical tables "Frequencies and percent" which are:

$$\% = \frac{\boldsymbol{Frequency}}{\boldsymbol{Sample\ Size}}\ x100$$

B. Mean of scores "*M±*".

The average score can be calculated by using the following:

$$M.S = \frac{\sum ri = 1Fi \text{ x } Si}{\sum ri = \ 1Fi}\ x100$$

C. Standard deviation test $\pm SD$.

$$SD = \sqrt{\frac{1}{n-1}\sum_{i=1}^{n}(Xi - \hat{\chi})^2}$$

D. Rating and Scoring:

The rating and scoring as adopted to responses (1) for correct answer and (0) for incorrect answer, the researcher divided the knowledge to the three levels, as shown below:-

M.S= Mean of scores, f= frequencies, S= Scores, N= Numbers of sumple

$$Range\ of\ score = \frac{Max(M.S) - Min(M.S)}{Rating} = \frac{1-0}{3} = \frac{1}{3} = 0.33$$

(0-0.33) poor knowledge

(0.34-0.66) moderate knowledge

(0.67-1.00) good knowledge

E. It uses a correlational coefficient "Cronbach alpha" used in estimating the internal consistency of the study tool, which can be calculated by using the following:

$$\alpha = \frac{K}{K-1}\left[1 - \frac{\sum_{i=1}^{K}\sigma_{ii}}{\sum_{i=1}^{K}\sum_{j=1}^{K}\sigma_{ij}}\right]$$

3.11.2. Inferential Approach
3.11.2.1. One Way ANOVA

one-way ANOVA is a parametric test that compares the average variance within each group to the variance throughout the whole sample to evaluate if the averages of three or more groups are comparable or different (Plichta & Garzon. 2009).

Source of variance	Sum of square	d.f	Mean square	F
Between Groups	$SS_B = \sum \dfrac{(\sum xP1)^2}{n} - \dfrac{(\sum xP)^2}{n}$	$df_B = K\text{-}1$	$\dfrac{MS\beta}{MS\beta}$	
Within Groups	$SS_w = \sum \dfrac{(\sum xP1)^2 \quad (\sum xP)^2}{N}$	$df_w = N\text{-}k$	$\dfrac{SSw}{DFw}$	$\dfrac{MSB}{MSW}$
Total	$SS_T = \sum \dfrac{(\sum xP1)^2 \quad (\sum xP)^2}{N}$	$df_t = N\text{-}1$		

3.11.2.2.Independent Sample T-test

In this test, the means of two independent groups are compared to see if there is a statistical evidence with a particular characteristic that the means of the linked populations are significantly different (Plichta & Garzon. 2009).

$$t = \frac{\mu_A - \mu_B}{\sqrt{\dfrac{\left[\left(\sum A^2 - \dfrac{(\sum A)^2}{n_A}\right) + \left(\sum B^2 - \dfrac{(\sum B)^2}{n_B}\right)\right] \cdot \left[\dfrac{1}{n_A} + \dfrac{1}{n_B}\right]}{n_A + n_B - 2}}}$$

$(\Sigma A)^2$: Sum of data set A, squared (Step 2).
$(\Sigma B)^2$: Sum of data set B, squared (Step 2).
μ_A: Mean of data set A (Step 3)
μ_B: Mean of data set B (Step 3)
ΣA^2: Sum of the squares of data set A (Step 4)
ΣB^2: Sum of the squares of data set B (Step 4)
n^A: Number of items in data set A
n^B: Number of items in data set B

The following are some shortcuts for calculating significance concerning level:

1. **NS:** Non-significant at P-value > 0.05.
2. **S:** Significant at P-value $\leq$ 0.05.
3. **H.S**: Highly Significant at P-value $\leq$ 0.01.

Chapter Four

Results

Chapter Four

Results of the Study

Under the objectives of the current study findings, the descriptive and inferential statistic approach is organized in tables and figures that include the followings:-

Table 4.1: Descriptive Statistic of Socio-Demographic Variables and Professional Characteristics

Factors	Classification	Freq.	%
Age/years ($M \pm SD = 28.46 \pm 6.197$)	22-29 years old	132	74.2
	30-39 years old	33	18.5
	40-49 years old	7	3.9
	≥ 50 years old	6	3.4
	Total	178	100.0
Gender	Male	87	48.9
	Female	91	51.1
	Total	178	100.0
Marital Status	Single	67	37.6
	Married	109	61.2
	Divorced	2	1.1
	Total	178	100.0
Educational level	Nursing School	42	23.6
	Nursing Institute	40	22.5
	Nursing Bachelors	96	53.9
	Total	178	100.0
Years of experience	1-5 years	119	66.9
	5-10 years	39	21.9
	>10 years	20	11.2
	Total	178	100.0
Work unit	CCU	73	41.0
	ICU	105	59.0
	Total	178	100.0
Experience in the current workplace	1-3 years	112	62.9
	3-5 years	50	28.1
	>5 years	16	9.0
	Total	178	100.0
Work shift	Morning	83	46.6
	Evening	95	53.4
	Total	178	100.0

Number of training courses about nursing care for comatose patients	No	98	55.1
	1 session	32	17.9
	2 sessions	27	15.2
	>2 sessions	21	11.8
	Total	178	100.0

This table represents socio-demographic and professional characteristics in terms of frequencies and percentages. The findings showed the mean age of the study sample is 28.46 (±6.197), and the age between 22 and 29 years old was recorded as the highest percentage (*n=132*; 74.2%).

Regarding gender, approximately half of the study participants were females (n=91; 51.1%) compared with those who were males (*n=87*; 48.9%).

Marital status-related findings, it is evident from the findings that married nurses were highly (*n=109*; 61.2%) as compared with those who were single and divorced.

Respected to their educational level, more than half nurses were bachelor's graduates (*n=96*; 53.9%) as compared with those who graduated from nursing schools (*n=42*; 23.6%) and those who graduated from nursing institutes (*n=40*; 22.5%).

Concerning the years of experience in nursing, the findings revealed that most of the critical care nurses were had (1-5) years of experience (*n=119*; 66.9%) as compared with those who had 5-10 years (*n=39*; 21.9%) and those who had more than 10 years (*n=20*; 11.2%).

However, in relation to the work unit, most nurses work in ICU (n=105; 59%) compared with those who work in CCU (*n=73*; 41%).

In addition, most of the critical care nurses had (1-3) years' experience incurrent workplace (*n=112*; 62.9%) and more than half work in the evening shift (*n=95*; 53.4%).

Regarding training courses about nursing care for comatose patients, most of critical care nurses without training courses (*n=98*; 55.1%).

Table 4.2: Critical Care Nurses' Knowledge regarding Nursing Care for Comatose Patients

Table 4.2.1: Critical Care Nurses' Knowledge in relation to General Information about Coma

List	General Information of Coma	Responses	Freq.	%	M.s ± SD	Ass.
1	Coma is defined as	Incorrect	9	5.1	*0.94±0.219*	*Good*
		Correct	169	94.9		
		Total	178	100.0		
2	Which of the following are the most common complications that may occur to a patient in a coma?	Incorrect	33	18.5	*0.81±0.389*	*Good*
		Correct	145	81.5		
		Total	178	100.0		
3	A patient with a head injury and in a coma state, the first indication of increased intracranial pressure (ICP) is	Incorrect	141	79.2	*0.20±0.406*	*Poor*
		Correct	37	20.8		
		Total	178	100.0		
4	One of the following is one of the common causes of coma	Incorrect	100	56.2	*0.43±0.497*	*Moderate*
		Correct	78	43.8		
		Total	178	100.0		
	Total Knowledge about General Information about Coma	Poor	8	4.5	*0.60±0.171*	*Moderate*
		Moderate	101	56.7		
		Good	69	38.8		
		Total	178	100.0		

"(M.s) Mean of Scores, (SD) Standard deviation, Level of Assessment (poor= 0-0.33, moderate=0.34-0.66, good=0.67-1.00)"

Based on statistical mean and standard deviation, this table demonstrated that the critical care nurses expressed a good response regarding their knowledge toward the definition of coma and its most common complication, as indicated by higher mean of scores. While

knowledge in item (the first indication of increased intracranial pressure), nurses expressed a poor level as indicated by low mean of scores and in item of (one of the common causes of coma), nurses expressed a moderate level as indicated by moderate mean of scores.

The overall findings demonstrated that (56.7%) of critical care nurses exhibit moderate knowledge related to general information about coma, as indicated by a moderate mean of score *0.60* (*±0.171*).

Table 4.2.2: Critical Care Nurses' Knowledge regarding Glasgow Coma Scale (GCS)

List	GCS items	Responses	Freq.	%	M.s ± SD	Ass.
1	The Glasgow Coma Scale is used to assess the following	Incorrect	8	4.5	*0.95±0.207*	*Good*
		Correct	170	95.5		
		Total	178	100.0		
2	Each component of the Glasgow Coma Scale contains a number of steps. Which of the following options is correct?	Incorrect	88	49.4	*0.50±0.501*	*Moderate*
		Correct	90	50.6		
		Total	178	100.0		
3	To assess the eye-opening response, the nurse should start with.	Incorrect	134	75.3	*0.24±0.432*	*Poor*
		Correct	44	24.7		
		Total	178	100.0		
4	Which part of the brain is evaluated when assessing the patient's motor response in the Glasgow Coma Scale?	Incorrect	122	68.5	*0.31±0.465*	*Poor*
		Correct	56	31.5		
		Total	178	100.0		
5	Which of the following results of the GCS or below results in which the patient is considered in a state of coma?	Incorrect	126	70.8	*0.29±0.456*	*Poor*
		Correct	52	29.2		
		Total	178	100.0		
6	Which of the results of the Glasgow Coma Scale indicates moderate brain injury?	Incorrect	100	56.2	*0.43±0.497*	*Moderate*
		Correct	78	43.8		
		Total	178	100.0		
7	Which of the following symbols indicates that the eye opening response cannot be assessed in the Glasgow Coma Scale if the patient's eye is swollen?	Incorrect	111	62.4	*0.37±0.485*	*Moderate*
		Correct	67	37.6		
		Total	178	100.0		
8	When assessing the Glasgow Coma Scale for a comatose patient by applying a deep sternum rub, he extends his arms and legs and	Incorrect	103	57.9	*0.42±0.495*	*Moderate*
		Correct	75	42.1		
		Total	178	100.0		

shows no other response. What is the result of GCS for this patient?					
Total Knowledge related to the Glasgow Coma Scale	Poor	68	38.2	*0.44±0.245*	*Moderate*
	Moderate	83	46.6		
	Good	27	15.2		
	Total	178	100.0		

"(M.s) Mean of Scores, (SD) Standard deviation, Level of Assessment (poor= 0-0.33, moderate=0.34-0.66, good=0.67-1.00)"

This table demonstrated that the critical care nurses expressed a moderate response regards knowledge Glasgow Coma Scale, as indicated by moderate mean of scores, except in item of (the use of the Glasgow Coma Scale), the nurses' had a good level, as indicated by high mean of score and a poor level in items number (3, 4, 5), as indicated by a low mean of scores.

The overall findings showed that (46.6%) of critical care nurses exhibit moderate knowledge related to Glasgow Coma Scale, as described by a moderate mean of score *0.44* (*±0.245*).

Table 4.2.3: Critical Care Nurses' Knowledge Concerning Maintaining the Airway Patency of Comatose Patients

List	Maintaining the Airway patency items	Responses	Freq.	%	*M.s ± SD*	*Ass.*
1	When the accumulation of secretions inside the lungs can lead to	Incorrect	121	68.0	*0.32±0.467*	*Poor*
		Correct	57	32.0		
		Total	178	100.0		
2	Which of the following should be taken into account to prevent the airway obstruction in a comatose patient?	Incorrect	60	33.7	*0.66±0.474*	*Moderate*
		Correct	118	66.3		
		Total	178	100.0		
3	When choosing a catheter to suction the patient's endotracheal tube through an open system, which variable will the catheter's size be chosen?	Incorrect	64	36.0	*0.64±0.481*	*Moderate*
		Correct	114	64.0		
		Total	178	100.0		
Total Knowledge related to Maintaining Airway Patency		Poor	73	41.0	*0.54±0.280*	*Moderate*
		Moderate	81	45.5		
		Good	24	13.5		
		Total	178	100.0		

"(M.s) Mean of Scores, (SD) Standard deviation, Level of Assessment (poor= 0-0.33, moderate=0.34-0.66, good=0.67-1.00)"

Based on statistical mean and standard deviation, this table demonstrated that the critical care nurses had moderate responses regards knowledge of maintaining the airway patency of comatose patients, as indicated by moderate mean of scores at all studied items, except in item of (accumulation of secretions inside the lungs) the nurses had poor level, as indicated by low mean of scores.

The overall findings clarified that (45.5%) of critical care nurses revealed moderate knowledge in terms of maintaining the airway patency of comatose patients, as described by a moderate mean of scores *0.54* (*±0.280*).

Table 4.2.4: Critical care nurses' Knowledge regarding Maintaining the Blood Circulation of Comatose Patients

List	Maintaining the Blood Circulation items	Responses	Freq.	%	M.s ± SD	Ass.
1	When developing a care plan to reduce the risk of thrombus formation, which of the following interventions should be undertaken?	Incorrect	146	82.0	0.17±0.385	Poor
		Correct	32	18.0		
		Total	178	100.0		
2	When assessing the patient for circulatory and perfusion problems, what are the findings that indicate poor tissue perfusion?	Incorrect	114	33.7	0.35±0.481	Moderate
		Correct	64	66.3		
		Total	178	100.0		
3	Which of the following complications occurs due to a deep vein thrombosis (DVT)?	Incorrect	99	36.0	0.44±0.498	Moderate
		Correct	79	64.0		
		Total	178	100.0		
Total Knowledge related to Maintaining the Blood Circulation		Poor	145	81.5	0.32±0.275	Poor
		Moderate	20	11.2		
		Good	13	7.3		
		Total	178	100.0		

"(M.s) Mean of Scores, (SD) Standard deviation, Level of Assessment (poor= 0-0.33, moderate=0.34-0.66, good=0.67-1.00)"

As it is shown in findings of this table, the critical care nurses expressed moderate responses regards knowledge of maintaining blood circulation of comatose patients, as indicated by moderate mean of scores at all studied items, except in the item of (developing a care plan to reduce

the risk of thrombus formation), which revealed that the critical care nurses had poor level, as indicated by low mean of scores.

Overall findings of table (4.2.4) about maintaining blood circulation for comatose patients, it was found that (81.5%) of critical care nurses illustrated poor knowledge, as described by a low mean of score *0.32* (*±0.275*).

Table 4.2.5: Critical Care Nurses' Knowledge about Maintaining Fluid Balance of Comatose Patients

List	Maintaining the Fluid Balance items	Responses	Freq.	%	M.s ± SD	Ass.
1	What is the assessment result confirming the diagnosis for a patient in a coma suffering from dehydration?	Incorrect	86	48.3	*0.51±0.501*	*Moderate*
		Correct	92	51.7		
		Total	178	100.0		
2	A comatose patient was diagnosed with excessive fluid volume. Which of the following assessing results confirms the diagnosis?	Incorrect	152	85.4	*0.14±0.354*	*Poor*
		Correct	26	14.6		
		Total	178	100.0		
3	The nurse assesses the fluid balance of a comatose patient by monitoring the fluids input and output the patient. What should the nurse understand about the patient's proportion of fluids input and output?	Incorrect	117	65.7	*0.34±0.475*	*Moderate*
		Correct	61	34.3		
		Total	178	100.0		
Total Knowledge related to Maintaining the Fluid Balance		Poor	137	77.0	*0.33±0.263*	*Poor*
		Moderate	33	18.5		
		Good	8	4.5		
		Total	178	100.0		

"(M.s) Mean of Scores, (SD) Standard deviation, Level of Assessment (poor= 0-0.33, moderate=0.34-0.66, good=0.67-1.00)"

The results of table (4.2.5) presented that the critical care nurses knowledge for all items related to maintaining the fluid balance of comatose patients expressed a moderate response, as indicated by moderate mean of scores, except for the item (a comatose patient was diagnosed with excessive fluid volume), the nurses had poorly knowledge.

The overall results of critical care nurses' knowledge about maintaining the fluid balance of comatose patients in the table (4.2.5),

found that (77%) of them were poorly knowledgeable, as described by a low mean of score 0.33 (±0.263).

Table 4.2.6: Critical Care Nurses' Knowledge regarding Maintaining Nutritional Needs for Comatose Patients

List	Maintaining the nutritional needs items	Responses	Freq.	%	M.s ± SD	Ass.
1	When feeding a comatose patient through the nasogastric tube (N/G Tube), the priority of care should be	Incorrect	99	55.6	*0.44±0.498*	*Moderate*
		Correct	79	44.4		
		Total	178	100.0		
2	Enteral nutrition is preferred over parenteral nutrition whenever possible because enteral nutrition	Incorrect	60	33.7	*0.66±0.474*	*Moderate*
		Correct	118	66.3		
		Total	178	100.0		
3	The comatose patient receives 200 ml of tube feeding every 4 hours. When checking the stomach remains of the patient before giving the scheduled feeding, 40 ml of stomach remains were found. In this case, nurse should be	Incorrect	121	68.0	*0.32±0.467*	*Poor*
		Correct	57	32.0		
		Total	178	100.0		
	Total Knowledge related to Maintaining the Nutritional Needs	Poor	82	46.0	*0.47±0.282*	*Moderate*
		Moderate	85	47.8		
		Good	11	6.2		
		Total	178	100.0		

"(M.s) Mean of Scores, (SD) Standard deviation, Level of Assessment (poor= 0-0.33, moderate=0.34-0.66, good=0.67-1.00)"

The table of (4.2.6) contain (3) items, this table illustrated that the critical care nurses had a moderate response regarding knowledge of maintaining the nutritional needs of comatose patients, as noted by moderate mean of scores at all studied items, except nurses had poor knowledge regarding the item number (3) (receives 200 ml of tube feeding every 4 hours).

The total results of the table (4.2.6) about critical care nurses' knowledge regarding maintaining nutritional needs for comatose patients were found that (47.8%) of nurses had moderate knowledge, as seen by a moderate mean of score 0.47 (±0.282).

Table 4.2.7: Critical Care Nurses' Knowledge in relation to Mouth Care of Comatose Patients

List	Mouth care items	Responses	Freq.	%	M.s ± SD	Ass.
1	What is the main reason for putting the comatose patient in the side-lying position when providing oral care?	Incorrect	45	25.3	0.74±0.435	Good
		Correct	133	74.7		
		Total	178	100.0		
2	What is the first thing a nurse does when cleaning the mouth of a comatose patient	Incorrect	44	24.7	0.75±0.432	Good
		Correct	134	75.3		
		Total	178	100.0		
3	One of the characteristics of sodium bicarbonate as an oral cleaning solution is:	Incorrect	108	60.7	0.39±0.489	Moderate
		Correct	70	39.3		
		Total	178	100.0		
Total Knowledge related to Mouth Care		Poor	55	30.9	0.63±0.230	Moderate
		Moderate	78	43.8		
		Good	45	25.3		
		Total	178	100		

"(M.s) Mean of Scores, (SD) Standard deviation, Level of Assessment (poor= 0-0.33, moderate=0.34-0.66, good=0.67-1.00)"

In current table (4.2.7) declared that the critical care nurses expressed a good response concerning the knowledge of the main reason for putting the comatose patient in the side-lying position when providing oral care and the first thing a nurse did it when cleaning the mouth of a patient in a coma as explained by higher mean of scores. In contrast, nurses had moderate knowledge about sodium bicarbonate as an oral cleaning solution, as shown by mean of scores.

According to the overall findings of the table (4.2.7) indicated that (43.8%) of critical care nurses had a moderate knowledge related to mouth care of comatose patients, as described by a moderate mean of score 0.63 (±0.230).

Table 4.2.8: Critical Care Nurses' Knowledge regarding Protecting the Patient from Injury, and Maintaining Skin and Joint Integrity of Comatose Patients

List	Protecting the patient from injury, and maintaining the skin and Joint integrity	Responses	Freq.	%	M.s ± SD	Ass.
1	When protecting a comatose patient from falling, the following must be done	Incorrect	26	14.6	0.85±0.354	Good
		Correct	152	85.4		
		Total	178	100.0		
2	When preventing pressure ulcers (bed ulcers), the following should be done	Incorrect	40	22.5	0.77±0.418	Good
		Correct	138	77.5		
		Total	178	100.0		
3	When caring for the skin of a comatose patient, the following should be done	Incorrect	93	52.2	0.47±0.500	Moderate
		Correct	85	47.8		
		Total	178	100.0		
4	Which of the following is a goal of the Passive Range of Motion exercises	Incorrect	119	66.9	0.33±0.472	Poor
		Correct	59	33.1		
		Total	178	100.0		
	Total Knowledge regarding Protecting the Patient from Injury, and Maintaining Skin and Joint Integrity of Comatose Patients	Poor	22	12.4	0.60±0.233	Moderate
		Moderate	83	46.6		
		Good	73	41.0		
		Total	178	100.0		

"(M.s) Mean of Scores, (SD) Standard deviation, Level of Assessment (poor= 0-0.33, moderate=0.34-0.66, good=0.67-1.00)"

With regard to statistical mean and standard deviation of this table, it recorded that the critical care nurses had a good reply regarding knowledge of protecting a comatose patient from falling and preventing pressure ulcers (bed ulcers), according to the high mean of scores. While responses to the item of caring for the skin of a comatose patient, nurses expressed moderate levels as described by moderate mean of scores. Whereas, the item the goal of the passive range of motion exercises, nurses had poor level as shown by low mean of scores.

The overall results of table (4.2.8) showed that the (46.6%) of critical care nurses display moderate knowledge related to protecting the patient from injury and maintaining skin and joint integrity for comatose patients, as described by a moderate mean of score *0.60 (±0.233)*.

Table 4.2.9: Critical Care Nurses' Knowledge concerning Eye Care of Comatose Patients

List	Eye care items	Responses	Freq.	%	M.s ± SD	Ass.
1	To prevent drying of the cornea of the eye of a comatose patient, the following must be done	Incorrect	112	62.9	*0.37±0.484*	*Moderate*
		Correct	66	37.1		
		Total	178	100.0		
2	To close the eye of a comatose patient to prevent drying of eye, nurse can use	Incorrect	115	64.6	*0.35±0.479*	*Moderate*
		Correct	63	35.4		
		Total	178	100.0		
3	What is the appropriate method to apply eye drops to a comatose patient?	Incorrect	135	75.8	*0.24±0.429*	*Poor*
		Correct	43	24.2		
		Total	178	100.0		
Total Knowledge related to Eye Care		Poor	133	74.7	*0.32±0.296*	*Poor*
		Moderate	34	19.1		
		Good	11	6.2		
		Total	178	100.0		

"(M.s) Mean of Scores, (SD) Standard deviation, Level of Assessment (poor= 0-0.33, moderate=0.34-0.66, good=0.67-1.00)"

With regard to the statistical mean and standard deviation of this table demonstrated that the critical care nurses exhibited a moderate response regards knowledge of eye care for comatose patients at all studied items, as indicated by moderate mean of scores, except nurses who expressed poor knowledge regarding appropriate method to apply eye drops to a comatose patient (item no.3).

According to the overall findings of the table (4.2.9), illustrated that (74.7%) of critical care nurses had poor knowledge in terms eye care for comatose patients, as described by a low mean of score 0.32 (±0.296).

Table 4.2.10: Critical Care Nurses' Knowledge regarding Maintaining Body Temperature of Comatose Patients

List	Maintaining the Body temperature items	Responses	Freq.	%	M.s ± SD	Ass.
1	Which of the following methods is preferred to be used to measure the temperature of a comatose patient?	Incorrect	90	50.6	*0.49±0.501*	*Moderate*
		Correct	88	49.4		
		Total	178	100.0		
2	What clinical indication is likely to determine when assessing a comatose patient with pyrexia	Incorrect	78	43.8	*0.56±0.497*	*Moderate*
		Correct	100	56.2		
		Total	178	100.0		
3	A comatose patient has a decreased in body temperature. What results does the nurse expect to appear on the patient when assessing vital signs?	Incorrect	68	38.2	*0.61±0.487*	*Moderate*
		Correct	110	61.8		
		Total	178	100.0		
	Total Knowledge related to Maintaining The Body Temperature	Poor	64	36.0	*0.55±0.282*	*Moderate*
		Moderate	89	50.0		
		Good	25	14.0		
		Total	178	100.0		

"(M.s) Mean of Scores, (SD) Standard deviation, Level of Assessment (poor= 0-0.33, moderate=0.34-0.66, good=0.67-1.00)"

This table demonstrated that the critical care nurses expressed a moderate response regarding the knowledge related to maintaining the body temperature of comatose patients, as shown by moderate mean scores at all studied items.

The overall findings illustrated that (50%) of critical care nurses exhibit moderate knowledge regarding maintaining body temperature of comatose patients, as shown by a moderate of mean score 0.55 (±0.282).

Table 4.2.11 :Critical Care Nurses' Knowledge concerning maintaining the Bladder and Bowel Elimination of Comatose Patients

List	Bladder and Bowel Elimination	Responses	Freq.	%	M.s ± SD	Ass.
1	When assessing a comatose patient who was found to have urinary retention, which of the following measures do take?	Incorrect	34	19.1	0.80±0.394	Good
		Correct	144	80.9		
		Total	178	100.0		
2	What is the most common cause of urinary tract infections (UTI)?	Incorrect	78	43.8	0.56±0.947	Moderate
		Correct	100	56.2		
		Total	178	100.0		
3	When evaluating a comatose patient who has an indwelling catheter and finds that the catheter is not performing and the patient's bladder is distended, what should take next?	Incorrect	75	42.1	0.57±0.495	Moderate
		Correct	103	57.9		
		Total	178	100.0		
4	What can be recommended for a patient in whom fecal impaction is suspected?	Incorrect	105	59.0	0.41±0.493	Moderate
		Correct	73	41.0		
		Total	178	100.0		
5	What are the causes of diarrhea for a comatose patient?	Incorrect	95	53.4	0.46±0.500	Moderate
		Correct	83	46.6		
		Total	178	100.0		
6	What interventions should be taken to prevent constipation for a comatose patient?	Incorrect	94	52.8	0.47±0.500	Moderate
		Correct	84	47.2		
		Total	178	100.0		
Total Knowledge related to Bladder and Bowel Elimination		Poor	60	33.7	0.54±0.255	Moderate
		Moderate	79	44.4		
		Good	39	21.9		
		Total	178	100.0		

"(M.s) Mean of Scores, (SD) Standard deviation, Level of Assessment (poor= 0-0.33, moderate=0.34-0.66, good=0.67-1.00)"

In terms of statistical mean and standard deviation, this table exhibited that the critical care nurses expressed a moderate reply regarding knowledge of bladder and bowel elimination of comatose patients, as it clear by moderate mean scores at all studied items, except for nurses' who had good knowledge toward assessing a comatose patient with urinary retention (item no.1).

The overall findings demonstrated that (44.4%) of critical care nurses had moderate knowledge in terms of bladder and bowel elimination

of comatose patients, as described by a moderate mean of score *0.54* (*±0.255*).

Table 4.2.12: Critical Care Nurses' Knowledge regarding Meeting Family Needs of Comatose Patients

List	Meeting Family Needs	Responses	Freq.	%	M.s ± SD	Ass.
1	Family members need information. What are the interventions that best help to meet this need?	Incorrect	59	33.1	*0.66±0.472*	*Moderate*
		Correct	119	66.9		
		Total	178	100.0		
2	When planning care to meet the needs of family members of a comatose patient, the nurse must	Incorrect	57	32.0	*0.67±0.467*	*Good*
		Correct	121	68.0		
		Total	178	100.0		
3	What nursing interventions would support the patient's family in a coma?	Incorrect	105	59.0	*0.41±0.493*	*Moderate*
		Correct	73	41.0		
		Total	178	100.0		
	Total Knowledge related to Meeting Family Needs	Poor	63	35.4	*0.58±0.351*	*Moderate*
		Moderate	64	36.0		
		Good	51	28.6		
		Total	178	100.0		

"(M.s) Mean of Scores, (SD) Standard deviation, Level of Assessment (poor= 0-0.33, moderate=0.34-0.66, good=0.67-1.00)"

The knowledge of the critical care nurses in table (4.2.12) demonstrated a moderate response about meeting the family needs of comatose patients at all studies items, as noted by moderate mean of scores, except that the knowledge in the item of (planning care to meet the needs of family members of a comatose patient), nurses revealed good level as detected by higher mean of scores (item no. 2).

In regarding to overall findings of table (4.2.12), it showed that (36%) of critical care nurses exhibit moderate knowledge related to meeting the family needs of comatose patients, as described by a moderate mean of score *0.58* (*±0.351*).

Table 4.5: Overall Critical Care Nurses' Knowledge regarding Nursing Care for Comatose Patients

Nurses Knowledge	Freq.	%	*M.s ± SD*
Poor	16	9.0	
Moderate	140	78.7	*0.50± 0.132*
Good	22	12.3	
Total	**178**	**100.0**	

"(M.s) Mean of Scores, (SD) Standard deviation, Level of Assessment (poor= 0-0.33, moderate=0.34-0.66, good=0.67-1.00)"

It is apparent from the table (4.5) that out of 178 critical care nurses had 16 (9%) of them had poor knowledge, 140 (78.7%) had moderate knowledge, and 22 (12.3%) had good knowledge. The majority of them (78.7%) expressed a moderate level of knowledge related to nursing care for comatose patients, as noted by a moderate mean of score 0.50 (±0.132).

4.6: Significant Differences in Critical Care Nurses' Knowledge concerning their Socio-Demographic and Professional Variables

Table 4.6.1: Statistical Differences in Critical Care Nurses' Knowledge and their Age (*n=178*)

Age	Source of variance	Sum of squares	d.f	Mean Square	*F-statistic*	*Sig.*
Knowledge	Between Groups	.154	3	.051	.237	.870
	Within Groups	37.644	174	.216		
	Total	37.798	177			

Findings of this table declared that there were no significant differences between critical care nurses' knowledge regarding nursing care for comatose patients and their age groups at a (*p-value=0.870*).

Table 4.6.2: Statistical Differences in Critical Care Nurses' Knowledge with regards their Gender (*n=178*)

variables	Gender	Mean	SD	t-value	d.f	*p-value ≤0.05*
Knowledge	Male	.53	.150	3.346	176	*.001*
	Female	.46	.104			

"SD: Standard deviation, t: t-test, d.f: Degree of freedom, p: Probability value."

Findings illustrated that there were significant differences in critical care nurses' knowledge regarding nursing care for comatose patients based on their gender (t=3.346; p=0.001).

Table 4.6.3: Statistical Differences in Critical Care Nurses' Knowledge and their Marital Status (*n=178*)

Marital Status	Source of variance	Sum of squares	d.f	Mean square	*F-statistic*	*Sig.*
Knowledge	Between Groups	.028	2	.014	.801	.451
	Within Groups	3.094	175	.018		
	Total	3.122	177			

The above table findings showed that there were no significant differences in critical care nurses' knowledge regarding nursing care for comatose patients and their marital status at a (p-value=0.451).

Table 4.6.4: Statistical Differences in Critical Care Nurses' Knowledge with in relation to their Educational Level (*n=178*)

Educational level	Source of variance	Sum of squares	d.f	Mean square	F-statistic	Sig.
Knowledge	Between Groups	.858	2	.429	9.667	.000
	Within Groups	7.767	175	.044		
	Total	8.625	177			

The findings of this table clarified that there were highly significant statistical differences between total critical care nurses' knowledge towards nursing care of comatose patients and educational level at a (*p-value=0.000*).

Table 4.6.5: Statistical Differences in Critical Care Nurses' Knowledge with regards to their Years of Experience in Nursing (*n=178*)

Years of experience	Source of variance	Sum of squares	d.f	Mean square	F-statistic	Sig.
Knowledge	Between Groups	.180	2	.090	1.863	.158
	Within Groups	8.445	175	.048		
	Total	8.625	177			

Findings indicated that there were no significant differences between critical care nurses' knowledge towards nursing care of comatose patients and years of experience in nursing at a (*p-value=0.158*).

Table 4.6.6: Statistical Differences in Critical Care Nurses Knowledge with regards to their Work Unit (*n=178*)

Variables	Group	Mean	SD	t-value	d.f	*p≤0.05*
Knowledge	CCU	.49	.175	*0.086*	176	*.621*
	ICU	.51	.245			

"SD: Standard deviation, t: t-test, d.f: Degree of freedom, p: Probability value."

These results showed that there were no significant differences in critical care nurses' knowledge towards nursing care of comatose patients with regard their work unit (*t=0.086; p=0.621*).

Table 4.6.7: Statistical Differences in Critical Care Nurses Knowledge with regards to their Years of Experience in Current Workplace (*n=178*)

Experience in Workplace	Source of variance	Sum of squares	d.f	Mean square	*F-statistic*	*Sig.*
Knowledge	Between Groups	2.402	2	1.201	.770	.121
	Within Groups	6.223	175	.036		
	Total	8.625	177			

Findings showed that there were no significant differences in critical care nurses' knowledge towards nursing care of comatose patients with regard years of experience in current workplace at a (*p-value=0.121*).

Table 4.6.8: Statistical Differences in Critical Care Nurses' Knowledge with concerning to their Work Shift (*n=178*)

Variables	Group	Mean	SD	t-value	d.f	*p≤0.05*
Knowledge	Morning	.49	.231	.883	176	*.331*
	Evening	.41	.212			

"SD: Standard deviation, t: t-test, d.f: Degree of freedom, p: Probability value."

These findings illustrated that there were no significant differences in critical care nurses' knowledge regarding nursing care of comatose patients with regard their work shift *(t= 0.883; p=0.331)*.

Table 4.6.9: Statistical Differences in Critical Care Nurses' Knowledge with in relation to their Number of Training Courses (*n=178*)

No. training	Source of variance	Sum of squares	d.f	Mean square	*F-statistic*	*Sig.*
Knowledge	Between Groups	1.262	3	.421	9.940	.010
	Within Groups	7.363	174	.042		
	Total	8.625	177			

Findings demonstrated that there were highly significant differences in critical care nurses' knowledge towards nursing care of comatose patients with regard to the number of training courses at a *(p-value=0.010)*.

Chapter Five

Discussion

Chapter Five
Discussion

This chapter discusses the results of the study of critical care nurses' knowledge regarding nursing care for comatose patients in Babylon governorate hospitals, presented in chapter four. In addition, this chapter presents a systematically organized, interpretation, and reasonable discussion of the results with the support from the available literature and related studies.

5.1. Socio-Demographic and Professional Variables of the Study Sample (Table 4-1)

5.1.1. Ages of Critical Care Nurses

The findings showed that the mean age of the study sample is 28.46 (±6.197), and the age between 22 and 29 years old were recorded as the highest percentage (n=132; 74.2%) from all sample (178) of critical care nurses. This might be due to almost of the nurses was graduated from college of nursing and, at the same time, newly recruited nurses were working together at critical care units. The results of this study were similar to the study conducted by Albougami (2019) in Saudi Arabia, in which results showed that the age of participants was between 20 and 30 years old that constituted (n=90; 60.4%) of the whole sample. Furthermore, these results agreed with the study carried out by Majeed (2017) in Baghdad teaching hospitals, who reported that the most of the sample were aged between 20 and 29, which constituted (n=30; 60%) of the whole sample.

In contrast, the results of the current study disagreed with the results of Puspasari (2019) in Indonesia, who reported that the highest age group was between 31 and 40, which was constituted (n=64; 61.54%) of the whole sample.

5.1.2. Gender of Critical Care Nurses

Regarding gender of the participants, about half of the study sample were females (n=91; 51.1%) compared with those who were males (n=87; 48.9%). This high proportion of female nurses is most probably a normal pattern in the nursing profession and supports the traditional belief that nursing is primarily a female profession and might be due to secondary nursing schools only accepting females only until a few years ago. In addition, there were differentiation in the admission of females to colleges and institutes of nursing, so the critical care nurses were mostly feminine. These findings agreed with a study conducted by Liyew *et al.* (2020) in Ethiopia; they found that most gender of their study were females (n= 162; 54.2%) of the whole of their sample. In addition, these findings agreed with the findings of Youssef *et al.* (2014) in Egypt, who showed that most of the participants in their study were females (65.7%).

On the other hand, the current study results were not congruent with the study of Fashafsheh *et al.* (2013) in North Palestine hospitals, who reported that more than half (54.3%) of the studied sample were male.

5.1.3. Marital Status of the Critical Care Nurses

According to marital status, findings showed that the married nurses were highly (n=109; 61.2%) compared with those who were single and divorced; due to cultural issues, being married is a more socially acceptable one in our culture. These results congruent with the study Faris and Hassan (2016), which showed that majority of the participants were married (n=28; 70%) of the whole sample. Similarly, these results agreed with Jaddoue and Ghanim (2011) that conducted in Baghdad, who reported that most of the participants were married.

In contrast, these results were inconsistent with the results of Das *et al.* (2014), who revealed that majority of the participants were unmarried (n=70; 70%) of the whole sample.

5.1.4. Educational Level of Critical Care Nurses

In proportion to educational level, the results showed that the majority of the nurses were holding bachelor's degree (n=96; 53.9%) as compared with those who graduated from nursing schools and nursing diploma. This might be due to the health institutions encouraging the presence of bachelor's graduates in critical care units such as CCU and ICU, as they had more knowledge than the rest of the nursing staff and graduating from the faculty of nursing and had curriculum about how to deal with critical cases. These results supported by the study of Lin *et al.* (2011), who mentioned that nurses with bachelor's degrees in nursing had the major percentage (n=167; 81.5%) of the whole sample. Moreover, a study conducted by Köse *et al.* (2016) found that most nurses had a bachelor's degree (n=50; 68.5%) of the whole sample, this results supported with the current study's findings.

On the other hand, these findings disagreed with Jaddoue and Ghanim (2011) who showed that highly percentage of the nurses participants were secondary school.

5.1.5. Years of Experience of Critical Care Nurses in the Nursing Field

Concerning the years of experience in nursing, the findings revealed that most of the critical care nurses had (1-5) years of experience (n=119; 66.9%). This because most of them were directed to administrative duties and always busy with it furthermore, most of them were newly recruited nurses. The present study results were supported by a study carried out by Ehwarieme et al. (2021), which revealed that (n=138; 65.1%) had (1-5) years of experience in nursing.

Instead, these findings were inconsistent with the findings of Sheta and Mahmoud (2018), who found that (58.3%) of the nurses had years of experience in nursing between 5 to 10 years.

5.1.6. Work Unit of Critical Care Nurses

Concerning the work unit, most of the critical care nurses worked in ICU (n=105; 59%) compared with those who work in CCU (n=73; 41%); this is because numbers (ICU) of nurses in the morning and evening shifts more compared to the CCU in hospitals. These findings congruent with the study conducted by Sedain and Bhusal (2019) that found that 53.2% of the nurses were working in ICU.

5.1.7. Years of Experience of Critical Care Nurses in the Current Workplace

In addition, most of the participants had (1-3) years of experience in current workplace (*n=112*; 62.9%); this may be because most critical care nurses were recently graduated, and their first working area was in critical care units, where the age group (22-29) years was recorded as the highest percentage. In the study conducted by Santos *et al.* (2016) in Brazil, their results were similar with the findings of the current study, which showed that the highly percentage of nurses had (1-3) years working in the same unit (n=57; 44.9%) of the whole sample.

Oppositely, these results disagreed with the study carried out by Köse *et al.* (2016), who revealed that (43.8%) of nurses had been working in the ICU for a period between 2 and 6 years.

5.1.8. Work Shift of Critical Care Nurses

Most nurses was worked in the evening shift (n=95; 53.4%) compared with those who worked in the morning shift; which may be because nurses' evening shifts in the ICU and CCU were working for four-day shifts in the hospitals. The present findings disagreed with the study of

Ibrahim *et al.* (2015), which found that most of the nurses working in the morning shift constituted (n=95; 61.7%) of the whole sample.

5.1.9. Number of Training Courses for Critical Care Nurses

The present study revealed that more than half of critical care nurses did not have any previous training courses (n=98; 55.1%), while less than half of the studied critical care nurses had previous training courses. This is because most critical care nurses are newly hired, and most of them were in evening shifts did not attend training courses. The current study's findings were inconsistent with a study conducted by Jaddoue and Ghanim (2011), who reported that majority (96%) of the studied nurses did not have a training session in nursing care for unconscious patients. In addition, this result was in disagreement with the results of Mohamed *et al.* (2019), which showed that (64.6%) of the studied nurses did not attend training courses compared to (35.4%) of the study sample who never attended any training about coma.

5.2. Critical Care Nurses' Knowledge regarding Nursing Care for Comatose Patients

5.2.1. Critical Care Nurses' Knowledge in relation to General Information about Coma

Most items of nurses' knowledge regarding general information about coma (definition of coma, common causes of coma, most common complications) were agreed with a study carried out by Ali (2011) in Sudan who found that most of nurses' knowledge were good, satisfied, and good knowledge about unconsciousness definition, cause of unconscious and common complications, respectively. This might be justified that nurses had information about the coma from their previous academic studies.

On the other hand, these results disagreed with a study carried out by AL-Hroub and Ycaza (2017) in Jorden, who found that most nurses had poor knowledge about the definition of a comatose patient.

5.2.2 Critical care Nurses' Knowledge regarding Glasgow Coma Scale (GCS)

The overall findings showed that (46.6%) of critical care nurses exhibit moderate knowledge related to Glasgow Coma Scale. According to the results of this study, nurses had moderate knowledge of the GCS is due to the fact that most nurses do not utilize the Glasgow Coma Scale in practice on a regular basis, as well as a lack of ongoing education personal and professional in this field. Consequently, ongoing training and expertise with the GCS instrument are essential.

These results agreed with the study by Sedain and Bhusal (2019) in Nepal, they found that the overall knowledge of nurses toward the Glasgow coma Scale (GCS) was (51.3%) moderate; because most of participants had less or equal to one year of experience in the critical care unit, or it may be because they had a protocol about the Glasgow Coma Scale and did not adhere to it.

Contrary, a study carried out by Singh *et al.* (2016) demonstrated that a slightly more than half of the nurses had poor knowledge about the Glasgow Coma Scale, these results disagreed with the findings of the (GCS) of the current study. The knowledge of critical care nurses to use the GCS for patient consciousness assessments is essential. Therefore, critical care nurses need to have good knowledge to perform their role well in the direction of assessing comatose patients. Likewise, these current study results disagreed with the study of Santos *et al.* (2016), who revealed that most nurses of critical care units had good knowledge about the Glasgow coma scale.

5.2.3. Critical Care Nurses' Knowledge regarding Maintaining the Airway Patency of Comatose Patients

Based on the overall table (4.2.3), the findings clarified that (45.5%) of critical care nurses revealed a moderate knowledge regarding maintaining the airway patency of comatose patients. These findings may guide the development of policies, such as continuing education and the adoption of measures to increase the level of knowledge of these professionals and subsequently, the quality of care given. In addition, the greater the degree of professional instruction, the better the performance for maintaining the airway patency of the comatose patient.

In previous study conducted by Majeed (2017) in Iraq, demonstrated that participants' results had fair knowledge about endotracheal suctioning, as these results supported the findings of maintaining the airway in the current study.

In contrast, study findings of critical care nurses' knowledge concerning maintaining the airway of comatose patients unmatched with results of Nigatu *et al.* (2022) in Ethiopia, which found that 54.9% of the knowledge of the participants towards airway and breathing management was poor.

5.2.4. Critical Care Nurses' Knowledge regarding Maintaining the Blood Circulation of Comatose Patients

The overall findings of the table (4.2.4) in maintaining blood circulation for comatose patients. It was found that (81.5%) of critical care nurses had poor knowledge. This finding is significant because it indicates a recognition of a knowledge gap and a readiness to participate in teaching programs on how to keep comatose patients' blood circulating.

These results supported by Özkan *et al.* (2021) in Turkey, the study revealed that nurses lacked knowledge about hemodynamic monitoring.

In a descriptive study carried out by Al-Mugheed and Bayraktar (2018) about the knowledge of nurses about deep vein thrombosis (DVT) risks and prophylaxis, they found that nurses had low level of knowledge about the prevention of DVT. These results were inconsistent with current findings. These findings can be explain that insufficient in-service training and lack of guidelines in the hospital.

5.2.5. Critical Care Nurses' Knowledge regarding Maintaining Fluid Balance of Comatose Patients

In relation to the overall findings demonstrated that (77%) of critical care nurses exhibit poor knowledge related to maintaining the fluid balance of comatose patients. A study conducted by Sheta and Mahmoud (2018) showed results that before receiving an educational program about body fluid balance assessment for critically ill patients, majority of the nurses had poor knowledge (n=50; 83.3%) of the whole sample and agreed with the findings of maintaining the fluid balance of comatose patients of the present study. While after receiving the educational program majority of the nurses had good knowledge (n=52; 86.7%) and disagreed with current results. This means that knowledge of nurses increased after receiving educational program.

Furthermore, in a quasi-experimental research carried out in Egypt by Abd Elalem and El Gahsh (2018), the results showed that (60.8%) of the nurses had poor knowledge of pre-intervention of body fluid balance and agreed with the results of maintaining the fluid balance of comatose patients of the current study. While (81%) of the nurses had good knowledge after providing an instruction intervention about body fluid balance assessment.

Through the above results, nurses' knowledge of body fluid balance assessment for critically ill patients had improved significantly post-

program implementation. The researcher concluded that educational programs and training courses are considered the two essential components for developing nursing staff and to help them to fill the gap in the knowledge of nurses.

5.2.6. Nurses' Knowledge regarding Maintaining Nutritional Needs of Comatose Patients

The total results of the table (4.2.6) about critical care nurses' knowledge regarding maintaining nutritional needs for comatose patients were found that (47.8%) of nurses had moderate knowledge. These results were in line with previous a cross-sectional study in the Gaza Strip conducted by Naser *et al.* (2021) presented the comparison between nurses and physicians in terms of nutritional knowledge they showed that the most of nurses (54.2%) had moderate knowledge. As result, they had limited nutrition knowledge and nutritional counseling to use in their regular medical practice. The causes for these results include a lack of nutritional issues in graduate curricula and a limitation of internship opportunities.

Moreover, these findings are compatible with a study carried out by Hadera *et al.* (2022), according to their results, approximately two-thirds (67.7%) of respondents had inadequate knowledge of enteral nutrition. In addition, in an Egypt study conducted by Mohammed and Taha (2014), findings revealed that most critical care nurses (52.5%) had unsatisfactory knowledge regarding administration of total parenteral nutrition. These results supported the results regarding maintaining nutritional needs in the current study.

The researcher confirmed that maintaining appropriate nutritional status is essential for improving the clinical outcomes of comatose patients. Maintaining optimum nutrition for comatose patients relies on the critical

care nurses' knowledge of nutritional management and the availability of management protocols.

5.2.7. Critical Care Nurses' Knowledge in relation to Mouth Care of Comatose Patients

According to the overall findings of the table (4.2.7) indicated that (43.8%) of critical care nurses had a moderate knowledge related to mouth care of comatose patients. These findings were in contrast with a study carried out by Sarefho (2011), who reported that only 18% (n=6) were knowledgeable about important aspects of oral care, while the majority 82% (n=28) of nurses lacked knowledge of important aspects of oral care. These knowledge gaps have consequences for providing quality oral care to comatose patients, as nurses lack the necessary knowledge they did not have the skills relating to oral care and thereby compromising patient care outcomes and causing morbidities. Mouth care is vital in comatose patients as it reduces the risk of nosocomial respiratory infections.

A cross-sectional study by Al-Jubouri and Jaafar (2018) in Iraq, revealed that the average percentages representing nurses' knowledge toward oral care for intubated patients were 61%, which the result is inconsistent with the findings of the current study. This is might due to the source of information since more than half of the nurses in this survey (50.8%) said they acquired their information from more experienced nurses. Furthermore, there were significant differences between nurses who got their knowledge from more experienced nurses.

Moreover, the results of the maintaining mouth care of comatose patients in the current study disagreed with a study conducted by Aboalizm and Kasemy (2016), who demonstrated that more than half of nurses had good knowledge about oral care for critically ill patients.

5.2.8. Critical Care Nurses' Knowledge regarding Protecting the Patient from injury and Maintaining Skin and Joint Integrity of Comatose Patients

The overall results of table (4.2.8) showed that the (46.6%) of critical care nurses display moderate knowledge related to protecting the patient from injury and maintaining skin and joint integrity for comatose patients. The quasi-experimental interventional study, conducted among hundred nurses in Sudan by Mousa (2019) found that most of the study group had poor knowledge regarding prevention complications of immobility in the pre-test phase, and improved in the post-test phase, and upgraded in the follow-up phase. This means that the education program increased the knowledge of nurses even in follow-up phase. Findings of current study disagreed with results of this study before receiving educational program.

5.2.9. Critical Care Nurses' Knowledge regarding Eye Care of Comatose Patients

According to the overall findings of the table (4.2.9), it illustrated that (74.7%) of critical care nurses had poor knowledge in terms of eyes care for comatose patients. This because critical care nurses had not sufficient information about eye care, thus, this will affect their performance in how to protect the coma patient from dry eyes.

These findings were inconsistent with the previous study done by Khalil *et al.* (2019) in Egypt who declared that most of nurses had a satisfactory knowledge score regarding eye care for critically ill patients; these results may have relevant to the knowledge acquired by newly graduated bachelor nurses from their nursing curricula.

5.2.10. Critical Care Nurses Knowledge regarding Maintaining Body Temperature of Comatose Patients

The total results in relation to knowledge regarding maintaining the body temperature of comatose patients were that half of the critical care nurses had moderate knowledge. These results agreed with the study carried out by Mohamed and Ali (2012) in Egypt, which revealed that most of the critical care nurses had unsatisfactory knowledge about management of fever; this is due to the fact that no specified protocol for fever management, like administer acetaminophen or ibuprofen as recommended, give cold sponge baths, and use a hypothermia blanket. Regularly check the patient's temperature to assess their reaction to therapy and prevent an extreme temperature decrease and shivering.

5.2.11. Critical Care Nurses' Knowledge concerning Maintaining the Bladder and Bowel Elimination of Comatose Patients

Nurses knowledge in item (when assessing a comatose patient who was found to have urinary retention) were (80.9%) of them had correct answer, while the item of (when evaluating a comatose patient who has an indwelling catheter and finds that the catheter is not performing and the patient's bladder is distended) were (57.9%) of them had correct answer, these results agree with findings items of Abdelmoaty *et al.* (2020), which found nearly same results before intervention about indications of urinary catheters and invasive procedures possible complications, respectively.

Whereas the all findings items that related maintain the bowel elimination were moderate and disagreed with study results of Knowles *et al.* (2015) post-implementation protocol, which found participants had overall knowledge scores significantly higher in post implementation protocol group when compared with the pre implementation group of protocol about bowel management practices in ICU. In recent years, the role of education during service has grown more significant, and nurses

engage in the educational courses, which has a greater impact on their performance.

5.2.12. Critical care nurses Knowledge regarding Meeting the Family Needs of Comatose Patients

In regarding to overall findings of table (4.2.12), it showed that (36%) of critical care nurses exhibit moderate knowledge regarding meeting the family needs of comatose patients. These results did not support with the study conducted by Buckley and Andrews (2011) which demonstrated that the nurses had a good knowledge for the needs of family members.

5.3. Overall Critical Care Nurses' Knowledge regarding Nursing Care for Comatose Patients

According to the table (4.5), it indicated that (78.7%) of critical care nurses expressed a moderate level of knowledge related to nursing care for comatose patients, as noted by a moderate of mean score 0.50 (±0.132). These findings could be due to critical care nurses did not receive sufficient information from the training course and lack of obligation to make evidence-based practice. In addition, it may be due to the presence of different educational levels. Moreover, the fact that continuing education for nurses is required because most of them may forget what they learned in nursing care for comatose patients, or have not paid much attention to the practical aspects.

These findings were in line with the findings of Khemnar (2016), who carried out a study in India, he found that 63% (126) of nurses expressed average knowledge score.

On the other hand, a study conducted in Egypt by Mohamed *et al.* (2019), they found that more than two-thirds of studied nurses had good

knowledge regarding care of comatose children; at the same time this study did not support the findings of the current study.

5.4. Significant Differences in Critical Care Nurses' Knowledge Concerning their Socio-Demographic and Professional Data

On investigating the significant statistical differences of critical care nurses' socio-demographic and professional characteristics with their knowledge regarding nursing care for comatose patients, as a result, the data analysis revealed that a significant difference between critical care nurses' knowledge regarding nursing care for comatose patients with some demographic and professional data at a p-value ≤ 0.05 (educational level, gender, and training course about nursing care for comatose patients). While the other demographical and professional data (age, marital status, experience in nursing, work unit, experience in the current workplace, and work shift) showed no significant difference with critical care nurses' knowledge regarding nursing care for comatose patients at a (p-value > 0.05).

5.4.1. Critical Care Nurses Knowledge and their Age

According to the findings of the one-way analysis of variance (ANOVA) in the table (4.6.1) demonstrated no significant statistical differences in nurses' knowledge concerning nursing care for comatose patients based on age at a (p-value=0.870). The findings of Khemnar (2016), which showed no significant difference between knowledge of nurses about care of unconscious patients and their age. Moreover, in another study done by Khalil *et al.* (2019), also they found no significant difference between knowledge of nurses about eye care of critically ill patients with the age of nurses. All above previous studies used same inferential statistic (one-way ANOVA), at the same time, their results were

consistent with the current study's findings. The researcher confirms that critical care nurses' knowledge regarding nursing care for comatose patients acquired by nurses regardless of their ages.

5.4.2. Critical Care Nurses' Knowledge and their Gender

Regarding to the data analysis by independent sample t-test, findings in the table (4.6.2) illustrated significant differences in critical care nurses' knowledge regarding nursing care for comatose patients based on their gender (t=3.346; p=0.001). It was observed that the male nurses (M=0.53) were significantly more knowledgeable than those who were female (M=0.46). Current results were similar with the findings of study done by Das *et al.* (2014) after their results analysis, found there was a significant association between critical care nurses' knowledge regarding enteral feeding for critically ill patients and their gender.

In contrast, Hien and Chae (2011) conducted a descriptive (cross-sectional) study among 94 Vietnamese nurses, they found that a significant difference between their knowledge about the GCS and gender, but the opposite of the current results, where they found female nurses had a significantly higher knowledge of the GCS than males.

5.4.3. Critical Care Nurses Knowledge and their Marital Status

The data presented in table (4.6.3) showed that there were no significant differences between critical care nurses' knowledge of nursing care for comatose patients and their marital status at a (p-value=0.451). A study published by Sedain and Bhusal (2019), noted that no significant association between nurses' knowledge of the GCS and their marital status. These results agreed with results of the current study.

5.4.4. Critical Care Nurses Knowledge and their Educational Level

As a result of the data analysis, there were highly significant difference in critical care nurses' knowledge regarding nursing care of

comatose patients with regards educational level at a (p-value=0.000). Based on the results, the researcher in this study explains that knowledge of critical care nurses is significantly improved with bachelor graduates (higher knowledge mean scores), unlike for nursing school graduates according to fig. (4.2). May be because nurses who are holding bacholer's degree studied the critical care nursing subjects for a whole semester in their curriculum, therefore, the significant differences between educational level and knowledge were obvious.

Khalil *et al.* (2019) carried out a study in Egypt revealed significant statistical differences in knowledge of nurses about eye care of critically ill patients and their educational levels, where found that the nurses who holding bachelor degree were slightly higher knowledge than technical and diploma nurses. These results were consistent with the results of the present study.

Moreover, Köse *et al.* (2016) supported this study, and they had been found that the significantly difference between educational level of the respondents and their knowledge about preventive interventions for pressure ulcer.

5.4.5. Critical Care Nurses Knowledge and their Years Experience in the Nursing

By using (on-way ANOVA) analysis, the table (4.6.5) demonstrated that there were no significant differences between overall knowledge of critical care nurses regarding nursing care for comatose patients and their years of experience in the nursing at a (p-value=0.158). However, a study conducted by Youssef *et al.* (2014), concluded that no significant correlation was found between years of experience in the nursing and nurses' knowledge of selected positive inotropics. These results matched with the current study's findings.

In contrast, these findings did not supported with the study conducted by Abed (2016) in Baghdad, which expressed that there were significant differences between the nurses' knowledge concerning the Braden scale and their years of experience in nursing. This means that knowledge increases as a result to increased experience among critical care nurses in their nursing field.

5.4.6. Critical Care Nurses Knowledge and their Working Unit (ICU/CCU)

Regarding the difference between critical care nurses Knowledge and working unit, the presented study findings in the table (4.6.6) indicated that there were no significant difference between critical care nurses' knowledge regarding nursing care of comatose patients and their work unit (t=0.086; p=0.621). According to these results, it can be concluded that this finding could be that most of nurses had few years of service in the unit. This explained why there were no statistically significant difference.

Furthermore, the study carried out by Sedain and Bhusal (2019) was in agreement with the present study's findings, which found that no significant association between the knowledge of nurses toward the Glasgow Coma Scale and the working unit.

5.4.7. Critical Care Nurses Knowledge and their Years Experience in Current Workplace

The findings of the table (4.6.7) demonstrated that no significant difference in critical care nurses knowledge of nursing care of comatose patients with regards their years of experience in the current workplace (*p=0.121*). The researcher deduced that most participants had a few years in their current workplace (ICU/ CCU) >3 years. In addition to work stress, which may cause physical, psychological, and social burden, these will not allow them to learn and understand nursing care that provides for comatose

patients. While, Hammod and Mohammed (2016) conducted in "Al-Hussain Teaching Hospital at Nassiryah City", illustrated no significant association among nurses' years of experience in the (ICU) and their knowledge regarding complications prevention of mechanical ventilation at (pre and post-tests). This study was in agreement with the findings of the current study.

5.4.8. Critical Care Nurses Knowledge and their Work Shift

The results highlighted in the table (4.6.8) that no significant difference in nurses knowledge towards nursing care of comatose patients with regard to their work shift *(t= 0.883; p=0.331)*. This can be explained that this may be because most critical care nurses were newly graduated and may be due to the presence of different educational level, furthermore insufficient training sessions for them in both shifts.

However, in a previous study conducted in Iraq by Al-Jubouri and Jaafar (2018), they found that there were significant differences between the participants' work shifts concerning their knowledge of oral care for intubated patients. These results were inconsistent with results of current study.

5.4.9. Critical Care Nurses' Knowledge and their Number of Training Courses

The findings of the table (4.6.9) demonstrated significant differences in nurses' knowledge of nursing care of comatose patients with regard to the number of training courses at a (p-value=0.010). The researcher confirmed that more critical care nurses' training courses significantly increased nurses' knowledge about nursing care for comatose patients according to the fig. (4.3).

In addition, Al-Tameemi and Khudur (2017) in Baghdad found that there was a relationship between nurses' specific training courses in ICUs

with their overall knowledge of the study group toward nursing follow-up to weaning from mechanical ventilation in ICUs at a p-value < 0.05. These findings agreed with the findings of the current study.

Finally, this can illustrated that training sessions, especially in critical care units, may help nurses strengthen their scientific and practical foundation. Therefore, the enhancement toward increasing the number of provided training courses regarding CCUs will improve the quality of care that can be provided to comatose patients, who are totally dependent on nurses.

Chapter Six

Conclusions and Recommendations

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Conclusions and Recommendations

6.1. Conclusions

Based on the study results, the researcher concludes the following:

1. The highly percentage of critical care nurses were aged ranging between 22 and 29 years old, more than half were female nurses. In addition, the most of them were married, and more than half of them were holding bachelor's degree.

2. Most of the study sample had (1-5) years of experience in nursing. Concerning the work unit, a higher percentage of the nurses were working in ICU compared with those who work in CCU.

3. Most of the participants had (1-3) years of experience in the current workplace, most of them worked in the evening shift and the higher percentage of them did not have any training courses in nursing care for comatose patients.

4. Critical care nurses had moderate knowledge regarding general information about coma, Glasgow Coma Scale (GCS), maintaining the airway patency, nutritional needs, mouth care, protecting the patient from injury and maintaining skin and joint integrity, maintaining body temperature, bladder and bowel elimination, and meeting family needs of comatose patients. Whereas, they had poor knowledge towards maintaining the blood circulation, maintaining fluid balance, and eye care for comatose patients.

5. The overall findings of critical care nurses knowledge demonstrated that majority of them expressed a moderate level of knowledge related to nursing care for comatose patients.

6. There were significant statistical differences between critical care nurses' knowledge regarding nursing care for comatose patients with some demographic and professional data at a (p-value $\leq$ 0.05) (gender, educational level, and training course). While the other demographical and professional data (age, marital status, years of experience in the nursing, work unit, experience in the current workplace, and work shift) showed no significant difference with critical care nurses' knowledge regarding nursing care for comatose patients at a (p-value > 0.05).

6.2. Recommendations

Based on the study findings and conclusions, the researcher recommends the following:

1. Continuing to provide special training courses for critical care nurses to increase their knowledge regarding nursing care for comatose patients, especially newly employed nurses in the critical care units (CCUs) they should get training on coma cases and how to providing nursing care.

2. Printing posters containing commonly performed instructions and hang them on the walls of critical care units in order to remember the nurses (e.g. GCS and some procedures).

3. Encouraging nurses to attend and participate in seminars and conferences with senior specialists in training and developing nursing staff who have long experience in teaching comprehensive and integrated nursing care for comatose patients.

4. The hospital management should provide a guideline or booklet containing nursing care for comatose patients.

5. To offer better care in critical care units, the whole nursing team must hold a bachelor's degree because nurses who were college graduated studied the critical care nursing subjects for a whole semester in their curriculum.

6. In the future, additional studies are required for raising the levels of the knowledge and practice of critical care nurses regarding nursing care that provide for comatose patients in order to mitigate comatose patients' morbidity and mortality because these patients are totally dependent on nursing staff.

7. Continuously assess critical care nurses' knowledge in hospitals in order to determine the positive change in their level of knowledge and monetarily or morally reward them.

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Appendices

Appendix (A1): Administrative Arrangements

University of Babylon

College of Nursing

Research Ethics Committee

Issue No:

Date: / /2021

جــامــعة بـــابــل

كـــلية التمريـض

لجنة اخلاقيات البحث العلمي

Approval Letter

To,

Marwan Mahdi Abbas

The Research Ethics committee at the **University of Babylon, College of Nursing** has reviewed and discussed your application to conduct the research study entitled " **Critical Care Nurses' knowledge Regarding Nursing Care for Comatose Patients in Babylon Governorate Hospitals**

The Following documents have been reviewed and approved:

1. Research protocol
2. Research instrument/s
3. Participant informed consent

Committee Decision:

The committee approves the study to be conducted in the presented form. The Research Ethics committee expects to be informed about any changes occurring during the study, any revision in the protocol and participant informed consent.

Prof. Dr. Salma K. Jehad
Chair Committee
College of Nursing
Research Ethical Committee
24 / 1 /2022

Appendix (A2): Administrative Arrangements

Ministry of Higher Education and Scientific Research

وزارة التعليم العالي والبحث العلمي

جمهورية العراق

**University of Babylon
College of Nursing**

جامعة بابل
كلية التمريض
لجنة الدراسات العليا

Ref. No. :

Date: / /

العدد : ٥٢٨
التاريخ : ٢٠ / ١ / ٢٠٢٢

الى / دائرة صحة بابل/ مركز التدريب والتطوير

م/ تسهيل مهمة

تحية طيبة :

يطيب لنا حسن التواصل معكم ويرجى تفضلكم بتسهيل مهمة طالب الماجستير (مروان مهدي عباس) لغرض جمع عينة دراسة الماجستير والخاصة بالبحث الموسوم :

معارف ممرضين العناية الحرجة فيما يتعلق بالعناية التمريضية لمرضى الغيبوبة في مستشفيات محافظة بابل.

Critical Care Nurses' Knowledge Regarding Nursing Care for Comatose Patients in Babylon Governorate Hospitals.

مع الاحترام ...

المرافقات //
• بروتوكول.
• استبانة.

ا.م . د. نهاد محمد قاسم الدوري
معاون العميد للشؤون العلمية والدراسات العليا
٢٠٢٢/١/

صورة عنه الى //
• مكتب السيد العميد للتفضل بالاطلاع مع الاحترام .
• لجنة الدراسات العليا
• الصادرة .

E-mail:nursing@uobabylon.edu.iq

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المكتب 009647711632208

www.uobabylon.edu.iq

Appendix (A3): Administrative Arrangements

جمهورية العراق

Ministry Of Health Babylon Health Directorate Email:- Babel_Healthmoh@yahoo.com Tel:282628 or 282621		وزارة الصحة والبيئة دائرة صحة محافظة بابـــل المديـــر العـــام مركـز التدريب والتنمية البشرية وحدة أدارة البحوث
		العدد : ١١٤
		التاريخ : ٢١ / ١ /٢٠٢٢

مستشفى الامام علي (ع)
مستشفى الأمام الصادق (ع)
مستشفى تري الكفل (ع)
مستشفى الحلة التعليمي
مستشفى مرجان التعليمي
مركز شهيد المحراب لجراحة وقسطرة القلب

م/ تسهيل مهمة

السلام عليكم ...

أشارة الى كتاب جامعة بابل /كلية التمريض / لجنة الدراسات العليا ذي العدد ٥٣٢ في
٢٠٢٢/١/٣٠

نرفق لكم ربطا استمارات الموافقة المبدئية لمشروع البحث العائد للباحث طالب الماجستير (مروان مهدي عباس)

للتفضل بالاطلاع وتسهيل مهمة المومـا أليه من خلال توقيع وختم استمارات أجراء البحث المرفقة في مؤسساتكم وحسب الضوابط والإمكانات لاستحصال الموافقة المبدئية ليتسنى لنا أجراء اللازم على أن لا تتحمل مؤسساتكم أية تبعات مادية وقانونية .... مع الاحترام

المرفقات :
استمارة عدد /٢

الدكتور
محمد عبد الله عجرش
مدير مركز التدريب والتنمية البشرية
/ / ٢٠٢٢

نسخة منه إلى :
● مركز التدريب والتنمية البشرية / وحدة أدارة البحوث مع الأوليات ...

سوزان ٣١/١

دائرة صحة محافظة بابل / مركز التدريب والتنمية البشرية // ايميل المركز babiltrainning@gmail.com

Appendix (A4): Administrative Arrangements

جمهورية العراق

Ministry Of Health **Babylon Health Directorate** Email:- Babel_Healthmoh@yahoo.com Tel:282628 or 282621		وزارة الصحة والبيئة دائرة صحة محافظة بابـــل المديــر العــام مركــز التدريب والتنمية البشرية وحدة أدارة البحوث العدد : ١١٤ التاريخ : ٢١ / ١ / ٢٠٢٢

إلى / مستشفى الامام علي (ع)
مستشفى الأمام الصادق (ع)
مستشفى زيد الكتبي (علم
مستشفى الحلة التعليمي
مستشفى مرجان التعليمي
مركز شهيد المحراب لجراحة وقسطرة القلب

م/ تسهيل مهمة

السلام عليكم ...

أشارة الى كتاب جامعة بابل /كلية التمريض / لجنة الدراسات العليا ذي العدد ٥٣٢ في ٢٠٢٢/١/٣٠

نرفق لكم ربطا استمارات الموافقة المبدئية لمشروع البحث العائد للباحث طالب الماجستير (مروان مهدي عباس)

للتفضل بالاطلاع وتسهيل مهمة المومى أليه من خلال توقيع وختم استمارات أجراء البحث المرفقة في مؤسساتكم وحسب الضوابط والإمكانات لاستحصال الموافقة المبدئية ليتسنى لنا أجراء اللازم على أن لا تتحمل مؤسساتكم أية تبعات مادية وقانونية ...مع الاحترام

المرفقات :
استمارة عدد ٢/

الدكتور
محمد عبد الله عجرش
مدير مركز التدريب والتنمية البشرية
/ / ٢٠٢٢

نسخة منه إلى :
• مركز التدريب والتنمية البشرية / وحدة أدارة البحوث مع الأوليات ...

سوسن ٣١/١

دائرة صحة محافظة بابل / مركز التدريب والتنمية البشرية // ايميل المركز babiltrainning@gmail.com

Appendix (A5): Administrative Arrangements

جمهورية العراق

Ministry Of Health Babylon Health Directorate Email:- Babel_Healthmoh@yahoo.com Tel:282628 or 282621		وزارة الصحة والبيئة دائرة صحة محافظة بابـــل المديـــر الـعـــام مركــز التدريب والتنمية البشرية وحدة أدارة البحوث
		العدد : ١١٤
		التاريخ : ٢١ / ١ / ٢٠٢٢

إلى / مستشفى الأمام الصادق (ع)
مستشفى الحلة التعليمي
مستشفى مرجان التعليمي
مركز شهيد المحراب لجراحة وقسطرة القلب

م/ تسهيل مهمة

السلام عليكم ...

أشارة الى كتاب جامعة بابل /كلية التمريض / لجنة الدراسات العليا ذي العدد ٥٣٢ في ٢٠٢٢/١/٣٠

نرفق لكم ربطا استمارات الموافقة المبدئية لمشروع البحث العائد للباحث طالب الماجستير **(مروان مهدي عباس)**
للتفضل بالاطلاع وتسهيل مهمة المومى أليه من خلال توقيع وختم استمارات أجراء البحث المرفقة في مؤسساتكم وحسب الضوابط والإمكانات لاستحصال الموافقة المبدئية ليتسنى لنا أجراء اللازم على أن لا تتحمل مؤسساتكم أية تبعات مادية وقانونية .... مع الاحترام

المرفقات :
استمارة عدد ٢/

الدكتور
محمد عبد الله عجرش
مدير مركز التدريب والتنمية البشرية
/ / ٢٠٢٢

نسخة منه إلى :
• مركز التدريب والتنمية البشرية / وحدة أدارة البحوث مع الأوليات ...

Appendix (A6): Administrative Arrangements

جمهورية العراق

وزارة الصحة والبيئة دائرة صحة محافظة بابـــل المديـــر العـــام مركـز التدريب والتنمية البشرية وحدة أدارة البحوث		Ministry Of Health Babylon Health Directorate Email:- Babel_Healthmoh@yahoo.com Tel:282628 or 282621
العدد : ٦١٤		
التاريخ : ٢٠٢٢/ ١ / ٢١		

إلى / مستشفى الامام علي (ع)
مستشفى الأمام الصادق (ع)
مستشفى ذي الكفل العام
مستشفى الحلة التعليمي
مستشفى مرجان التعليمي
مركز شهيد المحراب لجراحة وقسطرة القلب

م/ تسهيل مهمة

السلام عليكم ...

أشارة الى كتاب جامعة بابل /كلية التمريض / لجنة الدراسات العليا ذي العدد ٥٣٢ في ٢٠٢٢/١/٣٠

نرفق لكم ربطا استمارات الموافقة المبدئية لمشروع البحث العائد للباحث طالب الماجستير (مروان مهدي عباس)

للتفضل بالاطلاع وتسهيل مهمة الموما أليه من خلال توقيع وختم استمارات أجراء البحث المرفقة في مؤسساتكم وحسب الضوابط والإمكانات لاستحصال الموافقة المبدئية ليتسنى لنا أجراء اللازم على أن لا تتحمل مؤسساتكم أية تبعات مادية وقانونية .... مع الاحترام

المرفقات :
استمارة عدد /٢

الدكتور
محمد عبد الله عجرش
مدير مركز التدريب والتنمية البشرية
٢٠٢٢ / /

٤٥٩

نسخة منه إلى :
• مركز التدريب والتنمية البشرية / وحدة أدارة البحوث مع الأوليات ...

سوئزان ١/٣١

Appendix (A7): Administrative Arrangements

جمهورية العراق

Ministry Of Health
Babylon Health Directorate
Email:-
Babel_Healthmoh@yahoo.com
Tel:282628 or 282621

وزارة الصحة والبيئة
دائرة صحة محافظة بابـــل
المديـــر العـــام
مركـز التدريب والتنمية البشرية
وحدة أدارة البحوث

العدد : ١١٢

التاريخ : ٢١/ ١ /٢٠٢٢

الى / مستشفى الأمام الصادق (ع)
مستشفى ذي الكفل العام
مستشفى الحلة التعليمي
مستشفى مرجان التعليمي
مركز شهيد المحراب لجراحة وقسطرة القلب

م/ تسهيل مهمة

السلام عليكم ...

أشارة الى كتاب جامعة بابل /كلية التمريض / لجنة الدراسات العليا ذي العدد ٥٣٢ في ٢٠٢٢/١/٣٠

نرفق لكم ربطا استمارات الموافقة المبدئية لمشروع البحث العائد للباحث طالب الماجستير (مروان مهدي عباس)

للتفضل بالاطلاع وتسهيل مهمة المومأ أليه من خلال توقيع وختم استمارات أجراء البحث المرفقة في مؤسساتكم وحسب الضوابط والإمكانات لاستحصال الموافقة المبدئية ليتسنى لنا أجراء اللازم على أن لا تتحمل مؤسساتكم أية تبعات مادية وقانونية .... مع الاحترام

المرفقات :
استمارة عدد ٢/

الدكتور
محمد عبد الله عجرش
مدير مركز التدريب والتنمية البشرية
/ / ٢٠٢٢

نسخة منه إلى :
• مركز التدريب والتنمية البشرية / وحدة أدارة البحوث مع الأوليات ...

سونان ١/٣١

دائرة صحة محافظة بابل / مركز التدريب والتنمية البشرية // ايميل المركز babiltrainning@gmail.com

Appendix (A8): Administrative Arrangements

جمهورية العراق

Ministry Of Health Babylon Health Directorate Email:- Babel_Healthmoh@yahoo.com Tel:282628 or 282621		وزارة الصحة والبيئة دائرة صحة محافظة بابـــل المديـــر العـــام مركـــز التدريب والتنمية البشرية وحدة أدارة البحوث العدد : ١١٤ التاريخ : ٢١ / ١ / ٢٠٢٢

إلى / مستشفى الأمام الصادق (ع)

مستشفى ذي قار العام

مستشفى الحلة التعليمي

مستشفى مرجان التعليمي

مركز شهيد المحراب لجراحة وقسطرة القلب

م/ تسهيل مهمة

السلام عليكم ...

أشارة الى كتاب جامعة بابل /كلية التمريض / لجنة الدراسات العليا ذي العدد ٥٣٢ في
٢٠٢٢/١/٣٠

نرفق لكم ربطا استمارات الموافقة المبدئية لمشروع البحث العائد للباحث طالب الماجستير **(مروان مهدي عباس)**

للتفضل بالاطلاع وتسهيل مهمة الموما أليه من خلال توقيع وختم استمارات أجراء البحث المرفقة
في مؤسساتكم وحسب الضوابط والإمكانات لاستحصال الموافقة المبدئية ليتسنى لنا أجراء اللازم
على أن لا تتحمل مؤسساتكم أية تبعات مادية وقانونية .... مع الاحترام

المرفقات :

استمارة عدد ٢/

الدكتور

محمد عبد الله عجرش

مدير مركز التدريب والتنمية البشرية

/ / ٢٠٢٢

نسخة منه إلى :

● مركز التدريب والتنمية البشرية / وحدة أدارة البحوث مع الأوليات ...

دائرة صحة محافظة بابل / مركز التدريب والتنمية البشرية // ايميل المركز babiltrainning@gmail.com

Appendix (A9): Administrative Arrangements

جمهورية العـــراق		
Ministry Of Health Babylon Health Directorate Email:- Babel_Healthmoh@yahoo.com Tel:282628 or 282621		وزارة الصحة والبيئة دائرة صحة محافظة بابـــل المديـــر العـــام مركــز التدريب والتنمية البشرية لجنة البحوث

استمارة رقم :- ٠٣ /٢٠٢١

رقم القرار :- ٦>

تاريخ القرار :- /٤٤/ ٢٠٢٢

قرار لجنة البحوث

تحية طيبة ...

درست لجنة البحوث في دائرة صحة بابل مشروع البحث ذي الرقم (٢٥ /٢٠٢٢ بابل) المعنـــون (معارف ممرضين العناية الحرجة فيما يتعلق بالعناية التمريضية لمرضى الغيبوبة في مستشفيات محافظة بابل) والمقـــدم مـــن الباحـــث(مروان مهدي عباس) إلى وحدة أدارة البحوث والمعرفي مركز التدريب والتنمية البشرية في دائرة صحة بابل بتاريخ ٢٠٢٢/٢/١٠ وقررت :

قبول مشروع البحث أعلاه كونه مستوفيا للمعايير المعتمدة في وزارة الصحة والخاصة بتنفيذ البحوث ولا مانع من تنفيذه في مؤسسات الدائرة .

مـــع الاحتـــرام
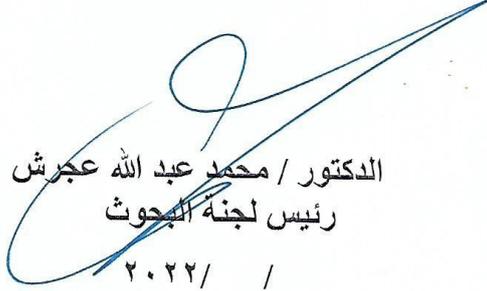
الدكتور / محمد عبد الله عجرش
رئيس لجنة البحوث
٢٠٢٢/   /

نسخة منه إلى :
●مكتب المدير العام / مركز التدريب والتنمية البشرية / وحدة إدارة البحوث ... مع الأوليات.

سوزان

دائرة صحة محافظة بابل / مركز التدريب والتنمية البشرية // ايميل المركز babiltrainning@gmail.com

Appendix (B): Questionnaire

عزيزي الممرض/عزيزتي الممرضة

تحية طيبة...

نعرض على حضراتكم الاستبانة لدراسة البحث الموسوم:-

(Critical Care Nurses' knowledge regarding Nursing Care for Comatose Patients in Babylon Governorate Hospitals)

(معارف ممرضين العناية الحرجة فيما يتعلق بالعناية التمريضية لمرضى الغيبوبة في مستشفيات محافظة بابل)

يرجى منكم التفضل بالإجابة على الأسئلة والفقرات الواردة فيها بكل نزاهة وموضوعية، ونؤكد على أن الغرض الأساسي لهذه الاستبانة، هي لأغراض البحث العلمي فقط ، وستحظى الإجابات بالسرية التامة. آملين منكم العمل على قراءة الاستبانة بتمعن قبل الإجابة عليها وإحاطتها بالجدية والاهتمام والمصداقية لغرض الوصول إلى نتائج حقيقية وواقعية معبرة عن الواقع.

- قدم اجابة واحدة فقط لكل سؤال متعدد الخيارات

مع التقدير

هل توافق بالمشاركة: نعم [ ]   لا [ ]

الباحث: مروان مهدي عباس

ماجسير تمريض صحة البالغين

كلية التمريض/ جامعة بابل

Appendix (B)

الاستبيان باللغة العربية

الجزء الاول:- البيانات الديموغرافيه و المهنية للممرضين العاملين في وحدات العناية الحرجة:-

ضع علامة (✓) في المكان المناسب لإجابتك

١ ـ العمر: سنة [   ]

٢ ـ الجنس: ذكر [   ] انثى [   ]

٣ ـ الحالة الاجتماعية: ـ

أعزب [   ] متزوج [   ] مطلق [   ] منفصل [   ] أرمل [   ]

٤ ـ المستوى التعليمي: ـ

بكالوريوس تمريض [   ]

معهد تمريض [   ]

إعدادية تمريض [   ]

٥ ـ عدد سنوات الخبرة في المجال التمريضي [   ] سنة

٦ ـ الوحدة التي تعمل بها :

وحدة العناية التاجية (CCU) [   ]

وحدة العناية المركزة (ICU) [   ]

٧ ـ عدد سنوات الخبرة في الوحدة الحالية التي تعمل بها [   ] سنة

٨ ـ الدوام: ـ صباحي [   ] **مسائي** [   ]

٩ ـ عدد الدورات التعليمية فيما يخص العناية بالمريض المصاب بالغيبوبة [   ] **دورة**

الجزء الثاني :ـ معارف ممرضين العناية الحرجة فيما يتعلق بالعناية التمريضية بمرضى الغيبوبة

ضع دائرة (⬭) حول الحرف الذي يضم الإجابة الصحيحة

اولا: ـ معلومات عامة حول الغيبوبة:

١ـ تعرف الغيبوبة بأنها:

أ.   هي حالة سريرية من عدم الاستجابة يكون فيها المريض غير مدرك لذاته أو البيئة المحيطة به لفترات طويلة (أيام إلى شهور أو حتى سنوات).

ب.   تغير غير ملحوظ في درجة وعي المريض بنفسه والبيئة من حوله

ج.   حالة طبية غير طارئة

٢ ـ أي المضاعفات الاتية الاكثر شيوعا التي قد تحدث للمريض في حالة الغيبوبة؟

أ.   التهاب الجهاز التنفسي

ب.   قرحة الفراش (bed sore)

ج.   خثرة الأوردة العميقة (DVT)

٣ـ مريض مصاب بإصابة في الرأس وفي حالة غيبوبة، أول مؤشر على زيادة الضغط داخل الجمجمة (ICP)هو: -

أ.   صداع الراس.

ب.   تغيير في مستوى الوعي (LOC).

ج.   استجابة بؤبؤ العين للضوء تكون بطيئة.

٤ـتعتبر أحد الأسباب الآتية من الأسباب الشائعة للغيبوبة:

أ.   السكتة الدماغية (stroke)

ب.   فرط ضغط الدم (HTN)

ج.   نقص السكر في الدم.

ثانيا:ـ مقياس كلاسكو للغيبوبة (GCS)

١ـ يستخدم مقياس كلاسكو للغيبوبة (Glasgow Coma Scale) لتقييم الآتي: -

أ.   درجة الإدراك

ب.   التغيرات العقلية

ج.   التغيرات المزاجية

٢ ـ يحتوي كل مكون من مكونات كلاسكو للغيبوبة على عدد من الخطوات، أي خيار من الخيارات الاتية هو الصحيح؟

أ.   استجابة فتح العين=٥، الاستجابة اللفظية=٤ ، الاستجابة الحركية= ٦.

ب.   استجابة فتح العين=٤ ، الاستجابة اللفظية= ٥، الاستجابة الحركية= ٥.

ج.   استجابة فتح العين= ٤، الاستجابة اللفظية= ٥، الاستجابة الحركية= ٦.

٣ـ لتقييم استجابة فتح العين ، يجب على الممرض أن يبدأ بـ:

أ. اطلب من المريض شفهياً أن يفتح عينيه

ب. استخدم المنبهات المؤلمة

ج. الوقوف بجانب سرير المريض

٤ـ أي جزء من أجزاء الدماغ يتم تقييمه عند تقييم الاستجابة الحركية للمريض في مقياس كلاسكو للغيبوبة ؟

أ. الفص القذالي (الفص الخلفي)   ب. المخيخ   ج. المسارات الحسية

٥ـ أي نتيجة من نتائج مقياس كلاسكو للغيبوبة الاتية او دونها يعتبر فيها المريض في حالة غيبوبة؟

أ. ١٠   ب. ٣   ج. ٨

٦ـ أي نتيجة من نتائج مقياس كلاسكو للغيبوبة تدل على إصابة الدماغ متوسطة الشدة (Moderate)؟

أ. ٨   ب. ١٠   ج. ١٣

٧ـ أي الرموز الاتية تدل على انه لا يمكن تقييم استجابة فتح العين (eye opening response) في مقياس كلاسكو للغيبوبة اذا كانت عين المريض متورمة؟

أ. T   ب. C   ج. D

٨ـ عند تقييم مقياس كلاسكو للغيبوبة لمريض في حالة غيبوبة وذلك بتطبيق فرك عميق لمنطقة عظم القص، فانه يمد ذراعيه وساقية ولا يظهر أي استجابة أخرى، ما نتيجة مقياس كلاسكو للغيبوبة لهذا المريض؟

أ. ٢   ب. ٣   ج. ٤

ثالثا :ـ الحفاظ على مجرى الهواء

١ـ عند تراكم الإفرازات داخل الرئتين تؤدي إلى:

أ. الانخماص الرئوي (Atelectasis) (فشل في توسع الرئة)

ب. الاستنشاق(Aspiration) (نزول الإفرازات الى الرئتين)

ج. فشل في الجهاز التنفسي.

٢ـ أي مما يلي يجب مراعاته لمنع انسداد مجرى الهواء لدى مريض الغيبوبة؟

أ. رفع الرأس على السرير ٣٠ درجة

ب. وضع المريض في وضع جانبي

ج- كلاهما

٣ـ عندما تختار قسطرة لاستخدامها في شفط أنبوب القصبة الهوائية للمريض عبر نظام مفتوح، أي متغير سوف يتم اختيار حجم القسطرة المراد استخدامها؟

أ. عمر المريض

ب.   حجم انبوبة الرغامي او انبوبة القصبة الهوائية (Endotracheal tube)

ج.   نوع الإفرازات المراد شفطها

رابعا :ـ الحفاظ على الدورة الدموية

١ ـ عند القيام بوضع خطة عناية لتقليل مخاطر تكوين الخثرة، أي التدخلات الاتية يجب اجراؤها ؟

أ.   الحافظ على ثني وركي وركبتي المريض أثناء وجوده في السرير.

ب.   تطبيق أجهزة الضغط بشكل متسلسل على اطراف المريض.

ج.   إعطاء الأدوية المضادة للتخثر كما هو مطلوب.

٢ ـ عند تقييم مريض في حالة غيبوبة لمشاكل الدورة الدموية والتروية، ما هي النتائج التي تشير إلى ضعف التروية الدموية في الأنسجة؟

أ.   ضغط الدم ١٠٢/٦٤ ملم زئبق

ب.   معدل النبض ١٠٤ نبضة / دقيقة

ج.   تباطؤ إعادة تعبئة الشعيرات الدموية (Slowed capillary refill)

٣ ـ أي من المضاعفات الاتية تحدث نتيجة الخثرة الوريدية العميقة (DVT)؟

أ.   احتشاء عضلة القلب (Myocardial infarction)

ب.   الفشل الكلوي (Renal failure)

ج.   الانسداد الرئوي (pulmonary embolism)

خامسا :ـ الحفاظ على توازن السوائل

١ ـ ما هي نتيجة التقييم التي تؤكد التشخيص لمريض في حالة غيبوبة يعاني من الجفاف؟

أ.   لزوجة وجفاف الاغشية المخاطية في الفم Dry, sticky mucous membranes

ب.   زيادة الادرار Polyuria

ج.   انخفاض معدل نبضات القلب

٢ ـ تم تشخيص مريض في حالة غيبوبة بزيادة حجم السوائل، أي من نتائج التقييم الاتية تؤكد التشخيص؟

أ.   ضعف مرونة الجلد (Poor Skin turgor)

ب.   انخفاض انتاج البول

ج.   تورم أوردة العنق

٣ ـ يقوم الممرض بتقييم توازن السوائل لمريض في حالة غيبوبة من خلال مراقبة السوائل الداخلة والناتجة من المريض، ما الذي يجب أن يفهمه الممرض حول نسبة السوائل الداخلة والناتجة من المريض؟

أ.   يجب أن تكون السوائل الداخلة أكثر بقليل من السوائل الناتجة من المريض

ب.   يجب أن تكون السوائل الداخلة أقل من انتاج البول

ج.   يجب أن تكون السوائل الداخلة مساوية لإنتاج البول

سادسا :ـ الاحتياجات الغذائية

١ ـ ينبغي عند تغذية مريض في حالة غيبوبة عن طريق الأنبوب الأنفي-المعدي (N/G Tube) فإن أولوية العناية ينبغي ان تكون ب:

أ.   فحص الانبوب الانفي – المعدي (NG tube) قبل وبعد التغذية.

ب.   وضع المريض في وضع شبه جالس (رفع الراس بزاوية 30 درجة) عندما نعطي التغذية.

ج.   غسل الانبوب الانفي- المعدي(ب 30 مل) ماء دافق قبل وبعد التغذية.

٢ ـ تفضل التغذية المعوية على التغذية الوريدية كلما أمكن ذلك بسبب التغذية المعوية:ـ

أ.   أكثر إرضاءً للمريض.

ب.   يقلل من مخاطر الأمراض المنقولة بالغذاء.

ج.   تحافظ على وظيفة القناة الهضمية وسلامتها.

٣ ـ يتلقى المريض المصاب بالغيبوبة ٢٠٠ مل من التغذية الأنبوبية كل ٤ ساعات، عند التحقق من بقايا المعدة للمريض قبل اعطاء التغذية المجدولة وجد ٤٠ مل من بقايا المعدة، في هذه الحالة عليك:

أ.   تخلص من البقايا واستمر في التغذية.

ب.   تأخير إطعام المريض لمدة ساعة ثم إعادة فحص المتبقي.

ج.   أعد الغذاء المتبقي للمريض واستمر في التغذية.

سابعا :ـ العناية بالفم

١ ـ ما هو السبب الرئيسي لوضع مريض في حالة الغيبوبة في وضع الاستلقاء الجانبي عند تقديم العناية بالفم؟

أ.   لتسهيل الوصول إلى تجويف الفم

ب.   لتقليل الترسبات في الفم

ج.   لتقليل مخاطر دخول مواد الى الجهاز التنفسي (aspiration)

٢ ـ يُعتبر أول عمل يقوم به الممرض عند القيام بتنظيف فم مريض في حالة الغيبوبة هو:ـ

أ.   سحب السوائل والافرازات من الفم.

ب.   السيطرة على رائحة الفم.

ج.   وضع المواد المطهرة والمضادة للبكتريا مثل الكلورهيكسيدين (Chlorhexidine) في فم المريض

٣ ـ من خصائص بيكربونات الصوديوم كمحلول تنظيف فموي: ـ

أ.   يزيد من لزوجة مخاط الفم

ب.   مضاد للجراثيم

ج.   يحد من حموضة الفم الزائدة

ثامنا :ـ حماية المريض والمحافظة على سلامة الجلد والمفاصل

١ ـ يتوّجب عند حماية المريض في حالة الغيبوبة من السقوط القيام ب:

أ.   رفع القضبان الجانبية (bedsides) لحماية المريض ثم مراقبته باستمرار.

ب.   تقييد حركة المريض باستخدام اربطه.

ج.   أخذ الحذر والوقاية للحفاظ على سلامة المريض.

٢ ـ ينبغي عند منع قرحة الضغط (قرحة الفراش) القيام ب:

أ.   تغيير وضعية المريض كل 2 ساعة.

ب.   تقليب المريض كل ٤ ساعات وزيادة تناول السعرات الحرارية للحفاظ على حالة الجلد بصورة طبيعية.

ج.   زيادة تناول الفيتامينات والمعادن للمريض مع الحفاظ على وضع المريض بوضع شبة جالس.

٣ـعند العناية بجلد مريض في حالة غيبوبة يتم عمل الآتي:

أ.   لبس جوارب ضاغطة

ب.   عمل مساج للجسم لتنشيط الدورة الدموية

ج.   كلاهما

٤ـ أي مما يلي هو هدف من تمارين النطاق السلبي للحركة (Passive Range Of Motion)؟

أ.   منع ضمور العضلات

ب.   تعزيز حركة السائل الزليلي لتغذية الغضروف المفصلي

ج.   تحسين أداء العضلات

تاسعا :ـ العناية بالعين

١ـيتوجب عند منع جفاف قرنية عين المريض المصاب بالغيبوبة القيام ب:

أ.   تنظيف العين بكرة قطنية مبللة بمحلول ملحي معقم (N/S) من الداخل الى الخارج

ب.   غلق عين المريض باللاصق الطبي (Plaster)

ج.   استخدام كريم طبي للعين(كمضاد حيوي)

٢ـ لغلق عين المريض في حالة الغيبوبة اللممرض يستطيع ان يستخدم:-

أ.   رقعة العين(eye patch)

ب.   شريط الغطاء (lid taping)

ج.   كلاهما

٣ـ ما هي الطريقة المناسبة لوضع قطرة العين لمريض في حالة غيبوبة؟

أ.   وضع قطرة في الزاوية الداخلية لعين المريض

ب.   وضع قطرة العين في الجفن العلوي

ج.   وضع قطرة العين في تجويف الجفن السفلي

عاشرا:ـ تنظيم درجة الحرارة

١ـ أي طريقة من الطرق الاتية يفضل استخدامها لقياس درجة حرارة لمريض في حالة غيبوبة ؟

أ.   عن طريق الشرج Rectal

ب.   عن طريق الفم Oral

ج.   عن طريق الابط Axillary

٢ ـ ما هو المؤشر السريري الذي ستحدده على الأرجح عند تقييم مريض في حالة غيبوبة مصاب بالحمى (pyrexia)؟

أ.   ضيق التنفس.

ب.   زيادة معدل نبضات القلب.

ج.   ارتفاع ضغط الدم.

٣ـ مريض في حالة غيبوبة لدية انخفاض في درجة حرارة الجسم، أي النتائج تتوقع ظهورها على المريض عند تقييم العلامات الحيوية؟

أ.   زيادة معدل ضربات القلب وزيادة ضغط الدم

ب.   زيادة معدل ضربات القلب وانخفاض ضغط الدم

ج.   انخفاض معدل ضربات القلب وانخفاض ضغط الدم

احد عشر:ـ افراغ المثانة واخراج الامعاء

١ـ عند تقييم مريض في حالة غيبوبة وجد لدية احتباس بولي، أي الاجراءات الاتية تتخذها؟

أ.   اعطاء كمية محدودة من السوائل.

ب.   استخدام قسطرة بولية.

ج.   اعطاء دواء مدرر للبول.

٢ ـ ما هو العامل الأكثر تسببا لحدوث التهابات المسالك البولية (UTIs)؟

أ   ركود البول

ب.   استخدام القسطرة البولية

ج.   كمية السوائل المتناولة

٣ـ عند تقييم مريض في حالة غيبوبة لدية قسطرة بولية مستقرة (Indwelling catheter) وتجد أن القسطرة لا تنفذ وأن مثانة المريض منتفخة، ما الإجراء الذي يجب أن تتخذه بعد ذلك؟

أ.   تفقد القسطرة بحثًا عن مكامن الخلل إلتواء او ما شابة وتأكد من التدفق الهابط.

ب.   تغيير القسطرة في أسرع وقت ممكن.

ج.   إخبار الطبيب.

٤ـ ما الذي يمكن أن يوصى به للمريض الذي يشتبه في حدوث انحشار البراز فيه؟

أ.   منظار المعدة

ب.   ابتلاع الباريوم

ج.   الفحص المستقيم Digital examination of the rectum

٥ـ ما هي أسباب الإسهال لمريض في حالة غيبوبة؟

أ.   استخدام المضادات الحيوية

ب.   قصور الغدة الدرقية (Hypothyroidism)

ج.   التقليل من تناول السوائل

٦ ـ ما هي التدخلات التي يجب اجراؤها لمنع الإمساك لمريض في حالة غيبوبة؟

أ.   اعطاء ملينات البراز(Stool softener administration)

ب.   استخدام حقنة شرجية (Enema)

ج.   زيادة الكربوهيدرات في النظام الغذائي

اثنتا عشر: تلبية احتياجات الأسرة:-

١ ـأفراد الأسرة بحاجة للمعلومات، ما هي التدخلات التي تساعد بشكل أفضل لتلبية هذه الحاجة؟

ا.   توفير تحديث يومي لتقدم حالة المريض وتسهيل التواصل مع المختص

ب.   إخبارهم بأنه غير مسموح لك بإعطائهم تقرير حالة المريض

ج.   تدوين قائمة بجميع الأدوية والجرعات الجديدة وإعطاء القائمة لأفراد الأسرة أثناء الزيارة

٢ ـعند التخطيط للعناية من اجل تلبية احتياجات أفراد أسرة مريض في حالة غيبوبة ، يجب على الممرض :

أ.   التعبير عن موقف الأمل والصدق والتواصل المفتوح والاهتمام.

ب.   تقليص عدد الزوار على غيرهم من الأشخاص المهمين.

ج.   التواصل مع فرد واحد من أفراد الأسرة لتقليل الوقت الضائع في إعادة المعلومات لجميع الزوار.

٣ ـما هي التدخلات التمريضية التي من شأنها أن تدعم أسرة المريض في حالة الغيبوبة؟

أ.   تشجيع أفراد الأسرة على المكوث طوال الليل في حالة احتياج المريض لهم.

ب.   قم بتحديث الحالة كل صباح وكلما حدثت تغييرات.

ج.   زيارات محدودة من الأطفال إلى وحدة العناية المركزة.

Appendix (B)

English Questionnaire

Part I: Demographic and professional data of critical care nurses:-

Put a tick (✓) in the appropriate place for your answer

1-Age: ☐ year

2- Gender: Male ☐ Female ☐

3-Marital status:

Single ☐ Married ☐ Divorced ☐ Separated ☐ Widow ☐

4- Educational level:

Nursing Bachelors ☐

Nursing Institute ☐

Nursing School ☐

5- Number of years of experience in the nursing field ☐ years

6-Work unit:

Coronary Care Unit (CCU) ☐

Intensive Care Unit (ICU) ☐

7-Number of years of experience in the current workplace ☐ years

8 -Work shift: Morning ☐ Evening ☐

9- The number of training courses regarding the care of the comatose patient ☐ Course

Part II: Critical Care Nurses' Knowledge regarding Nursing Care for Comatose Patients

Put a circle (⬭) around the letter that contains the correct answer

First: General Information about Coma

1- Coma is defined as

a. It is a clinical state of unresponsiveness in which the patient is unaware of himself or his environment for long periods (days to months or even years).

b. An unnoticeable change in the patient's level of consciousness of himself and the environment around him.

c. Non-emergency medical condition.

2- Which of the following are the most common complications that may occur to a patient in a coma?

a. Respiratory infection

b. Bed sore

c. Deep vein thrombosis (DVT)

3- A patient with a head injury and in a coma state, the first indication of increased intracranial pressure (ICP) is

a. Headache.

b. Change in level of consciousness (LOC).

c. The pupil's response to light is slow

4- One of the following is one of the common causes of coma

a. Stroke

b. Hypertension (HTN)

c. Hypoglycemia.

Second: Glasgow Coma Scale (GCS)

1- The Glasgow Coma Scale is used to assess the following

a. Degree of awareness

b. Mental changes

c. Mood changes

2- Each component of the Glasgow Coma Scale contains a number of steps. Which of the following options is correct?

a. Eye-opening response = 5, verbal response = 4, motor response = 6.

b. Eye-opening response = 4, verbal response = 5, motor response = 5.

c. Eye opening response = 4, verbal response = 5, motor response = 6.

3- To assess the eye-opening response, the nurse should start with:

a. Orally ask the patient to open his eyes.

b. Use painful stimuli.

c. Standing next to the patient's bed.

4- Which part of the brain is evaluated when assessing the patient's motor response in the Glasgow Coma Scale?

a. Occipital lobe (posterior lobe).

b. Cerebellum.

c. Sensory pathways.

5- Which of the following results of the GCS or below results in which the patient is considered in a state of coma?

a. 10

b. 3

c.8

6- Which of the results of the Glasgow Coma Scale indicates moderate brain injury?

a. 8   b. 10   c. 13

7- Which of the following symbols indicates that the eye opening response cannot be assessed on the Glasgow Coma Scale if the patient's eye is swollen?

a. T   b. C   c. D

8- When assessing the Glasgow Coma Scale for a comatose patient by applying a deep sternum rub, he extends his arms and legs and shows no other response. What is the result of GCS for this patient?

a. 2   b. 3   c.4

Third: Maintaining the Airway Patency

1- When the accumulation of secretions inside the lungs can lead to

a. Atelectasis

b. Aspiration

c. Respiratory failure.

2- Which of the following should be taken into account to prevent the airway obstruction in a comatose patient?

a. Raise the head on the bed 30 degrees

B. Placing the patient in a side position

C- Both of them

3- When choosing a catheter to suction the patient's endotracheal tube through an open system, which variable will the catheter's size be chosen?

a. Patient's age

b. Endotracheal tube size

c. The type of secretions to be suctioned

Appendices

Fourth: Maintaining the Blood Circulation

1- When developing a care plan to reduce the risk of thrombus formation, which of the following interventions should be undertaken?

a. Keep the patient's hips and knees bent while in bed.

b. Apply compression devices sequentially on the patient's limbs.

c. Give anticoagulant medication as required.

2- When assessing the patient for circulatory and perfusion problems, what are the findings that indicate poor tissue perfusion?

a. Blood pressure 102/64 mmHg

b. Pulse rate 104 beats/min

c. Slowed capillary refill

3- Which of the following complications occurs due to a deep vein thrombosis (DVT)?

a. Myocardial infarction

b. Renal failure

c. Pulmonary embolism

Fifth: Maintaining Fluid Balance

1- What is the assessment result confirming the diagnosis for a patient in a coma state suffering from dehydration?

a. Dry, sticky mucous membranes

b. Polyuria

c. Low heart rate

2- A comatose patient was diagnosed with excessive fluid volume. Which of the following assessing results confirms the diagnosis?

a. Poor skin turgor

b. Decreased urine output

c. Swollen neck veins

3- The nurse assesses the fluid balance of a comatose patient by monitoring the fluids input and output the patient. What should the nurse understand about the patient's proportion of fluids input and output?

a. The fluid input should be slightly more than the fluid output from the patient

b. Fluid input should be less than urine output

c. The fluid input must be equal to the production of urine

Sixth: Maintaining Nutritional Needs

1- When feeding a comatose patient through the nasogastric tube (N/G Tube), the priority of care should be

a. Examination of the nasogastric tube (NG tube) before and after feeding.

b. Put the patient in a semi-fowler position (elevating the head at a 30-degree angle) when feeding.

c. Wash the nasogastric tube (with 30 ml) flush with water before and after feeding.

2- Enteral nutrition is preferred over parenteral nutrition whenever possible because enteral nutrition

a. More satisfactory to the patient.

b. Reduces the risk of foodborne diseases.

c. Maintains the function and integrity of the gastrointestinal tract.

3- The comatose patient receives 200 ml of tube feeding every 4 hours. When checking the stomach remains of the patient before giving the scheduled feeding, 40 ml of stomach remains were found. In this case, nurse should be

a. Dispose of the residual and continue with the feeding.

b. Delay feeding the patient for one hour and then recheck the residual.

c. Return the remaining food to the patient and continue with the feeding.

Seventh: Mouth Care

1- What is the main reason for putting the comatose patient in the side-lying position when providing oral care?

a. To facilitate access to the oral cavity.

b. To reduce plaque in the mouth.

c. To reduce the risk of substances entering the respiratory tract (aspiration)

2- What is the first thing a nurse does when cleaning the mouth of a comatose patient

a. Withdrawal of fluids and secretions from the mouth.

b. Mouth odor control.

c. Putting antiseptic and anti-bacterial substances such as Chlorhexidine in the patient's mouth

3- One of the characteristics of sodium bicarbonate as an oral cleaning solution is:

a. Increases the viscosity of oral mucus

b. Antibacterial

c. Reduces excessive acidity in the mouth

Eighth: Protecting the Patient from Injury, and Maintaining Skin and Joint Integrity

1- When protecting a comatose patient from falling, the following must be done

a. Raise the bedsides to protect the patient and then monitor him constantly.

b. Restrict the patient's movement using his ligaments.

c. Take caution and prevention to maintain patient safety.

2- When preventing pressure ulcers (bed ulcers), the following should be done

a. Change the patient's position every 2 hours.

b. Turning the patient every 4 hours and increasing the caloric intake to maintain normal skin condition.

c. Increase the intake of vitamins and minerals for the patient while maintaining the position of the patient in a semi-fowler position.

3- When caring for the skin of a comatose patient, the following should be done

a. Wearing compression stockings

b. A body massage to stimulate blood circulation

c. Both of them

4- Which of the following is a goal of the Passive Range of Motion exercises

a. Prevent muscles atrophy

b. Promote the movement of synovial fluid to nourish the articular cartilage

c. Improve muscles performance

Ninth: Eye Care

1- To prevent drying of the cornea of the eye of a comatose patient, the following must be done
a. Clean the eye with a cotton ball moistened with sterile saline (N/S) from the inside to out

b. Closing the patient's eye with the plaster

c. Use of a medicated eye cream (as an antibiotic)

2- To close the eye of a comatose patient to prevent drying of eye, nurse can use
a. Eye patch

b. Lid taping

c. Both of them

3- What is the appropriate method to apply eye drops to a comatose patient?
a. Put a drop in the inner corner of the patient's eye

b. Putting eye drops in the upper eyelid

c. Putting eye drops in the lower eyelid cavity

Tenth: Maintaining Body Temperature

1- Which of the following methods is preferred to be used to measure the temperature of a comatose patient?

a. Via the rectal

b. Via the oral

c. Via the axillary

2- What clinical indication is likely to determine when assessing a comatose patient with pyrexia

a. Breathing difficult.

b. Increased heart rate.

c. Hypertension

3- A comatose patient has a decrease in body temperature. What results does the nurse expect to appear on the patient when assessing vital signs?

a. Increased heart rate and blood pressure increased

b. Increased heart rate and lower blood pressure

c. Low heart rate and low blood pressure

Eleventh: Maintaining the Bladder and Bowel Elimination

1- When assessing a comatose patient who was found to have urinary retention, which of the following measures do take?

a. Give a limited amount of fluid.

b. Use urinary catheterization.

c. Giving a diuretic.

2- What is the most common cause of urinary tract infections (UTI)?

a. Urinary stasis

b. Use of a urinary catheter

c. Amount of fluid intake

3- When evaluating a comatose patient who has an indwelling catheter and finds that the catheter is not performing and the patient's bladder is distended, what should take next?

a. Check the catheter for kinks, or the like, and check for downward flow.

b. Change the catheter as soon as possible.

c. Tell the physition.

4- What can be recommended for a patient in whom fecal impaction is suspected?

a. Gastroscopy

b. Barium swallow

c. Digital examination of the rectum

5- What are the causes of diarrhea for a comatose patient?

a. Use of antibiotics

b. Hypothyroidism

c. Reducing fluid intake

6- What interventions should be taken to prevent constipation for a comatose patient?

a. Stool softener administration

b. Using an enema

c. Increase carbohydrates in the diet

Twelfth: Meeting Family Needs

1- Family members need information. What are the interventions that best help to meet this need?

a. Providing a daily update of the patient's condition and facilitating communication with the specialist

b. Tell them that you are not allowed to give them a patient report

c. Make a list of all the new medicines and doses and give the list to family members during the visit

2- When planning care to meet the needs of family members of a comatose patient, the nurse must

a. Express an attitude of hope, honesty, open communication and concern.

b. Reducing the number of visitors to other important people.

c. Communicate with one family member to reduce time wasted returning information to all visitors.

3- What nursing interventions would support the patient's family in a coma?

a. Encourage family members to stay overnight in case the patient needs them.

b. Update the status every morning and whenever changes occur.

c. Limited visits of children to the intensive care unit.

<u>Appendix (B): Questionnaire</u>

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استبانة الخبراء والمحكمين

حضرة الدكتور/ة:...المحترم/ة

نظرا لمكانتكم العلمية والعملية المرموقة نرجو إبداء آرائكم ومقترحاتكم وما ترونه مناسبا حول

الاستمارة المرفقة طيا وهي جزء من رسالة الماجستير الموسومة:

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Critical Care Nurses' Knowledge regarding Nursing Care for Comatose

Patients in Babylon Governorate

<div dir="rtl">

معارف ممرضين العناية الحرجة فيما يتعلق بالعناية التمريضية لمرضى الغيبوبة في مستشفيات

محافظة بابل

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Objectives of the Study are to:-

1- Assess critical care nurses' knowledge regarding nursing care for comatose patients.

2- Investigate the differences between critical care nurses' knowledge regarding nursing care for comatose patients with regard demographic data and professional characteristics (age, gender, marital status, educational level, years of experience in the nursing field, work unit, years of experience in the current workplace, and work shift, training courses).

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اسم الخبير:..

اللقب العلمي: ....

عدد سنوات الخبرة: ....

مكان العمل: ....

التاريخ: ....

التوقيع: ....

الباحث: مروان مهدي عباس

ماجسير تمريض صحة البالغين

كلية التمريض/ جامعة بابل

</div>

Appendix (C): Panel of Experts

قائمة بأسماء خبراء الاستبانة

ت	اسم الخبير	اللقب العلمي	الاختصاص	مكان العمل	سنوات الخبرة
١	د. حسن علوان بيعي	أستاذ متمرس	الصحة العامة وطب المجتمع	كلية الحلة الجامعة	٤٠ سنة
٢	د. راجحة عبد الحسن حمزة	أستاذ	تمريض البالغين	كلية التمريض/ جامعة الكوفة	٣٧ سنة
٣	د. حكيمة شاكر حسن	أستاذ	تمريض البالغين	كلية التمريض/ جامعة بغداد	٣٣ سنة
٤	د. سحر أدهم علي	أستاذ	تمريض البالغين	كلية التمريض /جامعة بابل	٢٧ سنة
٥	د. شذى سعدي محمد	أستاذ	تمريض البالغين	كلية التمريض /جامعة بابل	٢٣ سنة
٦	د. فاطمة مكي محمود	أستاذ مساعد	تمريض البالغين	كلية التمريض /جامعة كربلاء	٢٧ سنة
٧	د. حسام عباس داود	أستاذ مساعد	تمريض البالغين	كلية التمريض /جامعة كربلاء	٢٠ سنة
٨	د. حسن عبد الله عذبي	أستاذ مساعد	تمريض البالغين	كلية التمريض /جامعة كربلاء	١٩ سنة
٩	د. إبراهيم علوان كاظم	أستاذ مساعد	تمريض البالغين	كلية التمريض/ جامعة الكوفة	١٦ سنة
١٠	د. وفاء عبد علي حطاب	أستاذ مساعد	تمريض البالغين	كلية التمريض/ جامعة بغداد	١٤ سنة
١١	د. جهاد جواد كاظم	أستاذ مساعد	تمريض البالغين	كلية التمريض/ جامعة الكوفة	١٣ سنة
١٢	د. محمد عبد الكريم مصطفى	أستاذ مساعد	تمريض البالغين	كلية التمريض/ جامعة الكوفة	١٣ سنة
١٣	د. صادق عبد الحسين حسن	أستاذ مساعد	تمريض البالغين	كلية التمريض/ جامعة بغداد	١٢ سنة

Appendix (D): Linguistic Approval

Ministry of Higher Education and Scientific Research

University of Babylon

College of Education for Human Sciences

وزارة التعليم العالي والبحث العلمي   جمهورية العراق

جامعة بابــل

كلية التربية للعلوم الانسانية

Ref. No :

Date: /   /

العدد : ٤٢٧/

التاريخ : ١٧ / ٧ / ٢٠٢٤

الــواردة

العدد/ ١٩٢٢

الى/ مكتب السيد معاون العميد للشؤون العلمية المحترم / ٢٠٢٤

م/ تقويم لغوي

تحية طيبة///

اشارة الى كتاب جامعة بابل / كلية التمريض ذي العدد ٢٤٠٤ في ٢٢/٧/١٧ ٢٠ نرسل اليكم رسالة طالب الدراسات العليا / الماجستير(مروان مهدي عباس) بعد تقويمها لغويا"من قبل (أ.د قاسم عبيس العزاوي)

مع الاحترام

أ.م.د. حسين حميد معيوف

رئيس قسم اللغة الانكليزية

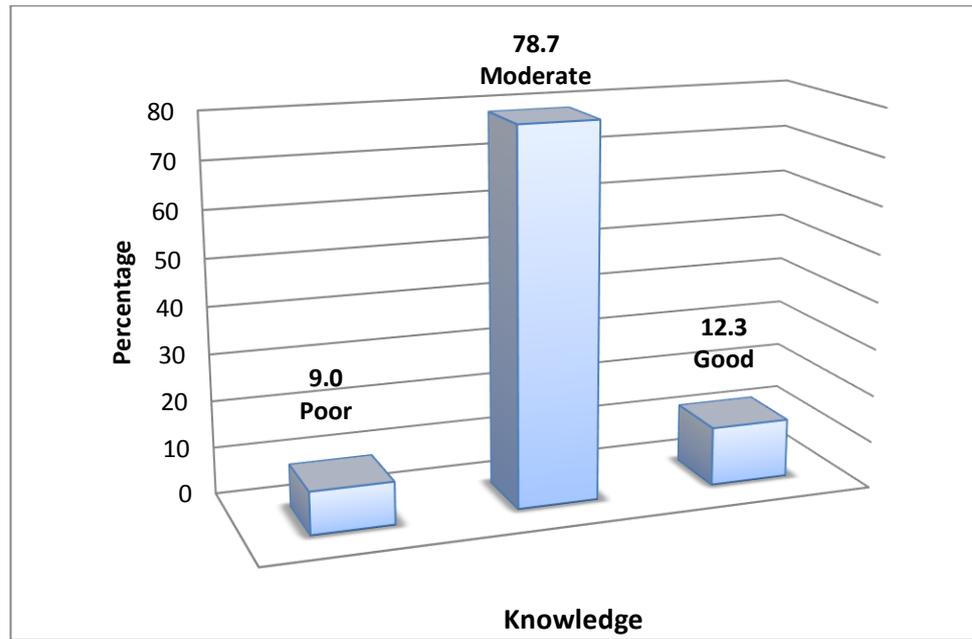الصادرة مع الاوليات

Appendix E: Figures

Figure 4.1: Overall Critical Care Nurses' Knowledge related to Nursing Care of Comatose Patients.
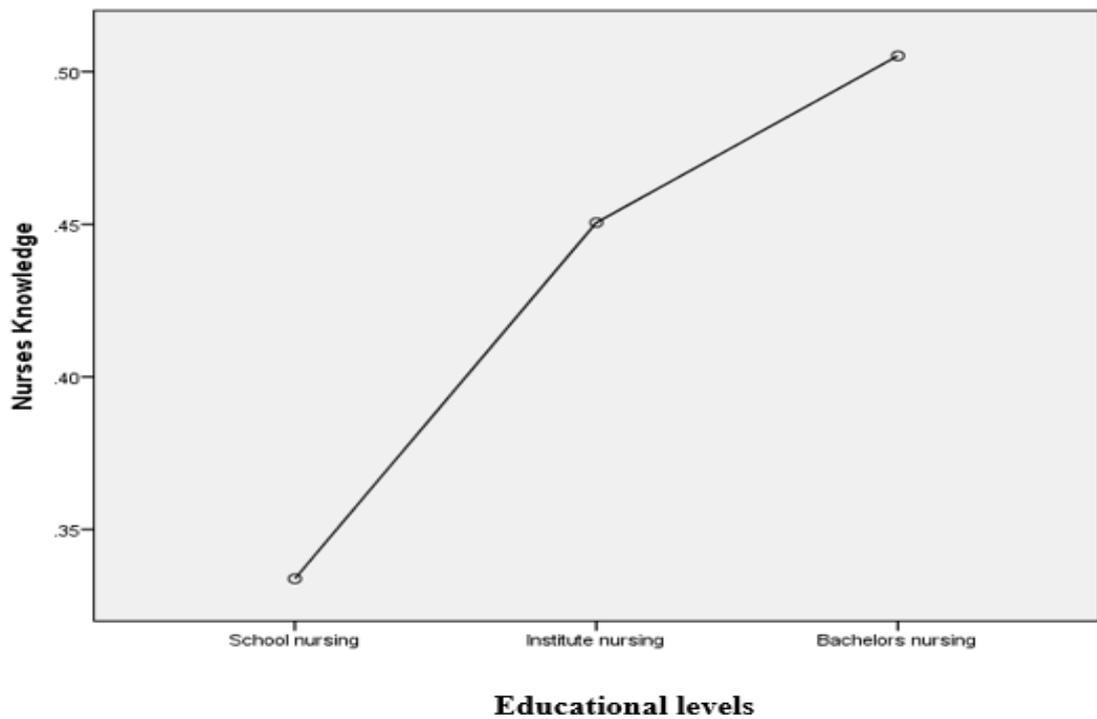

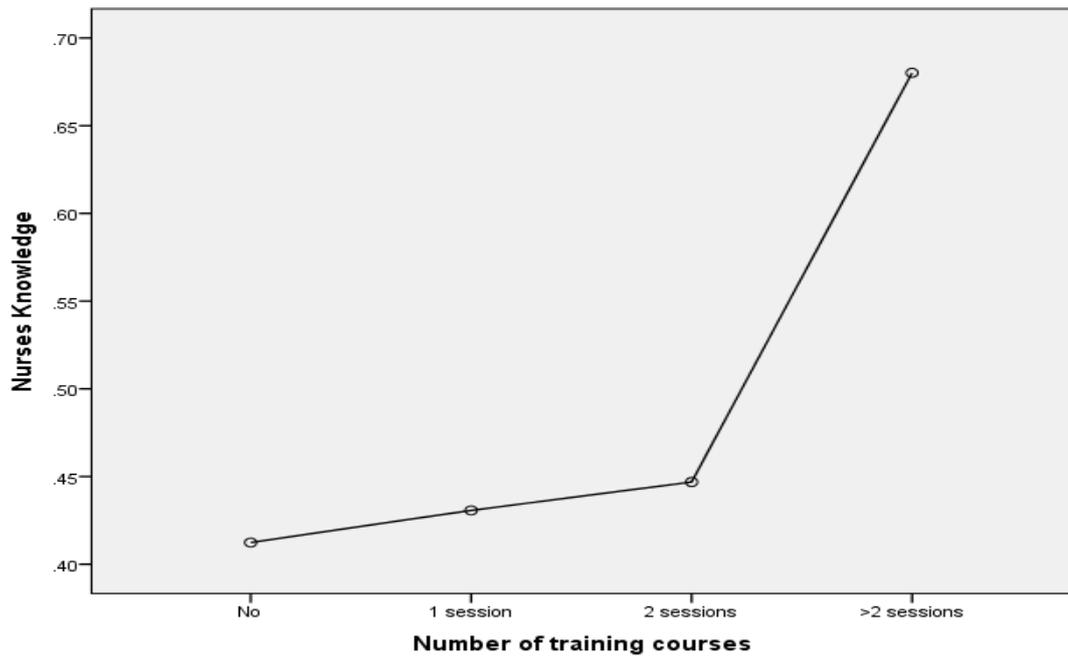Figure 4.2: Distribution of Nurses' Knowledge according to Educational Level.

Figure 4.3: Distribution of Critical Care Nurses' Knowledge according to Number of Training Courses

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الخلاصة

الخلفية العلمية: تتطلب العناية التمريضية لمرضى الغيبوبة الذين يدخلون في وحدات العناية الحرجة تنفيذ مهام الرعاية الأساسية التي تهدف إلى تمكين المرضى من أداء المهام اليومية للحياة ومنع المضاعفات. يعتمد مرضى الغيبوبة كليًا على ممرضين العناية الحرجة للشفاء، ومن مسؤولية الممرض دائمًا التفكير بشكل نقدي قبل التدخل. وبالتالي، يجب أن يكون لدى ممرضين العناية الحرجة العاملين في هذه الاماكن المعرفة الكافية لإجراء التقييم والتدخل.

الأهداف: هدفت هذه الدراسة إلى تقييم معارف ممرضين العناية الحرجة تجاه العناية التمريضية لمرضى الغيبوبة، وتقصي الفروق ذات الدلالة الإحصائية في معارف ممرضين العناية الحرجة تجاه العناية التمريضية لمرضى الغيبوبة فيما يتعلق بمتغيراتهم الديموغرافية وخصائصهم المهنية.

المنهجية: أجريت دراسة وصفية (مقطعية) لتحقيق أهداف هذه الدراسة من الفترة ١٩ سبتمبر ٢٠٢١ حتى ٦ يوليو ٢٠٢٢. عينة غير احتمالية (غرضية) تكونت من (١٧٨) ممرض عناية حرجة يعملون في CCU وICU في ستة مستشفيات في محافظة بابل. تم جمع البيانات باستخدام استبيان التقرير الذاتي. ثم تم اجراء تحليل احصائي للبيانات باستخدام برنامج SPSS إصدار (٢٠) وبرنامج مايكروسوفت اكسل (٢٠١٠) للبيانات التي تم جمعها.

النتائج: أظهرت نتائج هذه الدراسة أن النسبة الاعلى (٧٤,٢٪) من ممرضين العناية الحرجة تتراوح أعمارهن بين ٢٢ و٢٩ سنة، وحوالي النصف (٥١,١٪) كانوا أناث، و (٦١,٢٪) منهم كانوا متزوجين. بالإضافة إلى ذلك، أكثر من نصف المشاركين (٥٣,٩٪) كانوا من حملة البكالوريوس في التمريض. أظهرت النتائج الإجمالية لمعارف ممرضين العناية الحرجة أن (٧٨,٧٪) منهم عبروا عن مستوى معتدل من المعرفة المتعلقة بالعناية التمريضية لمرضى الغيبوبة. بالإضافة الى ذلك، كانت هناك فروق ذات دلالة إحصائية بين معارف ممرضين العناية الحرجة فيما يتعلق بالعناية التمريضية لمرضى الغيبوبة و بعض البيانات الديموغرافية والمهنية عند قيمة p-value ≤ 0.05 (الجنس والمستوى التعليمي والدورات التدريبية). بينما لم تظهر البيانات الديموغرافية والمهنية الأخرى أي فروق ذات دلالة إحصائية عند قيمة p-value > 0.05.

الاستنتاجات: أوضحت النتائج الإجمالية أن غالبية ممرضين العناية الحرجة عبروا عن مستوى معتدل من المعرفة حول العناية التمريضية لمرضى غيبوبة. علاوة على ذلك، توجد فروق ذات دلالة إحصائية بين المعرفة الكلية لممرضين العناية الحرجة وبعض البيانات الديموغرافية والمهنية.

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معارف ممرضين العناية الحرجة فيما يتعلق بالعناية التمريضية لمرضى الغيبوبة في مستشفيات محافظة بابل

رسالة مقدمة من قبل

مروان مهدي عباس

الى

مجلس كلية التمريض / جامعة بابل

جزء من متطلبات نيل درجة الماجستير في علوم التمريض

بإشراف

أ.د فخرية جبر محيبس

٢٠٢٢م   ١٤٤٣هـ