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COLLEGE OF HEALTH SCIENCES

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DEPARTMENT OF EMERGENCY MEDICINE AND CRITICAL CARE NURSING

ASSESSMENT OF KNOWLEDGE, PRACTICE AND BARRIERS ON THE NEED OF EARLY MOBILIZATION OF INTENSIVE CARE UNIT PATIENTS AMONG NURSES WORKING IN SELECTED PUBLIC HOSPITALS IN ADDIS ABABA, ETHIOPIA 2024.

BY: GEBREMARIAM GETNET (BSC, MSc CANDIDATES)

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STATEMENT OF DECLARATION

Letter of declaration

By my signature below, I declare and affirm that this is entirely my original work. I have followed all ethical principles of scholarship in the preparation, data collection, data analysis, and completion of this thesis. All scholarly matter that is included in the thesis has been given recognition through citation. I affirm that I have cited and referenced all sources used in this document. Every effort has been made to avoid plagiarism in the preparation of this thesis. This thesis submitted to Addis Ababa University College of health sciences department of emergency and critical care nursing, for partial fulfillment of the requirements for the Master of Science in emergency medicine and critical care nursing.

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APPROVAL BY THE BOARD OF EXAMINATION

This thesis by Gebremariam Getnet is accepted in its present form by the board of examiners as satisfying thesis requirement for the degree of masters in emergency and critical care nursing.

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LIST OF ABREVATIONS AND ACRONYMS

AAUCHS---Addis Ababa University College of Health Sciences

ABCDE------Airway, Breathing, Circulation, Disability, Exposure, Early mobility

ADL---Activity of Daily Living

AHRI---Armure Hansen Research Institute

ALERT---Africa Leprosy Rehabilitation and Treatment

ART---Anti Retroviral Therapy

BMI--------Body Mass Index

DVT----Deep Vein Thrombosis

EMCCN----Emergency Medicine and Critical Care Nursing

EM-----Early Mobility

HC---Health Care Professionals

HIV---- Human Immunodeficiency Virus

ICUAW—Intensive Care Unit Acquired weakness

ICU--------Intensive Care Unit

MOH---Minster of Health

MV------Mechanical Ventilator

PICS---Post Intensive Care Syndrome

PTS--Physiotherapist

ROM----Range Of Motion

SPSS---- Statistical Product and Social Service

ST---Saint

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LIST OF FIGURES

ABSTRACT

Background: Early mobilization is the physical activity performed on ICU patients as early as the second to fifth days of ICU admission due to their critical illness. Most of ICU admitted patient develops many complications which are not related to their primary diagnosis. EM improves the patient's physiological functioning, reduce length of stay, and improve mechanical ventilator weaning. Despite its importance, the early mobility procedure is not performed in most ICU settings. The main problem is related to the knowledge and practice of health care providers towards early mobility for ICU patients.

Objective: To assess knowledge, practice, and barriers related to the needs of early mobilization of intensive care unit patients among nurses working in public hospitals, Addis Ababa, Ethiopia 2024.

Methods: An institutional-based cross-sectional study design was conducted in Addis Ababa selected public hospitals from March 15 to April 15/2024. All nurses who work in ICU of selected public hospitals were included in the study by census methodes. Data were collected using a structured self-administered questionnaire and analyzed using SPSS version 27.Logistic regression was employed to determine the association between dependent and independent variables and variables with p value less than 0.05 were taken as significantly associated.

Result: About 21.8% ICU nurses have good knowledge towards early mobilization. Factors associated with knowledge were staff education and training p= 0.001, availability of early mobility guidelines and protocols in the ICU p=0.001 and work experiences p=0.042. From the total of study participants only 18.3% of ICU nurses have good practice of early mobilization. The factors that have significant association with practice of ICU nurses to EM were standard EM order p=0.003, planning and coordination p=0.007, BMI of patients < 30 p=0.029 and EM guidelines and protocols in the ICU p= 0.008.

Conclusion and recommendation: the knowledge and practice of the study participants were poor. This finding highly suggests the needs of EM knowledge and practice of ICU nurses. The factors that influence knowledge were experience's guidelines and protocols and training. Factors affect practices of nurses were standing bed rest order, lack of planning and

coordination, obesity of the patient and practice guidelines and protocols ascents. Providing education and regular training is important to upgrades the nurses and create awareness. Adopting early patients screening techniques, Providing EM guidelines and protocols to ICU for ICU nurses is also mandatory. All ICU should have physiotherapist, Moreover ICU advocator to EM should be assigned.

Keywords: early mobilization, knowledge, practice, Intensive care unit

CHAPTER ONE: - INTRODUCTION

1.1 BACKGROUND

Early mobilization refers to the application of physical activity as early as the 2nd to 5th day after the onset of critical illness or injury. As a result, it's critical that patients in the intensive care unit (ICU) especially those receiving mechanical ventilation be mobilized as soon as possible. Mobilization in the ICU is performed to the intensity that can bring about physiological changes(1).

Early mobilization is a physical activity that is performed at a suitable intensity, providing physical benefits for the body and helping (affecting) the circulation, central and peripheral perfusion, ventilation (oxygenation), and the level of consciousness. Early mobilization is classified into passive and active mobilization. Passive mobilization usually includes patients changing different positions, suctioning by a physiotherapist, and changing diapers. Active mobilization includes ambulation and physical exercises with or without assistance active side-to-side turning, cycling in bed, exercises in bed, sitting on the edge of the bed, transferring from bed to a chair, marching on the spot, ambulation, hoist therapy, tilt table, active resistance exercises, and electrical muscle stimulation (2,3).

ICU is a place where critically ill patient are admitted to get special care for their life-taking problems. Those critically ill patients who survive from ICU develop many complications additions to their illness due to their prolonged stay of immobility**.** Prolonged periods of immobility in patients have often been associated with discomfort, fatigue, loss of function, and decreased quality of life. Early mobilization of critically ill patients is a safe option with the additional benefit of improving functional outcomes (4).

The anticipated outcomes are directly correlated with the timing of the mobilization program's launch and frequency of execution. The mobilization strategies used must take into account both the patient's degree of participation and ability. To select the best strategy, medical professionals must perform a thorough examination that involves obtaining the patient's medical history and assessing the patient's cardiac and respiratory reserves as well as any factors influencing their overall clinical picture (2,5,6).

To ensure that patients in the ICU receive the best care possible, nursing care incorporates a variety of evidence-based techniques. In addition to playing a critical role in the administration of life-sustaining drugs, therapies, and treatments, intensive care unit nurses also play a major role in promoting physical mobility and strengthening to minimize both short- and long-term consequences related to delirium and intensive care unit acquired weakness (ICU-AW)(5).

Survivors of ICU frequently experience medical issues during their hospital stays, some of which may not be connected to the diagnosis that led to their ICU admission. Survivors of critical. illness who experience persistent limitations in their physical function may experience consequences known as ICUAW, which are linked to reduced mobility (4,5). Patients who stay in the intensive care unit frequently have less mobility. Patients using mechanical ventilation are particularly vulnerable since they frequently stand still for extended periods. Long-term recumbent postures have been linked to numerous detrimental consequences on the body's neurological, musculoskeletal, gastrointestinal, integumentary, and cardiovascular systems. It has been shown that immobility is linked to reductions in the musculoskeletal and cardiovascular systems' functional ability, even in individuals who appear to be in good health(6).

As a result of improvements in survival rates following a critical illness and advances in critical care medicine, clinicians have become aware of the considerable functional deficits that many of these surviving patients have. Patients who survive a serious illness and spend a significant amount of time in the ICU may develop intensive care unit-acquired weakness Common symptoms range from psychological health problems (e.g., anxiety, sleep difficulties, cognitive concerns, etc.) to impairments in physical function (e.g., exhaustion, decreased mobility, etc.). Post-intensive care syndrome (PICS) has been found to happen in at least 25% of ICU survivors on average. It is significantly linked to extended mechanical ventilation and bed-restore heavy sedation (8).

Underperforming early mobilization in the ICU is a result of the following: the prescription of bed rest for patients without a clearly stated contraindication to early mobilization; poor sedation practices for ICU patients to sleep; the use of neuromuscular blocking agents; the impact of the patient's illness; ICU lines, leads; and the physical environment of the ICU (9).

Early Mobilization intervention is more difficult in intensive care units due to the very ill patients there. The unit's culture will be changed, and this intervention will become a new priority for providing high-quality patient care, interdisciplinary teamwork, repeated education, and training on the advantages of early mobilization since nurses are the main force behind these programs because they are skilled in both evidence-based practice cooperation and collaboration. Early mobilization is required by nursing practice due to its inherent character, which promotes high-quality patient-centered care. With the right tools, culture, leadership, and communication, the intensive care unit can welcome this shift and raise the standard of care they give every day (10).

1.2 STATEMENT OF THE PROBLEM

Millions of individuals nationwide receive life-saving interventions from the ICU each year. One of the care a patient receive in the ICU is active and passive patient early mobilization starting from their admission until the end of their ICU stay since Patients who have received critical care frequently experience chronic problems that last long after they are released from the hospital. The term PICS refers to a group of disorders affecting cognitive, physical, and psychosocial functioning. Many ICU survivors have new issues like delirium, neuralgia, delayed healing, pressure injuries, and considerable functional deterioration; they never return to their pre-illness levels of function and well-being due to prolonged immobility (11).

In the intensive care unit, early mobilization is a safe and practical technique that enhances both physiological and functional outcomes, but it is not commonly practiced. Only a small percentage of patients, 19.2% on mechanical ventilation and 23.5% without, received early mobilization. Previous studies found that just 37% and 24% of ICU patients experienced bedside mobilization due to poor knowledge, practice, lack of strategy, training, expertise, and cultural barriers (3,12).

The knowledge of nurses about early mobilization in the ICU is generally low, with only 33.8% knowing about it and only 16% familiar with the protocols. Additionally, 28% are aware of clinical trials on this topic, and 40% have prior experience with mobilizing ICU patients. Surprisingly, about half of the nurses in the ICU cannot correctly identify an activity that constitutes early mobilization. This lack of familiarity with guidelines and literature may contribute to this misconception. Furthermore, more than half of healthcare professionals see early mobilization as potentially risky for critically ill patients, and less than half have mobilized a patient. Negative knowledge appears to influence the practice of early mobilization among the participants. Around 30% of clinicians who believe in the benefits of early mobilization would still not mobilize a critically ill patient on a vasopressor, and 15% of them would not mobilize a patient on mechanical ventilation. This suggests that patients on vasopressors or ventilators are seen as physiologically unstable and may not benefit from early mobilization or could even be at risk of harm (13).

The knowledge of nurses is shown as poor in many countries. In Ethiopia the knowledge related to early mobilization among different health professions shows that (16.8%) had poor

knowledge, (57.9%) had fair knowledge and 77 (25.3%) had good knowledge of early mobilization in ICU (3).

Patients in the ICU who are on mechanical ventilation for more than 7 days have a 25–60% higher risk of developing neuromuscular weakness, according to Hodgson, ICU delirium affects up to 80% of critically sick patients receiving Mechanical Ventilator (MV) (12). In critically ill patients, mobility practice can start as soon as four days following admission to the ICU. By the time the patient is discharged, they may have lost up to 18% of their body weight and 25% of their peripheral muscle tone due to the reasons for not getting mobility practice (13). Even though there is little evidence that early mobility reduces delirium, bed rest is still the norm in most intensive care units because most physicians and nurses do not consider the importance of early mobility due to a knowledge deficit (14).

Creating an educational program for early mobility can enhance nurse's knowledge, practice, competency, and promotion of early mobility in the ICU. The educational foundation is vital for successful healthcare initiatives, ensuring an understanding of the design, implementation, and evaluation of protocols. Implementing this program in a setting with an existing early mobility protocol aims to strengthen collaboration among the multidisciplinary team, patients, and families (15).

The main issue in local nursing practice is the gap between education and training when it comes to early mobility. This becomes problematic in the ICU where patients rely on nurses for their healthcare activities. Overcoming this obstacle requires the establishment of a functional mobility protocol to address the complexities and system barriers (16).

Education and training programs, including workshops, simulations, and online resources, are essential for healthcare providers to enhance their knowledge and practice in implementing early mobilization activities. Protocols and guidelines can further facilitate its integration into their daily routines (17).

This study aims to investigate the knowledge and practice of nurses related to the early mobilization of ICU patients who are working in the Addis Ababa public hospitals.

1.3 SIGNIFICANCE OF THE STUDY

The study will provide useful information that will inform health facilities to prepare special care for ICU patients which includes early mobilization. Most ICU patient develops many complications and reduces their recovery time and functionality because they don't get early mobilization. There is limited literature in this study area; the findings from this study will provide baseline data for further research and intervention on early mobilization. The study will be useful to other researchers as reference material while conducting further studies on similar problems. Identification of barriers is essential to guide program planning, and organizing care for ICU management protocol.

This study may help those clinicians to have updated knowledge and skills about early mobilization and also contribute to the development of protocols aimed at the prevention of complications and to the drawing of baseline data for the future improvement of knowledge and practice to maintain patients' well-being.

The result of this study will help to maximize health facilities efforts in improving the service of early mobilization to prevent ICU-acquired weakness and reduce hospital length of stay which reduces hospital burden on number of patients. It also helps those hospitals under the study to oblige their resident and seniors to write early mobilization orders for patients who need early mobilization without any contraindications.

This study helps to notify those hospitals under the study to have early mobilization protocols so that they can influence the minister of health (MOH) to make national-level early mobilization protocols since there are no protocols and assessment tools developed to guide early mobilization. It also helps to notify the respected hospitals to give training for their ICU professionals and monitor their practice by developing protocols. More to clearly show ICU needs a physiotherapist in the ICU like another specialist.

CHAPTER TWO: - LITERATURE REVIEW

2.1 INTRODUCTION

Early mobility in the ICU has numerous benefits, including improved mental and physical abilities, shorter hospital stays, and reduced need for mechanical breathing. However, implementing early mobility strategies can be challenging due to concerns about patient safety. Nurses may be unsure about the risks, such as falls and accidental removal of medical devices. Despite these concerns, ICU nurses play a crucial role in administering treatments and promoting physical mobility to minimize delirium and weakness (18).

Early mobility in nursing now incorporates a progressive strategy. Nurses assess patients upon admission to determine suitable activities like turning, sitting, ambulating, and using a range of motion exercises, based on early progressive mobility guidelines (19).

Various early mobilization strategies have positive effects on critical patients by preventing and reducing polyneuropathy and myopathy, improving quality of life, decreasing ICU stays and hospitalizations, and reducing mortality. They also help in reducing artificial breathing duration, promoting weaning off it, and maintaining muscle strength (20).

The effectiveness of early mobilization strategies may vary depending on factors such as the population studied, protocol, and timing of initiation, patient severity, and potential obstacles. Evaluating the short-term benefits of these techniques in the ICU is crucial for improving hospital outcomes (21).

Kathy Stiller studied the importance of systematically evaluating respiratory and cardiovascular reserves in addition to clinical data. She identified safe physiological markers to guide the implementation of human movement promotion strategies. Understanding cardiovascular and respiratory function, along with other variables, is crucial as critically ill patients often have an oxygen supply-demand imbalance. Therefore, timing is crucial when mobilizing these patients to avoid potential harm (22).

A clinical study found that mobilization led to an increase in patients returning to their prior level of independence, a decrease in delirium duration, and more days without needing a ventilator. The study focused on individualizing mobilization based on the patient's knowledge

and participation, with specific criteria for cardiopulmonary function. Techniques such as walking, sitting, and transfers were used (23).

A study examined the impact of daily sedation breaks during therapy on mechanically ventilated patients in the ICU. 104 patients were divided into two groups, with one group receiving sedation. Only 4% of patients experienced instability during therapy sessions, suggesting the procedure's safety. However, subsequent studies raised concerns about the safety and practicality of sedation breaks, highlighting the need for functional outcomes and patient safety (24).

2.2 KNOWLEDGE OF NURSES ABOUT THE NEED OF EARLY MOBILIZATION

To expedite the process of obtaining a mobility provider order, it is advised to determine eligibility for rehabilitation before admission. Standardizing EM actions would allow physiotherapists (PT) and nurses to focus more on active mobilization efforts, as they wouldn't need to constantly seek orders from doctors and could default to the EM protocol rather than bed rest (25).

A survey of critical care physicians and physiotherapists in Canadian academic intensive care units showed that 41.6% of the respondents have good knowledge. This revealed that a majority of respondents underestimated the prevalence of ICU-acquired weakness and lacked the necessary knowledge and skills for early mobilization in adult ICU patients. Obstacles included excessive sedation, unstable medical conditions, obesity BMI>30, staff shortages, safety concerns, inadequate protocols, and equipment limitations. The survey had a response rate of 71.3%, with physicians at 64.2% and physiotherapists at 87.3% (26).

Research conducted in Canada Montreal found that a majority of respondents (65.2%) were familiar with literature and clinical studies on EM in the ICU. However, only 40.6% had a correct response about the incidence of ICUAW, with clinicians often underestimating it (44.9%) or being unaware (8.7%). A Chi-square statistic revealed no association between professional groups and correct responses ($p=0.050$) (6).

In a study conducted in America, Rhode Island College Teaching Hospital found that 34% of respondents had good knowledge. Many respondents did not prioritize early mobilization. Doctors showed a limited understanding of the benefits of EM. Most clinicians felt unprepared to use mechanical ventilation with patients. Professionals had differing opinions on activity levels for critically ill patients. Doctors with different training saw barriers at the patient level differently. Few doctors considered early mobilization as not vital, while most saw it as important. Many respondents were familiar with EM literature and studies, but few knew the true incidence of ICUAW. No correlation was found between professional groups and understanding ICUAW occurrence (27).

Critical care physicians in hospitals in the Eastern Province of Saudi Arabia were surveyed to assess their understanding of emergency medicine in the ICU and identify obstacles. The survey was conducted between March and April 2020 with a sample of 200 critical care physicians. Out of the 211 individuals surveyed, nine surveys were disqualified due to participants not being critical care clinicians. The majority of respondents (52%) were registered nurses, followed by physicians (22%), and physical therapists (15%). The average knowledge score among participants was 63.57±18.33. 39% of respondents identified process-related obstacles as the primary barrier to EM, and 41% reported their institution lacked an EM protocol. 30% stated they follow an EM protocol, while 29% were unsure whether their institution had a protocol in place (28).

A self-structured questionnaire was used to interview healthcare professionals in intensive care units at a tertiary care academic institution. The data showed that 78% of respondents recognized the benefits of early mobilization such as shorter mechanical ventilation duration, and 54% acknowledged its preservation of muscle strength. Additionally, 44% of respondents considered EM essential and recommended its initiation after stabilizing the patient's cardiopulmonary state. The main obstacles to EM implementation identified were the lack of standardized recommendations, staff shortages, inadequate training, excessive sedation, and unstable health conditions (28).

In a study conducted in Ibadan teaching hospitals in Nigeria, the knowledge, attitudes, and practices of clinicians regarding EM were assessed. Among the 131 healthcare professionals

surveyed, 44% were doctors, 26% were physiotherapists, and 30% were nurses. Only 30% of clinicians understood EM well, despite 89% acknowledging its benefits. Just 5% were aware of the EM guidelines. Most believed that mobilizing patients from ventilators had more risks than advantages. Lack of training and support hindered the implementation of EM (13).

A study conducted in Khartoum, Sudan, examined the knowledge of Health Care Professionals (HCP) towards physiotherapists working in the ICU. Findings showed that 74.7% had sufficient knowledge of physiotherapy management. Manual airway clearance methods, such as suctioning and postural drainage, were commonly used in ICU physiotherapy, along with mobilizations, positioning, and limb exercises for patient rehabilitation(29).

A multi-center study was conducted in Northwest Ethiopia from April to June 2022. Researchers used a self-administered questionnaire to collect data from 304 clinicians at tertiary hospitals. The analysis revealed that 16.8% of clinicians had poor knowledge, 57.9% had fair knowledge, and 25.3% had good knowledge about early mobilization in critical care units. Being a physical therapist was associated with increased understanding(3).

2.3 ICU NURSES EARLY MOBILIZATION PRACTICE

A study on US intensive care units found that only 34% have physical therapist activities and 30% have a written early mobilization strategy. Mobilizing critically ill patients requires careful preparation and assessment. Overcoming regional obstacles, involving stakeholders, educating them, assessing the intervention, and synthesizing findings are important steps in implementing an early mobilization practice (30).

In a cross-sectional survey of registered physiotherapists with at least 2 years of experience in respiratory ICU, conducted with a self-administered questionnaire, 102 out of 200 full responses were received. Seventy-three point five percent of respondents reported mobilizing patients with ventilator support, but the majority preferred practicing EM in the ICU. The decision to perform EM was primarily influenced by the patient's medical stability and safety concerns (31).

A study conducted in Malaysia investigated the effects of pre-guideline intervention on nurses' practices in patient positioning and range-of-motion exercises for stroke patients. Before the intervention, various percentages of nurses reported practicing different positioning techniques, with noticeable improvements after the implementation of recommendations(16). The study also found significant variations in nurses' satisfaction levels with range-of-motion exercises before and after the intervention. These findings suggest that the guidelines intervention had a positive impact on nurses' practices and satisfaction in stroke patient care (31).

The research studied in South Africa examined 205 patient records from 29 ICUs in 13 hospitals. Most ICU was classified as "open," with only two using an early mobilization protocol. The average patient age was 43.5 years, and 72.2% required mechanical ventilation. Trauma and postoperative care were the primary reasons for ICU admissions. Limited out-of-bed mobilization occurred due to hemodynamic instability and patient unresponsiveness, which correlated with the type of ventilation (32).

A multicenter study in Japan analyzed mechanically ventilated ICU patients to investigate the impact of EM on patient outcomes. The study found that 68% of patients got EM by the fifth day in the ICU, and a Barthel index of ≥70 at hospital discharge was associated with EM achievement. Factors such as device usage and activities of daily living (ADL) at discharge had significant correlations with EM. Promoting timely mobilization is crucial for achieving independence in ADL. Further research is needed to overcome common barriers (33).

2.4 BARRIERS TO EARLY MOBILIZATION

Early mobilization in the ICU is not yet a standard practice worldwide. The implementation of this approach and the use of research findings face various barriers. These include patient-related factors like symptoms and hemodynamic instability, structural barriers like limited personnel and equipment, cultural barriers within the ICU, and process-related barriers like lack of coordination and regulations. Patient-related obstacles are the most commonly mentioned (34).

A cohort study conducted in Australia and New Zealand found that 63.5% of ICU patients did not qualify for early mobilization due to sedation or endotracheal intubation. Managing

sedation levels and providing proper pain relief and treatment of delirium were found to be important factors in successful mobilization. However, doctors often hold a misconception that mobilization can lead to complications with tubes and lines. This misconception hinders the use of mobilization and limits the role of physiotherapists. Nevertheless, studies have shown that competent clinicians can safely carry out early mobilization in mechanically ventilated patients (35).

A study in Brazil shows an intensive care unit revealed that only 29% of patients participated in out-of-bed activities like sitting and walking, while 55% were limited to exercising in bed. However, adopting a culture that promotes early mobilization can triple the number of mechanically ventilated patients capable of walking. (36).

A survey was conducted in six ICUs at two Egyptian teaching hospitals, involving 90 nursing staff members. The study aimed to assess the current early mobilization techniques used by nurses and the challenges they encountered. Obstacles were classified into patient, nurse, institution, culture, and process categories. Semi fowler's, lateral and supine positions were commonly employed. Patient-related difficulties and institutional-related challenges were the main obstacles, with factors such as hemodynamic instability and limited consciousness hindering mobilization (37).

In a 2016 study of 42 ICUs in the US, non-ventilated patients were 48% more likely to receive therapy than those on mechanical ventilation. Only 16% of ventilated patients achieved out-of-bed mobility, with only 4% progressing to ambulation, compared to 56% of non-ventilated patients(38).

40 studies identified 28 obstacles to early mobility, with 50% related to patients, 18% to structures, 18% to ICU culture, and 14% to processes. Solutions involve safety protocols, mobility guidelines, education, training, rounds, and physician involvement(39).

A cross-sectional study conducted by India surveyed ICU nurses at BeniSuef University Hospital's three ICUs in Egypt. The survey addressed patient-related hurdles, structural and cultural barriers, and process-related barriers. Major impediments to EM included high disease severity, staff shortages, time limits, lack of mobility culture, lack of planning and coordination, and inadequate staff training, according to the majority of nurses (40).

An 18-month study involving 187 MV patients in five adult intensive care units found that implementing care packages to EM increased the percentage of patients out of bed from 48% to 66%. This standardization reduced safety concerns associated with EM(41).

According to a majority of nurses (67.8% and 68.9%), the practice of early mobility is hindered by staffing shortages, time constraints, and a lack of programs or protocols. However, 64.4% of nurses believe that the lack of equipment does not prevent implementation. The majority of nurses also reported that cultural challenges, lack of staff knowledge, lack of support, and process-related issues can impede the adoption of early mobility protocols. The most commonly used early mobilization technique among nurses is the supine position (85.55% and 91.1%), followed by the semi-Fowler position (48.8%). Nurses do not perform activities such as cycling of legs, walking, rotation, and reflection, or prone work (37).

A prospective study was conducted in 12 intensive care units in New Zealand and Australia to investigate the effects of early mobilization during invasive ventilation on patient outcomes. The study involved 192 functionally independent patients who were ventilated for more than 48 hours. Measures such as sedation levels, length of mechanical ventilation, ICUAW, mortality at day 90, and 6-month functional recovery were assessed. Results showed a 26.6% mortality rate at day 90, with only 84% of scheduled mobilizations occurring. Patients who mobilized had higher muscle strength scores and better overall outcomes (42).

CONCEPTUAL FRAMEWORK

This is conceptual framework which was developed by reviewing different literatures about the knowledge and practice of nurses towards early mobilization of ICU patients.

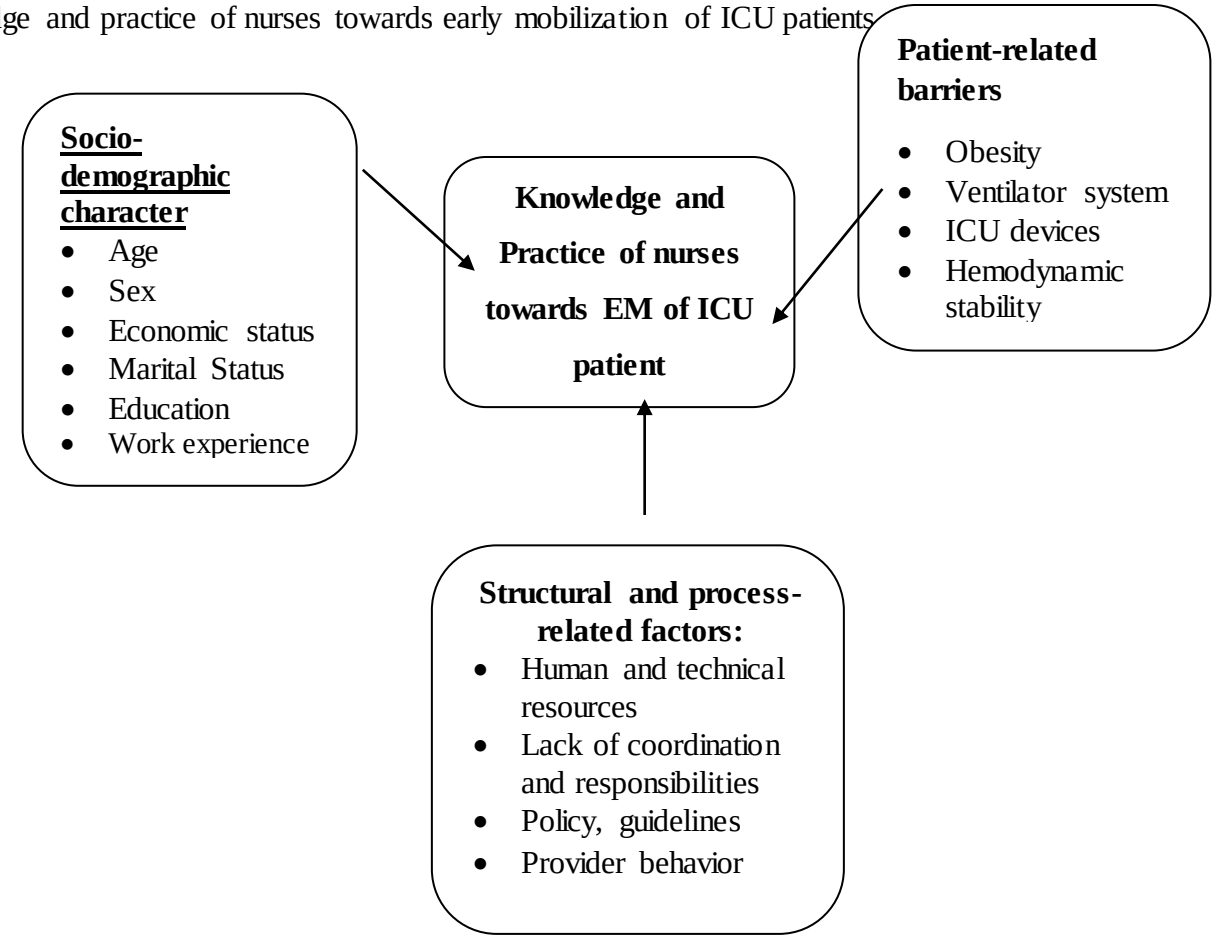

Figure 1:-conceptual framework adopted from knowledge and practice of ICU nurses towards early mobilization of ICU patients Addis Ababa, Ethiopia 2024GC (3,7,26,29).

CHAPTER THREE: - OBJECTIVE OF THE STUDY

3.1 GENERAL OBJECTIVE

The objective of this study was

- To assess knowledge, practice, and barriers to the needs of early mobilization of intensive care unit patients among nurses working in public hospitals, Addis Ababa, Ethiopia 2024.

3.2 SPECIFIC OBJECTIVES

- To determine the knowledge of nurses regarding the need of early mobilization of ICU patients in selected hospital ICUs in Addis Ababa
- To determine the levels of practice of nurses regarding the need of early mobilization of ICU patients in selected hospital ICUs in Addis Ababa.
- To identify barriers associated with knowledge and practice of nurses about the need of early mobilization of ICU patients in Addis Ababa.

CHAPTER FOUR: - METHODOLOGY

4.1 STUDY AREA AND PERIOD

The study was conducted in selected public hospitals of Addis Ababa from March 15 to April 15, 2024, for one month in Addis Ababa selected public hospitals with ICUs. Addis Ababa is the capital city of Ethiopia, with an estimated population of 8,938,683 in an area of 540 square kilometers. The population pyramid is broad-based, typically of a developing world; the main causes of morbidity and mortality are communicable diseases that could be prevented through the interaction of primary healthcare activities. The city has 13 public Hospitals from these hospitals 12 hospitals have ICUs. The research was conducted in selected 6 Addis Ababa public hospitals. These Six public hospitals were selected simple random sampling lottery methods from a total of 12 public hospitals with ICU set-up in Addis Ababa city for the study to address within the given resource and time (43).

St. Paul's Hospital, established in 1969 as St Paul General Specialized Hospital, is a collaborative effort between Emperor Haile Selassie and the German Evangelical Church. With 392 beds, it serves over 200,000 patients annually and a catchment population of over 5 million. About 75% of patients receive free medical services. The hospital has 13 departments staffed by over 1300 individuals, including the recently launched hemodialysis unit and the country's National Kidney Transplant Center. The Medical School was established in 2014. There are 16 mixed medical and surgical adult ICU beds and 40 ICU nurses currently working in the hospitals(44).

Black Lion Hospital, established in 1964, is a specialized hospital in Addis Ababa, Ethiopia. It serves as a teaching hospital for the School of Medicine at Addis Ababa University and offers specialized clinical services. With 200 doctors, 700 beds, and 379 nurses, it provides healthcare services alongside 115 other health professionals. The hospital plans to construct its private hospital, covering a 15-hectare land for expansion, to gain autonomy and establish financial assets. There are 12 mixed medical and surgical adult ICU beds, 4 stroke unit beds 8 cardiac ICU beds 36 ICU nurses, 24 cardiac ICU nurses, and 6 stroke unit nurses currently working in the hospitals. Totally 66 ICU nurses are included in the study(45).

African Leprosy Rehabilitation and Training Center (ALERT), a medical facility in Addis Ababa, focuses on Hansen's disease (leprosy). Originally named All Africa Leprosy Rehabilitation and Training Center, it now includes tuberculosis in its official name. ALERT offers leprosy training for Addis Ababa University's medical students and houses Armauer Hansen Research Institute (AHRI) for leprosy research. The facility includes a 240-bed teaching hospital with dermatology, ophthalmology, and surgery departments, as well as an orthopedic workshop and rehabilitation program. There are 12 adult ICU beds and 29 ICU nurses currently working in the hospitals(46).

Menelik II Referral Hospital in Addis Ababa, Ethiopia, is an esteemed public healthcare facility established in 1909 and named after Emperor Menelik II. Operated by Addis Ababa City Administration, it offers specialized services in various fields such as cardiology, neurology, and oncology. With a capacity of over 800 beds, the hospital serves over 15,000 patients daily and employs more than 2,300 staff members. There are 8 mixed medical and surgical adult ICU beds and 20 ICU nurses currently working in the hospitals(47).

Zewditu Hospital, located in central Addis Ababa, Ethiopia, was originally established by the Seventh-day Adventist Church but was later nationalized during the Derg regime in 1976. Today, it is operated by the Ministry of Health and is known as Ethiopia's premier hospital for treating ART patients. Zewditu has become the largest HIV clinic in Ethiopia, serving over 14,000 patients. There are 12 mixed medical and surgical adult ICU beds and 30 ICU nurses currently working in the hospitals(48).

St Peter Hospital is located in the northern part of Addis Ababa near Shiromeda, Ethiopia. It was established by the regime of emperor Hailesilase. Currently, it has many specialty cares and it is well known as the center of poisoning treatment. Currently, it is serving over 15000 patients. It has a mixed adult medical and surgical ICU with 12 beds and there are 30 ICU nurses currently actively working(49).

4.2 STUDY DESIGN

An institutional-based quantitative cross-sectional study design was applied to the study.

4.3 SOURCE POPULATION

All ICU Nurses who were working in Addis Ababa public hospitals.

4.4 STUDY POPULATION

All nurses who were working in the ICU at selected Addis Ababa public hospitals.

4.5 INCLUSION CRITERIA

All nurses who were working in the ICU and present during the data collection period

4.6 EXCLUSION CRITERIA

- Those who were not willing to participate in the study
- Those who were not present during the data collection period for different reasons like sick leave, annual leave, or maternity leave.
- Nurses, who have less than 6 months of experience as they are not permanent staff, do not clearly understand the ICU culture and process.

4.7 SAMPLE SIZE DETERMINATION AND SAMPLING PROCEDURES

The study sample size was calculated using a single population proportion formula and a p value of 0.253 was taken from a study conducted in North West Ethiopia (47).

$$n = \frac{\left(z\alpha/_2\right)^2 P(1-P)}{d^2} = \frac{(1.96)^2\, 0.253(1-0.253)}{(0.05)^2} = 290.4$$

n= sample size

Zα/2=standard normal deviation of 1.96 corresponding to 95% confidence interval.

P= Proportion = 0.253

d= Margin of error =0.05

Then, sample size was n=291

From a total of 12 Addis Ababa public hospitals with ICU 6 of them were selected by simple random sampling lottery methods for the study. But in all six hospital settings, there were a total of 215 nurse professionals working in the ICU. This number is small to use single

population proportion and sample size calculation, so all nurses working in the ICU were included and used as samples.

4.8 SAMPLE SELECTION

The census sampling method was applied to all subjects present in those 6 hospitals with ICUs and fulfilled the inclusion criteria included in the study.

4.9. STUDY VARIABLES

4.9.1 DEPENDENT VARIABLES

- Knowledge of ICU nurses about the need of early mobilization.
- Practice of ICU nurses regarding the need of Early mobilization of patients admitted to ICU

4.9.2 INDEPENDENT VARIABLES

Socio-demographic variables: Age, Sex, Marital status, education, economic status

Training on Early mobilization, Nurse-patient ratio, Professional qualification

Work experience in ICU, Resource Availability, Patient Condition and Stability

Obesity ventilator system, ICU devices, Human and technical resources

Lack of coordination and responsibility, Interdisciplinary Collaboration

Patient and Family Participation, Organizational Policies and Protocols:

4.10 OPERATIONAL DEFINITION

Knowledge: In this study, it refers to the correct response of the subject to a question regarding early mobilization which is measured According to Bloom's cutoff points (3).

- **Good knowledge**: scores greater than or equal to 80% were considered as good.
- **Poor knowledge**: scores below 80% were considered poor.

Practice: in this study, the practice of early mobilization performed by nurses is observed with the help of an observational checklist and leveled into two categories (5).

- **Good practice**: The practice level of nurses who scored greater than or equal to 75% was considered good practice.
- **Poor practice**: The practice level of nurses who scored less than 75% was considered poor practice.

4.11 DATA COLLECTION INSTRUMENTS AND TECHNIQUES

A structured and semi-structured self-administered questionnaire was used to assess the knowledge, practice, and barriers to early mobilization of ICU patients among ICU nurses. The questionnaires were adopted from other research that were conducted before on the same topics (3,6,9,11,15,21,25,26,29,31,34,44) and modified according to our setup. The questionnaires were collected by trained data collectors and supervisors. The structured self-administered questionnaire contained socio-demographic characteristics of nurses, knowledge of nurses about early mobilization; early mobility practice of ICU nurses, and barriers related to early mobilization of ICU patients related questions were asked each study participant. A total of three trained data collector nurses and two supervisors participated during the data collection time.

4.12 DATA QUALITY ASSURANCE

The data collection process was regularly checked by the investigator for its accuracy and completeness. The data collectors used the same guide paper which is written in English**.** Before data analysis, every questionnaire was checked; corrective actions were taken for unfilled questions before conducting the main study. Pre-tests were carried out at Yekatit 12 Memorial Hospital for one week from March 11-14/2024 GC before the actual study was done, which was not included in the main study. Based on the result of the pretest some questions were modified as necessary. The reliability of the data collected was maintained by checking Cronbach's alpha value of 0.925 for knowledge questions and 0.947 for practice questions. In this regard, experts on the subject matter were contacted and the questionnaire was reviewed to obtain the desired variables. Each participant was told and strictly followed by the principal investigator to respond to the questions on his/her own, without consulting anyone else, and that all the questions provided in the tool were answered and the respondents were not allowed to take the questionnaires in group and Google in between so that no references made so that their actual knowledge at the time of the study were analyzed (avoid bias).

4.13 DATA PROCESSING AND ANALYSIS

All the Data were checked for completeness and consistency by the principal investigator. Data were entered into the Kobo toolbox and then converted into Excel and exported to SPSS version 27 for analysis. A descriptive statistical analysis was done. Binary logistic regression is done, and variables having a P-value less than 0.25 were candidates for the multivariable model. In multivariable analysis, variables having a P-value less than 0.05 were decided statistically significant and reported using an adjusted odds ratio with a 95% confidence interval. The result of the study was analyzed using descriptive and proportions percentages, mean, and median. The result of the study is presented using appropriate tables & graphs.

4.14 DISSEMINATION OF THE RESULT

The result of this study will be disseminated to Addis Ababa University, College of Health Science Department of Emergency Medicine, and Critical Care. A copy of the results will be submitted to the studied respective hospital ICU Departments'. Furthermore, the manuscript will be submitted to national and international peer-reviewed Journals for possible publication.

4.15 ETHICAL CONSIDERATION

Ethical approval letters were obtained from Addis Ababa University, College of Health Science Department of Emergency Medicine and Critical Care Nursing (EMCCN). Ethical clearance was obtained from the Addis Ababa health bureau and a letter of permission was obtained from each respective hospital Medical Directors of the study settings before the actual data collection period. Permission letters were provided to the respective head nurses of the ICU. Information was given to study participants about the purpose and procedure of the study, informed consent was obtained from each individual, and the confidentiality and privacy of the study participants were ensured.

CHAPTER FIVE: - RESULT

5.1 Socio-Demographic Characteristics of the Study Participants

There were a total of 215 nurses who worked in the ICU of selected Addis Ababa public hospitals and 202 were included in this study. This makes the response rate 94% from the total population. Amongst the respondents of the study, 110 (54.5 %) were female nurses, and the majority (75.2%) of nurses were in the age range of 25–30 years. More than half of the study respondents, 152(52.5%) were single. The majority of the respondents, 95(47%) monthly income in the range between 4500-6500 ETB with the mean monthly income of 6726.9 ETB, which is below the mean. The majority of the respondents 104 (51.5%) have 1-3 years of experience and 126 (62.4%) of nurses were comprehensive BSC degree holders. Most of the respondents of the study 175(86.6%) were working in the medical and surgical ICU (table 1).

Table 1: Socio-Demographic Characteristics of Participants Working in the Intensive Units of Selected Public Hospitals of Addis Ababa, Ethiopia 2024.

Variable		Frequency	Percent
Name of institution	TASH	59	29.2%
	SPHMMC	39	19.3%
	ALERT	29	14.4%
	PETER	27	13.4%
	MINILIK	22	10.9%
	ZEWDITU	26	12.9%
Sex	Male	92	45.5%
	Female	110	54.5%
Age	25–30 years	152	75.2%
	31–35 years	45	22.3%
	36- 40 years	5	2.5%
Marital status	Married	95	47%
	Single	106	52.5%
	Divorced	1	0.5%
Work experience in ICU	1- 3 years	104	51.5%
	4 - 6 years	47	23.3%
	>=7 years	51	25.2%
Professional qualification	Comprehensive BSC Nurse	126	62.4%
	BSc in ECCN	18	8.9%
	MSC in ECCN	35	17.3%
	Others	23	11.4%
Working unit	Medical and surgical ICU	175	86.6%

	Cardiac unit	21	10.4%
	Stroke unit	6	3%

5.2 Knowledge of Nurses Working In Adult Intensive Care Units towards Early Mobilization of ICU Patients

There were a total of 27 Yes/No knowledge questions given to study participants and based on the result of this study only 44(21.8%) with 95% CI (16.3, 28.1) of respondents had good knowledge of early mobilization of ICU patients. See figure (fig2) below.

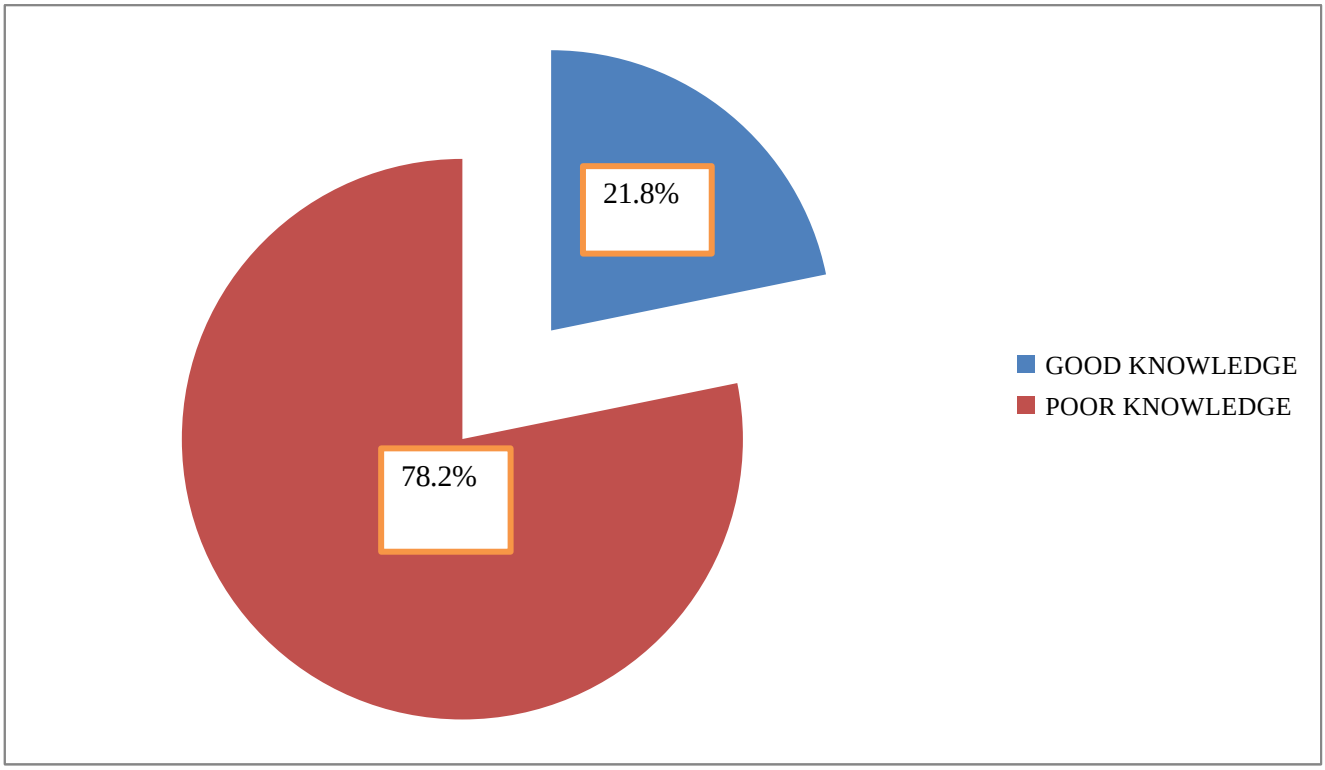

Figure 2: Knowledge Level of Nurses Working in Intensive Care Unit of Public Hospitals of Addis Ababa Ethiopia, 2024.

As we see from the table below majority 137(67.8%) of the participants were aware of the correct definition of early mobilization, but only 80 (39.6%) participants were aware that early mobilization is a part of the ABCDE bundle care. On the contrary, 12 (5.9%) of the respondents didn't know about early mobilization. From the study result more than half, 120(59.4%) of ICU nurses were aware that patients should be mobilized within 2-5 days of ICU Admission. Amongst the study participants only 82(40.6%) of the respondents were aware that Early mobilization is initiated when the patient's cardiorespiratory status is

stabilized, regarding mobilization of patients who have undergone vasoactive infusion, 26(12.9%) of the study participants were aware that EM is initiated when the patient is off vasoactive infusion, but 14(6.9%) of the respondents do not know when early mobilization needs to be initiated. More than half 169 (83.7%) of ICU nurses knew that early mobilization is a very important procedure. This study investigates that from a total of respondents, 134(66.3%) were aware that EM reduces ICU-acquired weakness, 58(28.7%) were aware that EM reduces ICU length of stay and 66(29.7%) were aware EM reduces the duration of a mechanical ventilator.

The majority of nurses 126(62.4%) responded that every patient in the ICU is appropriate for EM, but only 95(47%) knew patients with mechanical ventilators can be mobilized, 59(29.2) knew patients with a critical illness can be mobilized, 93(46%) knew patient with vasopressor and inotropes can be mobilized, 34(6.8%) knew patients sedated with analgesia can be mobilized and 30(17.5%) did not know which patient can be mobilized and 30(14.9%) of the respondents knew every ICU patients should not be mobilized.

This study investigates that 109(54%) of the study participants were aware that patients' critical condition is one of the risk factors for early mobilization. More than half of the total respondents, 104(51.5%) were aware patients connected with ICU devices are one of the risk factors. The majority of ICU nurses were not aware of when is safe to mobilize ICU-admitted patients unless they are told to do so. Most participants 194(96%) knew Nurses were the responsible body for early mobilization. What you can admire from the respondent's answers is only 28(13.9%) of respondents were aware physicians should mobilize ICU patients.

Of the total study participants, the majority of 109(54%) were aware that early mobility prevents DVT, Delirium, and ICU-related mortality. Of the total of the study participants 150(74.3%) were aware that EM will improve the patient's physiological functioning. Most of the respondents120 (59.4%) were aware that EM should be performed both in bed and out of bed. Of a total of respondents, most them 172(85.1%) were aware that suctioning is used as an early mobility protocol to clear the airway, 52(25.7%) were aware that chest vibration and shaking are used to clear the airway as early mobility, and 66(32.7%) are aware coughing is as early mobility protocols used to protect the airway (Table2).

Table 2: Knowledge Distribution of Nurses about Early Mobilization in Some Selected Public Hospitals of Addis Ababa Ethiopia, 2024.

Knowledge question	No	Yes
Early mobilization is a physical activity performed as early as ICU admission	65(32.2%)	137(67.8%)
Early mobilization is a part of the ABCDE bundle	122(60.4%)	80(39.6%)
Time of starting early mobilization	120(59.4%)	82(40.6%)
When do you think mobilization should be initiated in the ICU? Following ICU admission	84(41.6%)	118(58.4%)
When do you think mobilization should be initiated in the ICU? Select ALL that apply/patient is off vasoactive infusions	176(87.1%)	26(12.9%)
What is the importance of early mobilization/Reducing the incidence of ICU-acquired weakness	68(33.7%)	134(66.3%)
What is the importance of early mobilization/Decrease ICU length of stay	144(71.3%)	58(28.7%)
What is the importance of early mobilization/Reduce duration of mechanical ventilators	142(70.3%)	60(29.7%)
Which patient can be possibly mobilized/Receive mechanical ventilation	107(53%)	95(47%)
Which patient can be possibly mobilized/Patients who are critically ill	143(70.8%)	59(29.2%)
Which patient can be possibly mobilized/low dose of vasopressors/ inotropic agents	109(54%)	93(46%)
Which patient can be possibly mobilized/patients who are sedated with analgesia	168(83.2%)	34(16.8%)
Which patient can be possibly mobilized/All ICU patients should not be mobilized	172(85.1%)	30(14.9%)
What are the risk factors you consider to not mobilize the Patients /Patients critical condition	93(46%)	109(54%)
What are the risk factors you consider to not mobilize the Patients /Patients connected to ICU devices	98(48.5%)	104(51.5%)
Who should mobilize the patient /Nurses	8(4%)	194(96%)
Early mobility prevention / ICU-related mortality, DVT, Delirium	93(46%)	109(54%)
Early mobilization will/Improve the patient's physiological functioning	52(25.7%)	150(74.3%)
Early mobilization should be /Limited in bed	151(74.8%)	51(25.2%)
Early mobilization should be / Both in bed and out of bed mobilization	82(40.6%)	120(59.4%)
Early mobilization should be /Routine care	112(55.4%)	90(44.6%)
Which are airway clearance methods used in your early mobility protocols/Coughing maneuvers	136(67.3%)	66(32.7%)
Which are airway clearance methods used in your early mobility protocols/Suctioning	30(14.9%)	172(85.1%)
Which are airway clearance methods used in your early mobility protocols/Forced expiratory techniques	160(79.2%)	42(20.8%)
Which are airway clearance methods used in your early mobility protocols/Active cycle breathing	161(79.7%)	41(20.3%)
Which are airway clearance methods used in your early mobility protocols/Percussion clapping	160(79.2%)	42(20.8%)
Which are airway clearance methods used in your early mobility protocols/Chest vibration/ shaking	150(74.3%)	52(25.7%)
Which are airway clearance methods used in your early mobility protocols/Bed ex	181(89.6%)	21(10.4%)

5.3 Factors Associated with Knowledge of Nurses

Many independent variables have an association with knowledge by binary logistic regression. Bivariable logistic regression analysis of work experience, inadequate knowledge and training, written guidelines or protocols, lack of mobility culture, lack of multidisciplinary approach, lack of staff knowledge and expertise about risks and benefits of EM, staff training, lack of patient and family knowledge were a candidate for multivariable regression to assess knowledge of ICU nurses towards early mobilization with a p-value of less than 0.25. Variables that have a significant association with the knowledge of nurses at $p<0.05$ were work experience, written guidelines and protocols, and ICU staff nurses training. ICU nurses who had training were eight times more likely to have good knowledge than those who haven't trained [AOR = 8.36; CI: 2.96–23.77] and those nurses who had more experience and expertise about the benefits and risks of EM most likely having good knowledge than those who have had less experience's [AOR= 0.354 CI, 0.134, 0.96]. Those institutions with early mobilization written guidelines and protocols were 8 times more likely of knowledgeable nurses than those who didn't have guidelines and protocols for early mobilization [AOR= 8.4, CI, 4.54, 15.24] (table 3).

Table 3: Factors Associated with Knowledge of Nurses Working in Intensive Care Units of Some Public Hospitals of Addis Ababa Ethiopia, 2024.

Factors		Overall knowledge					
		Poor	Good	COR (95%CI)	P-value	AOR (95%CI)	P-value
patients$ family knowledge	No	153	5	1		1	
	Yes	36	8	6.80(2.10, 22.02)	0.001*	0.682(0.125, 3.72)	0.658
staff training	No	148	10	1	1	1	
	Yes	28	16	8.46 (3.48,20.54)	<0.001*	8.36(2.96, 23.77)	<0.001**
guidelines or protocols	no	155	3	1		1	
	yes	30	14	24.1(6.53, 89.1)	0.001*	8.4(4.54,15.24)	<0.001**
Work experience	>5years	36	8	1		1	
	1-4 years	154	4	(1.05, 1.53)	0.072	0.354(0.134, 0.96)	0.042**
Multidisciplinary Approach	No	158	0	1		1	
	Yes	44	0	2.58(1.28, 5.2)	0.008	0.57(0.24, 1.385)	0.203

Note: * = significant at p<0.25, **= significant at p<0.05, COR= Crude odd ratio, AOR=Adjusted odd ratio, CI =Confidence interval

5.4 Practice of ICU Nurses towards Early Mobilization of ICU Patients

In this study there were a total of 27 practice questions given to respondents, only 37 (18.3%) with 95% CI (13.2, 24.4) nurses had good practice report towards early mobilization of ICU patients, and most of the respondents 81.7% had a poor practice of early mobilization (Fig 3).

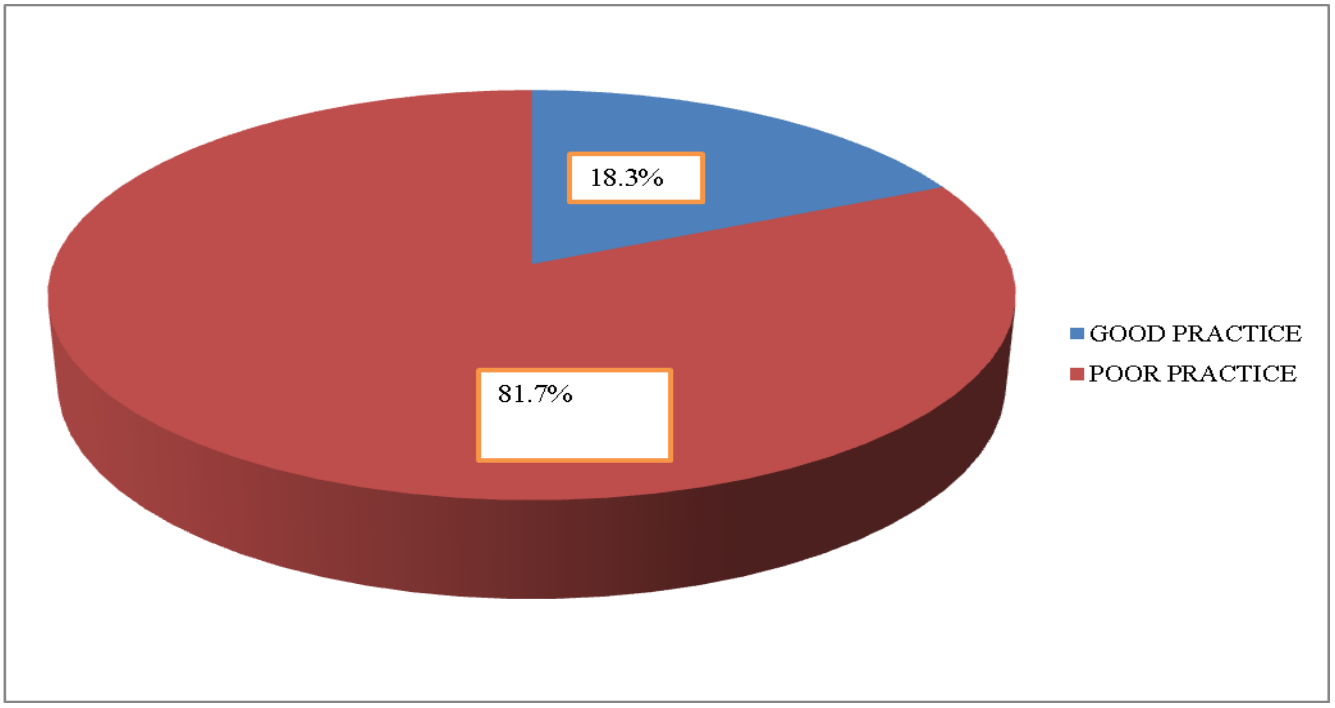

Figure 3: Practice of Nurses Working in Intensive Care Units towards Early mobilization of ICU patients in Public Hospitals of Addis Ababa, Ethiopia, 2024.

Based on this study, from the total of study participants 122(60.4%) ICU nurses assess patients to identify any contraindication of EM and 88(43.6%) encourage patients to do active exercise in their ICU stay. The majority of the respondents 130(64.4%) help support patients who are without mechanical ventilators for mobilization out of their bed, meanwhile only 41 (20.3%) of the participants perform respiratory training in their shifts. The majority of the study participants 138(68.3%) only perform passive exercise which is commonly routine care.

From the table below, we can understand that from the total participants of the study, 106(52.5%) assessed a range of motion before EM of patients, 70(34.7%) assessed muscle strength, tone, and sensation, and 53(26.2%) assessed bed mobility. 83(41.1%) were assessed consciousness before the early mobilization of ICU patients.

The majority of the study participants 166(82.2%) performed limb exercises and breathing exercises, 108(53.5%) of the respondents were overviewed for the practice of early mobilization by the ICU coordinator, but only 85(42.1%) performed percussion, vibration, and suctioning techniques as early mobility practices. Most of the respondents 156(77.2%) were educated about their patients and patients' families about early mobilization.

The most reported type of practice of early mobilization by the majority of the study participants from the total of study participants, 178(88.1%) performed only passive range of motion commonly routine bed care. Of the total participants, 106(52.5%) performed functional task training for improving patients, 100(49.5%) performed ambulation, and 67(33.2%) performed gait training for their improving patients. The majority of the ICU nurses 176(87.1%) performed bed exercise, shoulder exercise, neck exercise, elbow, wrist, hip, and knee exercise as early mobility for ICU patients (table 4).

Table 4: Early Mobilization practice of ICU nurses working in the ICU of some selected public hospitals of Addis Ababa Ethiopia, 2024.

practice questions	No	Yes
I assess patients to identify if patients have any contraindications of EM	79(39.1%)	123(60.9%)
I encourage conscious patients to do active exercise within their capacities	114(56.4%)	88(43.6%)
I perform passive limb exercises for unconscious patients daily twice	172(85.1%)	30(14.9%)
I help patients take the semi-supine position in my daily work	181(89.6%)	21(10.4%)
I help patients sit on the edge of the bed	124(61.4%)	78(38.6%)
I help patients without mechanical ventilation to mobilize out of bed	72(35.6%)	130(64.4%)
I help patients on mechanical ventilation to mobilize out of bed	168(83.2%)	64(16.8%)
I encourage and help patients perform respiratory training in my daily work	160(79.2%)	42(20.8%)
I instruct patients' families to perform physical exercises for the patients	165(81.7%)	37(18.3%)
Only routine care always	117(57.9%)	85(42.1%)
Passive exercise	64(31.7%)	138(68.3%)
Active exercise	161(79.7%)	41(20.3%)
Bedside cycling	163(80.7%)	39(19.3%)
What types of assessment will you carry out in ICU patients before EM?/ROM	96(47.5%)	106(52.5%)
What types of assessment will you carry out in ICU patients before EM?/Muscle strength	131(64.9%)	71(35.1%)
What types of assessment will you carry out in ICU patients before EM?/Bed mobility	149(73.8%)	53(26.2%)
What types of assessment will you carry out in ICU patients before EM?/Consciousness	119(58.9%)	83(41.1%)
Types of exercise involved in your practice? Active Range Of Motion	153(75.7%)	49(24.3%)
Types of exercise involved in your practice? Passive Range Of Motion	24(11.9%)	178(88.1%)
Types of exercise involved in your practice? Sitting on the edge of the bed	160(79.2%)	42(20.8%)
What types of exercise are involved in your practice? balance	162(80.2%)	40(19.8%)
What kind of exercise do you perform to improve patients?/Ambulation	102(50.5%)	100(49.5%)
What kind of exercise do you perform to improve patients?/Gait training	135(66.8%)	37(33.2%)
What kind of exercise do you perform to improve patients?/Active cycling	158(78.2%)	44(21.8%)
What kind of exercise do you perform to improve patients?/Resisted exercises	155(76.7%)	47(23.3%)
What kind of exercise do you perform to improve patients?/Functional task training	96(47.5%)	106(52.5%)
All(neck, shoulder, elbow, wrist, bed exercise) bed, elbow , shoulder, neck exercise	26(12.9%)	176(87.1%)

5.5 Factors Associated With the Practice of Nurses

In bivariable logistic regression, factors such as sex of ICU nurses, patients' critical condition, lack of clinical experience, ICU-related devices, hemodynamic instability, absence of written guidelines and protocols, obesity of the patient, standard EM order, lack of assistance staff, inadequate knowledge and training about early mobility, lack of planning and coordination were a candidate for multivariable logistic regression with P-value less than 0.25. From multivariable regression, sanding bed rest orders, no written guidelines or protocols, good planning and coordination, and obesity of patients were significantly associated with the

practice of nurses. Patients who had standardized early mobility ordered by a physician for ICU patients have 5 times have a better chance of getting practice of early mobilization than those patients who had a standing bed rest order, [AOR= 4.96, CI 3.7, 11.1]. Having a good plan and coordination in the ICU to do EM had more likely lead to Good Practice in the ICU [AOR=0.05 CI 0.06, 0.458]. Those patients who have a BMI <30kg/h^2 are more likely 2 times mobilized than obese ones with [AOR=2.1 CI 1.276, 127.53]. Those nurses who got written guidelines and protocols in their ICU had better practice than those who couldn't get [AOR =0.035 CI 0.005, 0.221] (table 5).

Table 5: Factors associated with practices of Nurses working in the intensive care units of public hospital of Addis Ababa, Ethiopia, 2024.

Factors		Practice				OVERALL PRACTICE	
		Poor	Good	COR	P value	AOR (95%CI)	P-value
Sex of respondents	Male	68	24	1		1	
	Female	97	13	0.38(0.18,0.798)	0.011	1.12(0.256, 4.92)	0.879
Standard EM order	NO	95	12	1		1	
	YES	70	25	0.35(0.166,0.752)	0.007	4.96(3.7, 11.1)	0.003**
Clinical experience	NO	136	18	1		1	
	YES	29	19	0.202(0.095,0.432)		0.339(0.06,2.043)	0.238
ICU related devices	NO	88	34	1		1	
	YES	77	3	9.97(2.93,33.6)	0.001	0.53(0.118,2.384)	0.480
planning/coordination	NO	141	14	1			0.007**
	YES	14	23	0.104(0.047.0.23)	0.001	0.05(0.06, 0.458)	
Obesity BMI <30	NO	87	35	1		1	0.029**
	YES	78	2	15(3,65, 67.4)	0.001	2.1(1.276, 12.53)	
Patients critical	NO	63	7	1		1	0.151
condition	YES	102	30	0.378(0.157,0.911)	0.03	0.294(0.055, 1.56)	
Inadequate training	NO	59	33	1		1	0.2
	YES	106	4	14.03(5,43.8)	0.001	4.24(0.47, 38.5)	
Lack of assistance	NO	160	5	1		1	0.485
	YES	27	10	0.084(0.027,0.27)	0.001	0.409(0.083, 5.01)	
Guideline/protocols	NO	161	4	1		1	0.008**
	YES	24	13	0.46(.014,0.152)	0.001	0.035(0.005,0.221)	

Note: * = significant at p<0.25, **= significant at p<0.05, COR= Crude odd ratio, AOR=Adjusted odd ratio, CI =Confidence interval

CHAPTER SIX: - DISCUSSION

Early mobilization is an important physical activity that needs to be performed in the ICU to improve the patient's physiological functioning within the first 2-5 days of the patient's ICU admission unless there is no contraindication. It is also important for healthcare professionals working in the ICU to reduce ICU length of stay and duration of mechanical ventilation. It also reduces the cost of the hospitals for the family of the patient and the patient burden of the hospitals(1).

A total of 202 ICU nurses participated in this study. The major objective of this study was to assess knowledge, practice, and the barriers to early mobilization of ICU patients among nurses who are working in selected Addis Ababa public hospitals, in Ethiopia. The study result showed that only 21.8% of nurses have good knowledge and only 18.3% of ICU nurses have good practice in early mobilization. This may have an impact on the quality of ICU care.

In this study, the total proportion of good knowledge was 21.8% with 95% CI (16.3, 28.1). This finding is similar to the study conducted in Saudi Arabia teaching hospitals which 22% had good knowledge regarding EM (28). The result of this study is lower than the study done in Sudan Khartoum which 74.4 % of professionals had good knowledge of early mobilization(29) and this variation may be due to they included physicians and physiotherapists in their study. This study result is also lower than the study conducted in Nigeria at the University of Ibadan which is 30 % (13) and this may be due to the different sample size of the study. It is also lower than the study conducted in Canada which is 40.1%(15) and in Italy at 41.6% (50), this disparity could be due to the difference in nurses in accessing information between countries, education, the difference in technological advancement and quality of In-service training for nurses.

The finding of this study is greater than the study done in Rhode Island college teaching hospitals in the US, in which only 16.8% of the respondents had good knowledge (27), this may be due to the reason that the study is done only in one hospital setting. This study was much higher knowledgeable on the early mobilization of ICU patients than the study done in Egypt, where 16% of staff nurses had good knowledge of EM (37), This might be due to the difference in sample size used, year of a study conducted, the difference in personal understanding, cut point for the classification of knowledge, continuing educational program,

the difference in curriculum and other factors among countries (16). The finding of this study is also higher than the study done in Shanghai China on university graduating students before the actual work which is 20% (51), This variation may be due to their lack of clinical experiences and exposure.

In this study, nurses' work experience (p-value 0.042), staff education and training (p-value 0.001), and presence of written guidelines and protocols (P value 0.0001) had statistically significant association with the knowledge of nurses about early mobilization of ICU patients.

The finding of this study is in line with the study done in Ethiopia in 2020 at North West hospitals in Ethiopia(3), and Sudan Kahourtum on multicenter hospitals(29), the work experience at a p-value of 0.042 is statistically significant and when work experiences of the nurses increase in the ICU they have a likelihood of good knowledge about early mobilization of ICU patients. This may be due to the reason that work experience increases exposure to the patient who needs EM, and nurses develop the confidence to mobilize.

The finding of this study is also in line with a study done at Bensufe University of Egypt (40) and Nigeria University of Ibadan (13) who had staff education and training on knowledge of early mobilization had more knowledge than those who did not have on the contrary. This may be due to the reason that nurses become able to identify which patients need to be mobilized and nurses might have updated their knowledge through training and upgrading their status.

The finding of this study is similar to the study conducted in China Shanghai (51), a study conducted in Malaysia teaching hospitals (16, 31) and South Africa(32), in which written guidelines and protocols present in the ICU had a statistically significant association with knowledge of nurses and this may be due to the reason that it boosts the nurse's knowledge, Help the nurses to read about early mobility.

The nurse's good practice in this study was 18.3% with 95% CI (13.2, 24.4). The finding is higher than the study conducted in Nigeria which revealed that the level of good practice was 14% (13). This might be due to the difference in the study period, the difference in study characteristics, the criteria to classify practice, and the tool used to assess practice. This finding is also higher than the result of the study conducted in Canada Montreal which is

15.9% (52), This may be due to less number of beds in our ICU, and the 24-hour shifts of the nurses.

The finding is lower than the study conducted in South Africa which is 42.9% of nurses had good practice of early mobilization (53), china where 30.7 % of nurses had good practice of EM (54), and Florida International University where 91% of nurses had a good level of practice regarding EM (55). This difference in practice among nurses might be because of differences in the setup, cut point to classify practice of nurses, training of nurses, presence or absence of skill-based simulation, implementation of continuous professional development among countries availability of hospital protocols and guidelines.

Standard EM orders by physicians to ICU admitted patients (p = <0.003), lack of planning and coordination in the ICU for EM (p=0.007), being obese of ICU patients (p=0.029) no written guidelines and protocols in the ICU for EM (p= 0.008) were significantly associated with the practice of ICU nurses. The finding of this study is in line with the study done in the USA by the American Thoracic Society in 2016 (56), which showed that there was a significant association between nurses' practices with lack of coordination and planning in the ICU at p-value of < 0.007(7). The finding of this study is also in line with a study done in Nigeria at the University of Ibadan (13), South Africa, and Egypt (53). This could be due lack of clinical advocators in the ICU for early mobilization, a lack of knowledge about the importance of early mobility in reducing ICU length of stay, lack of nurses' regular monitoring.

The result of this study is about the effect of standing bed rest orders by physicians and nurses' practice was a statistically significant contribution to the decrement of nurses' practice at a p-value of 0.003. This finding is in line with a study which is conducted in Egypt in 2016 at Bensuff University (40). This finding is also in line with the finding of a study which is conducted in Nigeria at the University of Ibadan showed that early mobility is highly affected by a standing bed rest order by a physician. Another study done in Brazil (36), Australia, and New Zealand(35) also showed that standing bed rest orders highly affect nurses' practices. This could be due to the physician not giving priority to EM, lack of knowledge about the importance of EM, lack of knowledge to identify which patient is not eligible for early mobility, or fear of taking the risk of a patient fall.

The finding of this study shows that obesity in patients whose BMI>30 highly affected the nurse's early mobilization at a P value of 0.029. This finding is in line with a study done in Canada Montreal in 2019(52) and the University of Maryland in Baltimore USA in 2016(56) showed that obese patients prevent nurses from doing early mobility practices. This may be due to the number of staff in the ICU is low, a lack of family support in the early mobility practice, poor nutritional education of the patients and not performing physical activity.

Based on the findings of this study Absence of EM guidelines and protocols in the ICU at a p-value of 0.008, highly affects the nurse's early mobility practice negatively and decreases the nurse's practice of EM. This finding is similar to the study done in Sudan Kahourtum (29), South Africa and Zimbabwe(32) showed that lack of written guidelines and protocols highly affects the nurse's early mobility practice. This may be due to a lack of knowledge; early mobility is not culture in those ICUs. No regular seminar and morning discussion program, absence of a clinical coordinator to monitor early mobility.

CHAPTER SEVEN:-STRENGTH AND LIMITATION OF THE STUDY

7.1 STRENGTH OF THE STUDY

The study was conducted in six major specialized hospitals of Addis Ababa and the country, which may have a better chance of having exposure to better ICU settings based on our country setting. Half of the study areas were included in the study which makes the study representative to the general population. The assessment tools used were evaluated by expertise and have very good validity and reliability with a Cronbach's alpha value of >0.9 for both knowledge and practice questions. The finding of this study will help those hospitals to know the status of their employee and help them to empower. The study is novel to our country and helps the next researcher and concerned body to emphasize the EM program. The method used for this study helps to explore the knowledge and practice level of ICU nurses within a short period. Generally, this study addressed its objectives. In addition, primary data was used directly from ICU nurses. All respondents used the same questionnaires given in English to reduce biases. The census method was used as a sampling technique which eliminates sampling error.

7.2 LIMITATIONS OF THE STUDY

This study assessed the knowledge and practice of nurses on early mobilization. This study didn't include other health professionals in the study. In addition to this, the study participants were from intensive care units of government hospitals, it did not include private hospital nurses. The study used a cross-sectional study design, which can't show exactly the causal relationships of the causes and effects of the dependent variable knowledge and practice with other independent variables. Since the study is novel to our country getting references which have the same health system as our country was not easy. The result of the study is expressed from the sum result, this didn't identify specifically in which area of knowledge and practice gap the nurse has.

CHAPTER EIGHT: - CONCLUSION

CONCLUSION

This study shows that there is a significant knowledge and practice gap among nurses working in the Addis Ababa public hospitals ICU units about early mobilization of ICU patients. The major factors associated with good knowledge of nurses were staff education and training, work experience, and written guidelines and protocols. In addition, the major factors associated with poor practice of ICU nurses to early mobilization were obesity of patients with BMI>30, sanding bed rest orders, lack of planning and coordination, and no written guidelines and protocols for early mobilization in the ICU. Early mobilization improves patients' physiological functioning, reduces ICU length of stay in the ICU, and reduces the duration of mechanical ventilators. Moreover, it will help both the hospitals and health professionals by reducing the patient burden and being cost-effective. Therefore in conclusion it is important to make ICU nurses knowledgeable and skillful through training, education, and experience-sharing programs.

CHAPTER NINE:-RECOMMENDATIONS

Based on the findings of this study, the following recommendations were forwarded.

TO HOSPITALS

Should fulfill all the necessary equipment used for early mobilization. Most importantly, hospitals should facilitate morning educational and learning programs to have experience sharing among nurses as well as conduct simulation programs that enable them to improve the skills of nurses. In addition, they should encourage nurses to prepare seminars and discuss patient care in the intensive care units. Moreover, hospitals should ensure that nurses who perform the procedure are adequately trained and competent enough. In addition, hospitals must ensure that quality assurance programs are in place to monitor and assure the quality of care provided to patients. Training should be given to each ICU nurse and during rotation or new recruitment there should be training before they are directly involved in ICU care. The hospital needs to consider employing physiotherapists in the ICU so that basic ICU care can be easily addressed. Assigning attending physician to evaluate the Standing bed rest order and if patients are candidates they should get early mobility. Empowering the staff with education and needs to prepare ICU early mobility advocators in the unit. The hospitals should prepare their early mobility protocols. Finally, hospitals should give regular feedback on the early mobilization practices of nurses to help them improve their knowledge and skills.

The findings of this study may have implications for hospitals to invest in the education, training, and supply of equipment for ICU nurses, assign EM advocators in the ICU to have clear planning, coordination, and monitoring, make available EM guidelines and protocols in the ICU and early identification of the patient for eligibility to EM which have been shown to affect their practice positively.

TO ADDIS ABABA HEALTH BUREAU

Should give training for those nurses regularly working in the ICU and updated information about basic ICU care including early mobilization as ABCDE bundles. The educational program needs to be given to ICU nurses and upgrading their educational qualifications. Make available the current early mobilization protocols of WHO until our country prepares its guidelines and protocols. Evaluating the nurses' knowledge and practice about basic ICU care

in a regular fashion. Working with other nongovernmental hospitals and other federal hospitals to share knowledge and other resources.

TO THE MINISTRY OF HEALTH

Should incorporate early mobility in the curriculum of emergency care. Arrange educational programs, training, and experiences sharing abroad that enable nurses to have updated knowledge and the latest evidence-based practices. In addition, the Ministry of Health should accomplish regular supervision of hospitals. Moreover, the Ministry of Health should check for possible shortages of supplies and facilities within the hospitals.

FOR FUTURE RESEARCHER

This study can serve as a baseline for further researchers in the area.

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APPENDIX 1:- CONSENT FORM

English Version Participant Information Sheet and Informed Voluntary Consent

Information Sheet

Greetings: Good morning/afternoon!

My name is----------. I am working as a data collector for the study being conducted on the assessment knowledge and practice of Intensive care unit nurses towards open early mobilization of ICU patients in some selected public hospitals in Addis Ababa, Ethiopia 2024.

The aim of this study is; to the assessment knowledge and practice of ICU nurses towards Early mobilization of ICU patients in selected public hospitals in Addis Ababa, Ethiopia 2024.

Risk/Discomfort: There is no risk in participating in this research project.

Benefits: If you participate in this research project, there may not be a direct benefit to you and you will not be provided any incentives to take part in this project, but your participation is likely to help us assess knowledge and practice of Intensive care unit nurses and this will help the concerned bodies for developing appropriate interventions.

Confidentiality: The information collected from this research project will be kept confidential and information about you that will be collected by this study will be stored in a file, without your name, but a code number assigned to it and it will not be revealed to anyone except the principal investigator.

Right to refuse or withdraw: You have full right to refuse to participate in this research. You can choose not to respond to some or all questions if you do not want to give your response. You have also the full right to withdraw from this study at any time you wish.

Procedure and duration: The questionnaires contain knowledge, practice, and barriers-related questions. And some of the questions may have more than one answer as alternatives.

Do you agree to participate?

Yes ☐ continue to the next page No ☐ Thank the participant

INDIVIDUAL CONSENT FORM

First I would like to thank you for taking your time and participating in our study.

I the undersigned participated in the study "Assessment Knowledge and Practice of Intensive Care Unit Nurses Towards Early Mobilization of ICU patient in Some Selected Public Hospitals in Addis Ababa, Ethiopia 2024." my free will and interest after being oriented about the purpose of the study. Can you sign your agreement for the study? Yes ---------- Date ----------

Person to Contact: If you want more information and check about this project you can contact the following people.

Principal Investigator Name and Address:

Name: Gebremariam Getnet Kassahun Phone number: +251918634121

email www.gmariamgetnet130@gmail.com

ANNEX 2: ENGLISH VERSION QUESTIONNAIRES

PART I - socio-demographic characteristics of the respondent

Questions	**Responses**	**Remark**
Name of the institution	1. Black Lion SH 4. Alert SH 2. St. Paul's SH 5. Zewditu SH 3. Minilik SH 6. St peter hospital	
Sex	1. Male 2. Female	
Age	----------**year**	
Marital status	A) Married B) Single C) Widow D) Divorced	
Monthly income	_____ET birr	
Work experience in ICU in years	_____	
Professional qualification	A) BSc in ECCN B) BSc comprehensive C) MSc ECCN D) Other……	
Working Unit	A) surgical B) medical C) cardiac	

PART II: Knowledge assessing questions (modified from A Clinical Practice Guideline) more than one answer is possible (3,6,16,29)**.**

1. Which idea is correct about early mobilization
    A. Early mobilization is a physical activity performed as early as ICU admission
    B. Early Mobilization practice should start from active activities and then gradually transition to passive activities
    C. Early mobilization is a part of the ABCDE bundle
    D. I don't know
2. Which is correct about early mobility
    A. Early mobility should take 2 times a day for 30 minutes
    B. Early mobilization is safe and feasible to perform in the ICU
    C. Early mobilization is provided during recovery from critical illness
    D. I don't know
3. Time of starting early mobilization

A. 2-5 days B. 5-7days C. 7-14 days D. >14days

4. When do you think mobilization should be initiated in the ICU? Select ALL that apply.
    A. Following ICU admission

    B. patient cardio-respiratory status has stabilized

    C. when the patient is extubated and intubated

    D. the patient is off vasoactive infusions

    E. A patient who is conscious and can cooperate

    F. sedative infusions are discontinued

    G. I don't know

5. How important is early mobility in the ICU to you? a. Extremely important b. Very important C. Important d. Not as important e. Not sure
6. What is the importance of early mobilization
    A. Reduce the incidence of ICU-acquired weakness
    B. Decrease ICU length of stay
    C. Reduce the duration of mechanical ventilators
    D. I don't know
7. Which patient can be possibly mobilized
    A. Receiving mechanical ventilation
    B. Patients who are critically ill
    C. low dose of vasopressors and/ or inotropic agents
    D. patients who are sedated with analgesia
    E. I don't know
    F. All ICU patients should not be mobilized
8. I understand which patients are appropriate for mobilization? A. Yes B. No

9. What are the risk factors you consider to not mobilize the Patients
    A. Patients critical condition
    B. Patients connected to ICU devices
    C. Fear of patient fail
    D. I don't know
10. I am not sure when it is safe to mobilize my patients? A. Yes B. No
11. Who should mobilize the patient
    A. Nurses B. Physician C. Physiotherapist D. I don't know
12. Early mobility prevent
    A. DVT B. Delirium C. ICU-related mortality D. All E. I don't know
13. I understand which patients are appropriate for early mobilization? A. Yes B. No
14. Early mobilization will
    A. Improve patient's physiological functioning
    B. Improve body functioning
    C. Improve pulmonary function
    D. I don't know
15. Early mobilization should be
    A. Limited in bed
    B. Both in-bed and out-of-bed mobilization
    C. Routine care
    D. I don't know
16. Which are airway clearance methods used in your early mobility protocols
    A. Coughing maneuver's
    B. Suctioning
    C. Forced expiratory techniques
    D. Active cycle breathing
    E. Percussion clapping
    F. Chest vibration/ shaking
    G. Bed exercise

Part III: Practice Assessing questioners for ICU nurses towards EM of ICU patients taken from the Clinical Practice Guideline) more than one answer is possible (3,5,15,16,57)**.**

1. What do you do for ICU patients select all that you do.
    A. I assess patients to identify if patients have any contraindications of EM
    B. I encourage conscious patients to do active exercise within their capacities
    C. I perform passive limb exercises for unconscious patients daily twice.
    D. I help patients take the semi-supine position in my daily work
    E. I do nothing
2. What do you do for your patient during your shift?

A. I help patients sit on the edge of the bed
B. I help patients without mechanical ventilation to mobilize out of bed
C. I help patients on mechanical ventilation to mobilize out of bed
D. I encourage and help patients perform respiratory training in my daily work
E. I instruct patients' families to perform physical exercises for the patients

3. What kind of exercise do you perform in your ICU?
   A. Only routine care always
   B. Passive exercise
   C. Active exercise
   D. Bedside cycling
   E. I do nothing
4. What types of assessment will you carry out in ICU patients before EM? Circle assessments
   A. Range Of Motion
   B. muscle strength, tone, sensation
   C. bed mobility
   D. consciousness
   E. None
5. Early Mobility advocator(head nurses) in the ICU facilitates early mobilization practice? A. yes B. No
6. Limb exercises and breathing exercises performed to ICU patients every day? A. yes B. No
7. I will educate my patients on exercise: range of motion or increase their physical activity while in the ICU, unless contraindication Perception. A. yes B. No
8. For what purpose do you perform Percussion, vibrations, and suction techniques used to treat patients in ICU as EM practice?
   A. Muscle strength
   B. Functional mobility
9. What types of exercise are involved in your practice? Circle all applied
   A. Active Range Of Motion
   B. Passive Range Of Motion
   C. Sitting on the edge of the bed
   D. balance
10. What kind of exercise do you perform to improve patients?
    A. functional task training
    B. Ambulation
    C. Gait training
    D. Active cycling
    E. Resisted exercises
    F. none
11. What kind of Early Mobility performed in ICU

A. Neck exercise
B. shoulder exercise
C. elbow, Wrist, hip and knee, ankle exercise
D. bed exercise
E. all is applied

Part IV: questioners help to identify barriers to early mobility practice of ICU nurses taken from the Clinical Practice Guideline) more than one answer is possible (7,11,21,25)**.**

A. Patient-related barriers (Physical, ICU device, and equipment barriers)

1. What are the reasons to prevent from preventing early mobility?

A. The patient on critical condition
B. Lack of Clinical experience
C. Psychological status
D. Time constraint
E. ICU related devices(MV, central line, cervical collar)

2. What are the most important patient-level barriers to early mobilization in YOUR ICU? Please check ALL that apply or "no patient barriers if there are none.

A. medical instability (Hemodynamically instability)
B. patient being endotracheal intubated
C. physical restraints need
D. risk of dislodgement of ICU devices or lines prevents me from performing
E. cognitive impairment/cognitive age
F. excessive sedation
G. inadequate analgesia
H. obesity BMI>30

B. Structural Barriers

1. **What are the most important institutional (structural) barriers to early mobilization in your ICU? (more than one answer is possible)**

A. routine bed rest orders on ICU admissions

B. Insufficient equipment for early mobilization (e.g. ceiling lifts, chairs, walkers, etc.)

C. Inadequate Knowledge or training about early mobility

D. no written guidelines or protocols for early mobilization

E. not enough physical space

F. Lack of assistance staff

G. no clinician champion/advocate to promote early mobilization in the ICU

H. perceived to be an expensive intervention by administrators or unit leader

I. other institutional barrier(s), please specify_____

C. Cultural barriers (more than one answer is possible)

A. lack of mobility culture
B. lack of multidisciplinary culture(physicians, nursing, physical, therapy)
C. lack of staff knowledge and expertise about the risks or benefits of mobility
D. early mobility is not a priority during an ICU stay
E. lack of staff education and support
F. lack of patient and family knowledge about the benefits of early mobility

D. Process-related barriers (more than one answer is possible)

A. lack of planning and coordination

B. unclear expectations, roles, and responsibilities

C. missing or delayed daily screening for eligibility

D. standardized early mobility order/ physician order

E. perceived fear of risk of mobility and stress injury

F. staffed with dedicated rehabilitation therapists