ADDIS ABABA UNIVERSITY COLLAGE OF HEALTH SCIENCE

DEPARTMENT OF EMERGENCY AND CRITICAL CARE NURSING

KNOWLEDGE AND PRACTICE OF ADULT EMERGENCY NURSES TOWARDS POST TRAUMATIC HYPOVOLEMIC SHOCK MANAGEMENT IN SELECTED PUBLIC HOSPITALS IN ADDIS ABABA, ETHIOPIA, 2024.

BY: MESERET AMARE DERSO (BSC)

JUNE, 2024

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APPROVAL BY THE BOARD OF EXAMINATION

This thesis by Meseret Amare Derso is accepted in its present form by the board of examiners as satisfying thesis equipment for the degree of masters in emergency and critical care nursing.

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DECLARATION

Letter of Declaration:

By my signature below, I declare and affirm that this entirely is 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 referred to all sources used in this document. Every effort has been made to avoid plagiarism in the preparation of this thesis. This thesis was 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 emergency and critical care nursing.

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ABBREVIATIONS AND ACRONYMS

ALERT	All Africa Leprosy, Tuberculosis and Rehabilitation Training Center
AHRI	Armauer Hansen Research Intuition
TASTH	Tikur Anbessa Specialized Teaching Hospital
AaBET	Addis Ababa Burn, Emergency and Trauma
ECCN	Emergency and critical care nursing
THS	Traumatic Hypovolemic Shock
PTHS	Post Traumatic Hypovolemic Shock
PTHSM	Post traumatic Hypovolemic Shock Management
RBC	Red Blood Cells
ED	Emergency Department
ICU	Intensive Care Unit
MOF	Multi Organ Failure
ETB	Ethiopian Birr
SPSS	Statistical Product and Social Service
AOR	Adjusted Odds Ratio
COR	Crowds Odds Ratio
SRS	Simple Random Sampling
ART	Antiretroviral Therapy
MOH	Ministry of Health
GCS	Glasgow coma scale
AVPU	Alert Voice Pain Unresponsive

ABSTRACT

Introduction: Posttraumatic Hypovolemic shock management is one of the commonly performed routine care in the emergency department so as to maintain oxygen delivery to multiple organs, which can be caused by internal or external bleeding. Knowledge and practice of nurses working in the emergency department towards post traumatic hypovolemic shock management is directly related to minimize complications, improve standard management, to promote effective treatment and to reduce length of stay in the Hospital.

Objective: to assess knowledge and practice of adult emergency nurses towards post traumatic hypovolemic shock management in selected public hospitals in Addis Ababa, Ethiopia 2024.

Methods: Institutional based cross-sectional study was conducted on nurses working in six public hospitals. Simple random sampling method was used and data were collected using a structured self-administered questionnaire. Data was entered into the kobo toolbox and analysis was done using SPSS version 25. Frequency and percentage were done for categorical data. In addition, mean and standard deviation were done for continuous data. Besides, binary logistic regression was used to determine an association between dependent and independent variables. The study was conducted from March/ 2024 to April/ 2024.

Result: From 226 nurses, 215 participated, resulting in 95%. From this, 62(28.8%) with 95% of CI (0.229- 0.354) and 64(29.8%) with 95% CI (0.237-0.364) of nurses had good knowledge and practice respectively. work experience [AOR = 15; CI: 4.49-49.8], professional qualification [AOR = 8.91; CI: 2.9-27.62] and training [AOR = 20.01; CI: 12.5–24.1] were significantly associated with knowledge of Nurses with p- value <0.05. Moreover, monthly income of more than 15000 ETB [AOR = 14.79; CI: 5.93 -- 39.9] and training [AOR = 7.74; CI: 1.76 -- 7.93] were associated with the practice of nurses.

Conclusion: in this study, a smaller proportion of nurses had good knowledge and practice of posttraumatic hypovolemic shock management. Monthly income, work experience, professional qualification and training were major factors associated with knowledge and practice.

Keywords*:* Posttraumatic, hypovolemic shock, Knowledge, Practice, emergency departments, Nurses

1. INTRODUCTION

1.1 Background

Shock is a potentially fatal circulatory failure disease that results in cellular and tissue hypoxia due to insufficient oxygen supply to meet metabolic and oxygen consumption demands. Shock has reversible effects at first, but it quickly becomes irreversible, leading to multiple organ failure (MOF) and consequent death. The clinician must promptly start therapy when a patient appears with undifferentiated shock in order to reverse shock, prevent MOF, and save the patient's life. This must be done while quickly determining the etiology (1).

It is a potentially deadly condition that arises from low blood pressure, insufficient blood flow, and hypoxia in body tissues. In addition, shock lowers consciousness, raises heart rate, and lowers blood pressure. Shock is the body's defensive response to a drop in blood flow and can be caused by insufficient intravascular fluid volume, sudden changes in blood vessel diameter, or a weakened heart rate(2).

Clinical, hemodynamic, and biochemical markers are used to diagnose shock and due to blood loss, shock following traumatic injury is likely to be hypovolemic (3).

Hypovolemic shock is a term used to describe a medical or surgical condition in which multiple organ failure results from excessive blood loss, leading to insufficient perfusion and insufficient circulation. It is a serious medical illness that can occur when an individual loses more than 20 %(one- fifth) of his body’s blood or fluid supply and it typically occurs after sudden blood loss, or hemorrhagic shock. Hypovolemia, which results from traumatic injuries such repeated gunshot wounds, stab wounds to the abdomen or arteries, is the direct loss of whole blood or bodily fluid(4). Hypovolemic shock can result from burn, trauma, hemorrhage, and surgery. burn causes plasma loss, trauma and hemorrhage cause blood loss from the inside or outside (5).

Traumatic Hypovolemic shock (THS) is a subtype of hypovolemic shock in which trauma or injured patients experience a small to large internal or external blood loss. After trauma, bleeding continues to be the greatest avoidable cause of death. The primary goal of a physician or nurse treating an acute traumatic hypovolemic shock is to halt the bleeding as quickly as possible (6),(7). In hypovolemic shock, a decrease in circulation volume leads to hypo perfusion. Among the injuries some patients who do not pass away right away have lost enough blood to result in hypovolemic shock. It is the most common type of shock experienced by those with severe injuries.

It happens when there is an abrupt and significant reduction of circulation volume. The decreasing fluid volume causes a reduction in tissue perfusion, which impedes the tissues and cells ability to meet their metabolic needs (8).

Around the world, bleeding accounts for at least 40% of deaths following trauma (9).

Since hemorrhage takes about two hours to start and end, early detection and treatment of hemorrhagic shock can save lives. Controlling the source of the bleeding as soon as possible and restoring the intravascular volume and oxygen transfer capacity are crucial for limiting the degree and duration of shock as well as replacing the accumulated oxygen debt (10).

In order to care for patients with emergency situations such as post-traumatic hypovolemic shock treatment, emergency room nurses need to be adequately knowledgeable (11).

The nurse plays an important role in giving first aid to hypovolemic shock patients by ensuring patient airway, inserting intravenous catheter administering oxygen as the doctor ordered, when bleeding is presently applying direct pressure to the site increase level of intravenous fluid as a doctor order assess the level of consciousness and vital signs and interpreted laboratory values which help in identify the hypovolemic condition (12).

1.2 Statement of the Study

A critically injured polytrauma patient's initial assessment is a challenging task because every minute can be the difference between life and death. It has been shown that mortality can be decreased by shortening the period between harm and diagnosis and treatment. Emergency nurses need to be skilled in diagnosing and treating patients with post traumatic hypovolemic shock management since they are typically the first to respond to patients with polytrauma, severe bleeding, and shock. Trauma is a public health concern, and the leading cause of hospital mortality is post traumatic hypovolemic shock. For preventative efforts to be effective, emergency department detection must be prompt, safe, and efficient (6).

An estimated 16,000 people every day pass away from trauma. Among these 30 to 50 % of them are the outcome of hemorrhagic shock (13)

Post traumatic hypovolemic shock is brought on by blood loss from visible injuries, such as pelvic fractures, chest trauma, femoral fracture, and hummer bone injury or abdominal trauma. It is a serious, sometimes fatal condition that arises from hypo-perfusion of tissues due to low blood volume (hypovolemia)(14).

Among injured patients, uncontrolled post-traumatic bleeding is the primary cause of potentially avoidable death; one-third of bleeding trauma patients exhibit coagulopathy symptoms at hospital admission (15).

The majority of trauma victims who die before they reach the hospital and up to 40% of those who arrive are caused by bleeding. Traumatic hypovolemic shock can develop from uncontrolled bleeding in a matter of minutes, although its early symptoms might be mild and may not manifest until the patient has lost a significant volume of blood. The majority of deaths that occur within the first hour of receiving emergency services attention are caused by bleeding. Bleeding is the reason for half of hospital deaths that occur during the first 24 hours and 80% of operating room deaths that occur following significant trauma[(9),(16)].

Traumatic hypovolemic shock is a serious condition brought on by physical abuse, hemorrhage, and organ damage that results in substantial blood loss and tissue infiltration in the bloodstream.

Its high fatality rate, risk of impairment, and difficult diagnosis make it the most common cause of death in emergency departments. Accurate diagnosis, timely fluid resuscitation, and observation of hemodynamic changes are necessary for successful treatment. Poor care might result in organ failure and even death. Every year, 5.8 million people worldwide pass away from trauma-related incidents that leave them crippled and dead. Hypovolemic shock accounts for around 40% of trauma-related deaths. Results from severe hypovolemic shock are still not good; over 50% of individuals who need emergency care for hemorrhagic shock die from it. Traumatic bleeding has been associated with unfavorable outcomes for over 30 years; this is true both in civilian and military contexts worldwide. An estimated 60,000 Americans lose their lives to traumatic bleeding each year (17).

In trauma patients, hypovolemic shock is associated with poor prognoses and early mortality. Studies show that bleeding accounts for at least 40% of traumatic deaths, with around half of those deaths occurring prior to hospital arrival. Typically, hemorrhagic shock advances in the initial hours. In most cases, poor hypovolemic management, along with correctional delays in medical and surgical care, lead to the death of injured individuals. Research indicates that 80% of trauma deaths occur within an hour after injury and 50% within the first 24 hours. This condition is known as post traumatic hypovolemic shock. Therefore, as soon as they get to the hospital, individuals with catastrophic injuries need to receive rapid care. Severe damage results in irreversible shock because it quickly produces a 25% decrease of blood volume (6).

Management of post-traumatic hypovolemic shock patients by nurses in intensive care units and emergency departments is crucial in lowering the death rate and preventing complications. They might not know enough about post-traumatic hypovolemic shock patients, or they might not be treating them properly (17).

A research to examine nurse’s knowledge in challenging areas found that the most questions that nurses failed to answer or missed were about traumatic hypovolemic shock. Another study concluded that improving a nurse's knowledge and comprehension of hypovolemic shock management is necessary to lower hemorrhagic shock –related fatalities. Emergency medical staff must respond quickly to improve situations, and professionalism and medical professionalism

significantly influence response effectiveness and patient prognosis. Improving emergency care quality and using scientific emergency rescue nursing are crucial for patient wellbeing(18).

Nurses who are working in emergency department play an important role in management of post traumatic hypovolemic shock patient which help in decreasing mortality rate and prevent complication, but most of the nurse lack knowledge and practice regarding post traumatic hypovolemic shock management, Therefor the study explore the nurses' knowledge and practices about post traumatic hypovolemic shocked patient (6).

Emergency nurses should get training in the use of evidence-based nursing protocol, which includes specifics on how to manage shock of varying degrees and types, including how to provide medicines and do fluid resuscitation (14). Even though post traumatic hypovolemic shock is the most common routine work performed in emergency departments having the patient Injury, only limited studies were done on international context and there is no any research conducted in Ethiopia. Therefore, assessing knowledge and practice of post traumatic hypovolemic shock is very important.

1.3 Significant of the study

The study may help those clinicians to have updated knowledge and practice regarding post traumatic hypovolemic shock management and can lead to better patient outcomes and reduced mortality rates. In addition, it helps identify the factors that influence nurses' knowledge and practice in managing post traumatic hypovolemic shock management. In healthcare organizations can implement targeted interventions to improve the quality of care provided to the patient. Moreover, it can improve patient safety and prevent adverse events. The findings of this study will be used by hospital administrators, health institutions and policymakers to focus on areas of improvement to provide supportive educational and training support for professionals. In addition, it will serve as baseline data for the future improvement of post traumatic hypovolemic shock management knowledge and practice for patients' well-being in the emergency departments.

2. LITERATURE REVIEW

2.1 Overview of post traumatic hypovolemic shock management

The global effects of severe injury and related bleeding on people's health and well-being are incalculable. Accidental injuries or acts of violence account for 12% of the world's illness burden. 30 to 40% of trauma deaths are caused by bleeding, and 33 to 56 percent of these deaths happen before hospitalization. Continued bleeding, coagulopathy, and inadequate resuscitation are the main causes of early mortality among individuals who get care. The second most common cause of early mortality for patients with injuries is hypovolemic shock, on average(19).

Post traumatic shock or hypovolemic shock brought on by blood loss from visible trauma; hidden bleeding from pelvic fractures; and blunt abdominal trauma, which is a major cause of death and morbidity because the circulatory system is unable to provide enough oxygen and nutrients to meet the needs of cells for metabolic processes and it is the cause of 10 million fatalities worldwide each year (14).

Treating hypovolemic shock with blood products, keeping the patient's temperature normal, and regaining hemostatic function are the current clinical standard of care (20).

Hypovolemic shock is due to an acute reduction in the effective fluid volume by bleeding and other causes. A severe reduction in the effective circulating blood volume along with systemic hypo perfusion results in hypovolemic shock. Hypovolemic shock can cause critical organ ischemia harm if treatment is not received, which can result in multi organ failure and death. As this will determine the course of treatment, the initial step in care is to rule out other kinds of shock (21).

Hemorrhage is the most common cause of avoidable mortality in this clinical group. Bleeding is responsible for around 40% of deaths from trauma, making it one of the world’s major causes of death and disability. An all-encompassing approach to managing trauma bleeding includes fluid resuscitation, rapid surgical intervention, and blood transfusion therapy (22).

The current standard of care for traumatic injury hypovolemic shock mostly depends on fluid management, whole blood resuscitation, and red blood cell (RBC) transfusion. Multiple organ

failure (MOF), an increase in intensive care unit (ICU) admission and length of stay, an increase in hospital length of stay, and mortality are all linked to these transfusions(19).

2.2 Knowledge towards post traumatic hypovolemic shock management among adult emergency department nurses

In trauma emergency units, nurses usually take care of the sickest patients and carry out the most difficult procedures. In addition, they oversee service resources, which necessitates a grasp of science, technological competence, and interpersonal and communication abilities (23).

A descriptive cross sectional study design was carried out to nurse's knowledge towards management about hypovolemic shock in Al Basra teaching hospital , Iraq revealed Regarding the pathophysiology, signs and symptoms, cause of hypovolemic shock, case type and age group at risk, over half of nurses are well-versed in the subject at mean score of 0.68 to 1. A mean score of 0.34 to 0.67 indicates that nurses have a medium level of knowledge regarding the definition, risk factors, and classification of hypovolemic shock. This means that 72% of nurses agree that nursing management of hypovolemic shock is necessary, 27% of nurses don't know this, and 3% degree. Regarding nursing care, nursing intervention, and intravenous solutions that are most frequently used with hypovolemic shock, the majority of nurses agree, with a mean score of 2.34 to 3. Overall assessment of nursing management of hypovolemic shock was in agreement at the mean score and standard deviation (2.52+0.310), with nurses indicating that they don't know what to do regarding therapy at mean score (1.67 – 2.33). And these are concluded that among nurses, 58% have strong knowledge of hypovolemic shock, 39% have medium knowledge, and 3% have weak knowledge. Of the nurses, 72% have good nursing management of hypovolemic shock , 27% have medium nursing management , and 3% have poor nursing management(5). A descriptive cross-sectional study carried out in Intensive Care Unit Damietta general hospital and port said government hospital, Egypt revealed that 46% of the nurses in the study had inadequate overall knowledge about caring for patients with post-traumatic hypovolemic shock, whereas 54% of the nurses had satisfactory knowledge (24).

Descriptive research design was conducted in the Emergency and intensive care unit, at Benah university hospital, Egypt revealed that regarding the treatment of post traumatic hypovolemic shocked individuals, 56.7% of the nurses in the study have a sufficient degree of expertise. On the other hand, 43.3% of them have inadequate knowledge (17).

A descriptive research design carried out at medical and surgical emergency room at new emergency hospital affiliated to Ain Shams University, Egypt revealed that 53.33% of the studied nurses had inadequate total level of knowledge, whereas 46.67% of the studied nurses had adequate total level of knowledge about caring of patients with hypovolemic shock (25).

2.3 Practice towards post traumatic hypovolemic shock management among adult emergency department nurses

Hemorrhagic shock in trauma patients is a complex condition with high fatality rates. Treatment aims to halt bleeding, maintain oxygen flow, and prevent organ failure, tissue hypoxia, and inflammation. Treatment involves blood transfusion, vasopressor usage, and fluid resuscitation, with disagreement on the best technique(26).

A descriptive cross-sectional research carried out in Egypt It was shown that 66% of the nurses in the study had satisfactory overall practice with patients with post traumatic hypovolemic shock, while 34% had unsatisfactory practice (24).

A descriptive research design was conducted in the Emergency and intensive care unit, at Benha university hospital, Egypt revealed that 83.3% of the nurses in the study were proficient in inserting urinary catheters and cannulas. Additionally, in terms of oxygen therapy, emergency care, intake, and output, 80.0%, 76.6%, and 73.3% of them had competent practice. Additionally, 70.0% of them had experience using a pulse oximeter, a blood transfusion, and the Trendelenburg posture. In terms of caring for patients who had been shock-traumatized by hypovolemia, 73.3% of the nurses in the study were competent in their field. In contrast, 26.7% of them practiced at an incompetent degree (17).

A descriptive research design carried out at medical and surgical emergency room at new emergency hospital affiliated to Ain Shams University Egypt, revealed that 56.7% of the studied nurses had in adequate total level of practice, whereas 43.3% of studied nurses had adequate total level of practice about caring of patients with hypovolemic shock (25).

A review of nurse's perception of traumatic hemorrhagic shock management in Komfo Ankoye, teaching hospital, Kumasi, Ghana revealed that 66% of participants had satisfactory practice for handling traumatic hemorrhagic shock (6).

A cross-sectional survey design was conducted on guidelines and management of hypovolemic shock of healthcare professionals in Galkayo hospital in Somalia revealed that in order to control hypovolemic shock the majority of participants—40%—prefer to follow MSF and UNICEF criteria, followed by WHO guidelines (34%), and IMCI guidelines (26%) (4).

2.4 Factors associated with knowledge and practice towards post traumatic hypovolemic shock management among adult emergency department nurses

In order to care for patients with emergency situations, nurses working in emergency rooms need to be adequately knowledgeable. Giving nurses the necessary information through ongoing professional development encourages their independence and self-assurance when providing emergency treatment(11).

A descriptive cross sectional study design was carried out to nurse's knowledge toward management about hypovolemic shock in Al Basra teaching hospitals , Iraq revealed that the majority of participants in this study were between the ages of 20 and 30 (68%), with 69% of them female and 31% male. In terms of years of experience, the majority of nurses (56%) have fewer than five years of experience. When it comes to educational levels, the nursing institutions have the biggest percentage (39%). 41(% of them work in burns, surgery and obstetrics. And this concluded that the majority of participants in this study were between the ages of 20 and 30(68%), with 69% of them female and 31% male. The majority of nurses (56%) have fewer than five years of experience. When it comes to educational levels, the Nursing Institute has the biggest percentage (39%). 41 percent of them work in burns, surgery, and obstetrics (5).

A descriptive cross-sectional research carried out in Egypt in the intensive care unit in Damietta general hospital and Port Said government hospital revealed that the majority of the researched nurses (90) were female and 78% of them had graduated from a technical school of nursing. More than half of the studied nurses (60%) were in the age category of 20 to less than 30 years old.

Among the nurses under study, 48% had less than five years of experience, 56% received training in hypovolemic shock, and less than half (44%) worked at Damietta General Hospital. The total scores of nurses' knowledge and practice regarding the management of patients in post-traumatic hypovolemic shock showed no statistically significant link ($p<0.050$). There was a statistically significant correlation found between the name of the hospital and the complete knowledge of nurses about patients in post-traumatic hypovolemic shock. Regarding post traumatic hypovolemic shock patients, there was no statistically significant relationship found between the study nurses' marital status, age, sex, or educational attainment (24).

A descriptive research design was conducted in the Emergency and intensive care unit, at Benha university hospital, Egypt revealed that 43.0% of the nurses in the study belonged to the 30-40 age group, with an average age of 34.10 ± 7.69 years. In addition, 76.6% of them were married and 80.0% of them were female. Thirty-one percent of them had one to five years of experience working in an intensive care unit or emergency room, while forty-three percent had a nursing school credential. Also, 76.6% of the nurses in the study had not taken any courses on how to care for patients who had been shock-shocked after a traumatic event, and 60.0% of them worked in emergency rooms. Between the researchers' total level of practice and the nurses under study, there was a statically significant positive association (p value=0.042) (17).
A descriptive research design carried out at the medical and surgical emergency room at a new emergency hospital affiliated to Ain Shams University revealed that the average age of nurses was 35 ± 8.3, and 66.7% of them were married. In terms of employment categories, 93.33% of them were staff nurses, 50% 0f nurses took courses based on information from emergency room training programs .It showed that 33% of the nurses were men and 67% of the nurses were women. The study comprised 30 nurses, and the frequency of and percentage distribution of their years of experience were examined; 50% of the nurses in the study had fewer than 5 years of experience, and 33% had more than 10 years. In addition, 33% of the nurses had graduated from the technical institution of nursing and 67 % of the nurses held diplomas (25).

A cross-sectional survey design was conducted on guidelines and management of hypovolemic shock of healthcare professionals in Galkayo hospital in Somalia revealed that fifty (50) participants, of which twenty (40%) were female and thirty (60%) were male. Twelve doctors

(24%) and 38 nurses (76%) took part in the current study. The mean age of the participant was 39.88±8.09 years, with a range of ages from 28 to 58. 22 (44%) of the participants, or the majority, are in the 31–40 year age range. The age group of 51 to 60 years old comprises the fewest participants. The majority of participants (84%) had less than nine years of job experience, whereas the remaining participants had nine to fourteen years of work experience. When the factors influencing the guidelines' selection were evaluated, it was discovered that the participants' marital status and their occupation—that is, whether they are doctors or nurses—were statistically significant at $P<0.05$ (4).

2.5 Conceptual Framework

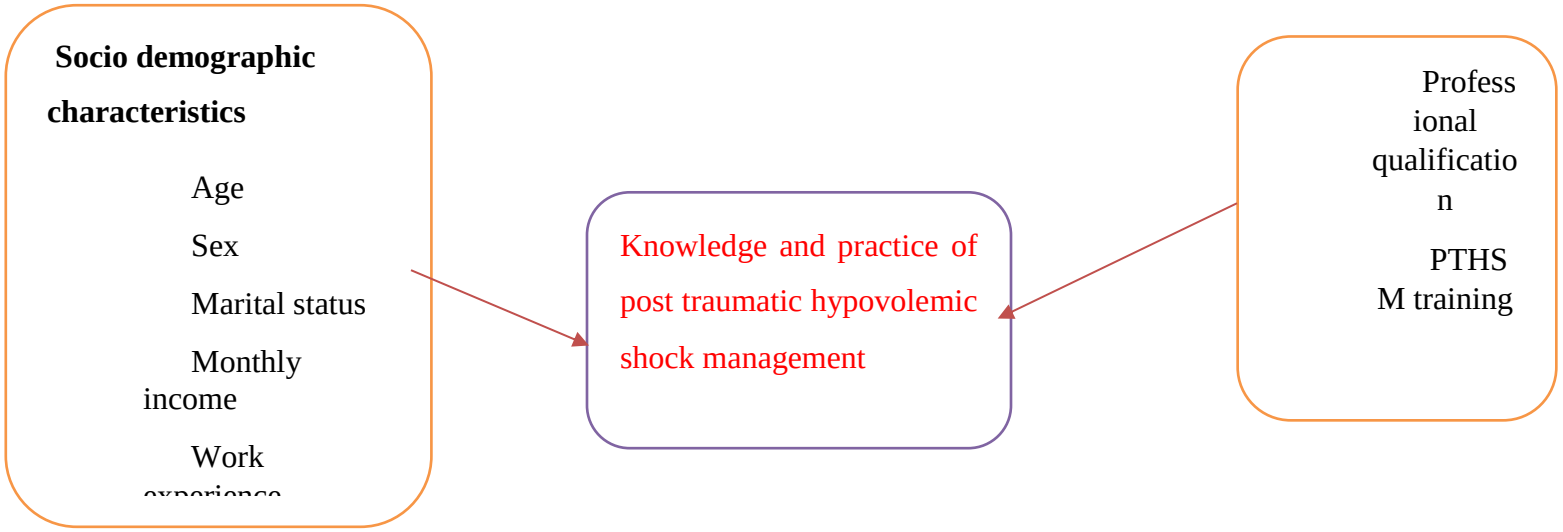

Figure 1: Conceptual Framework Adapted from knowledge and practice of adult emergency department nurses towards post traumatic hypovolemic shock management (5,6,17,24,25).

3. OBJECTIVES

3.1 General Objectives

- To assess knowledge and practice of adult emergency nurses towards post traumatic hypovolemic shock management in selected public hospitals in Addis Ababa Ethiopia, 2024.

3.2 Specific Objectives

- To determine knowledge of adult emergency nurses towards post traumatic hypovolemic shock management in selected public hospitals in Addis Ababa, Ethiopia, 2024.
- To assess practices of adult emergency nurses towards post traumatic hypovolemic shock management in selected public hospitals in Addis Ababa Ethiopia 2024, Ethiopia 2024.
- To identify factors associated with knowledge and practice of adult emergency nurses towards post traumatic hypovolemic shock management in selected public hospitals in Addis Ababa Ethiopia; 2024.

4. METHODS AND MATERIALS

4.1 Study Area and Period

The study was carried out in Addis Ababa, the capital and largest city of Ethiopia, with a population of 5,704,000 and area of 540 square kilometers. According to the 2012(EFY) health and health related indicators published by the Ministry of Health (MOH), Addis Ababa has 13 hospitals and 98 health centers(27). The study was carried out in six selected public hospitals in Addis Ababa. These were,

ALERT (All Africa Leprosy, Tuberculosis and Rehabilitation Training Centered) is a medical facility in Addis Ababa, focused on Hansen's disease (Leprosy). Originally named All Africa Leprosy Rehabilitation and Training Center, it now includes tuberculosis in its official name. It 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, rehabilitation program and the second trauma center in the country, has 53 emergency nurses (28).

Tikur Anbessa Specialized Teaching Hospital (TASH), 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, among these 52s are emergency nurses.it provides healthcare services alongside 115 other health professionals. The hospital plans to gain autonomy and establish financial assets (29).

Addis Ababa Burn, Emergency & Trauma Hospital (AaBET) is an affiliate of St. Paul's hospital millennium medical college and in inclusive of four major departments: emergency medicine and critical care, plastic reconstructive and hand surgery, orthopedics and Traumatology, and Neurosurgery. AaBET hospital is progressive and successfully managed upper level teaching hospital with 190 bed ward departments as well as center for traumatology physiotherapy and spinal disorders and recognized as one of the largest government based trauma & emergency centers in the country. It has 72 emergency nurses (30).

Yekatit 12 Hospital Medical College (Y12HMC), was established in 1923 and is one of the oldest hospital in Ethiopia "Bete Saida Be Tefferi Mekonnen Hospital.at first later renamed Yekatit 12 hospital when the Derg Regime came to power in 1970s. It was founded by Dr. Ayne, a Swedish

Medical Doctor, who served in the hospital as a medical director until 1936. . Currently, it is offering medical service in three main programs, namely outpatient and inpatient treatments plus emergency cases. Currently the hospital has 130 specialists and subspecialists, 180 general physicians, residents and public health professionals, 520 nurses among these 24 are emergency nurses and currently serving more than 5 million people in Catchment (31).

Menelik II Referral Hospital in Addis Ababa, 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 among these 33 nurses working in the adult emergency department (32).

Zewditu Memorial Hospital (ZMH), 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 memorial hospital has become the largest HIV clinic in Ethiopia, serving over 14,000 patients and currently it has 30 adult emergency nurses (33). Data was collected from 5 April to 5 May, 2024.

4.2 Study Design

Institutional based cross sectional study was conducted

4.3 Population

4.3.1 Source Population

All nurses working in the adult emergency department in selected public hospitals of Addis Ababa.

4.3.2 Study Population

Nurses who were working in the adult emergency department of selected public hospitals during the data collection period.

4.4 Eligibility Criteria

4.4.1 Inclusion Criteria

Nurses who were working in the adult emergency department for 6 months and above were included.

4.4.2 Exclusion Criteria

Nurses who were not available during the study period due to maternal leave, annual leave, sick leave nurses were excluded.

4.3 Sample Size Determination and Sampling Procedure

4.5.1 Sample Size Determination

The sample size of the study was calculated by using a single population proportion formula.[n=(Zα2 2 P(1-P)/d 2] and. P value taken as 56.7 %(or P=0.567) for the study from (17).

Z=standard normal deviation of 1.96 corresponding to 95% confidence interval

P= Population proportion = 0.567

D= Margin of error=0.05

N= (Zα/2) 2 P (1-P)/d2

n= (1.96)2 (56.7) (43.3)/ (0.05)2

n= (3.8416) (0.567) (0.433)/0.0025

n=378

Substituting the values in the formula above sample size becomes, n=378

Since the total population is less than 10,000 then, correction formula was used,

nf=n/(1+n/N), nf = 378/ (1+378/444) = 205

After adding a 10% non-response rate, the final sample size was 226

4.5.2 Sampling procedures

For this study, six public hospitals were selected randomly from a total of 12 public hospitals with an emergency department set up in Addis Ababa for the study in order to address within the given resource and time. The final sample size was allocated proportionally to each Hospital based on the size. There were 444 nurses working in the adult emergency department in all public hospitals.

$$ni = \frac{Ni \times n}{N}$$

Where:

ni = total sample size in each health facility

Ni = total number of nurses working at ED of each selected hospital

n = total sample size determined in the selected hospitals (226)

N = total number of nurses working in ED in the selected hospitals (264)

Using the above formula, total sample size

For Alert specialized hospital is (53x 226/264) =46

For Tikur Anbessa specialized Teaching Hospital is (52 x 226/264) =45

For Aabet Hospital is (72 x 226/264) =58

For Yekatit 12 Hospital is (24 x 226/264) =22

For Minilik Referral Hospital is (33x 226/264) =29

For Zewditu Memorial Hospital is (30 x 226/264) =26

Finally, a simple random sampling method was used to select the study participants in each hospital till the desired sample size was fulfilled **(Figure 2)**

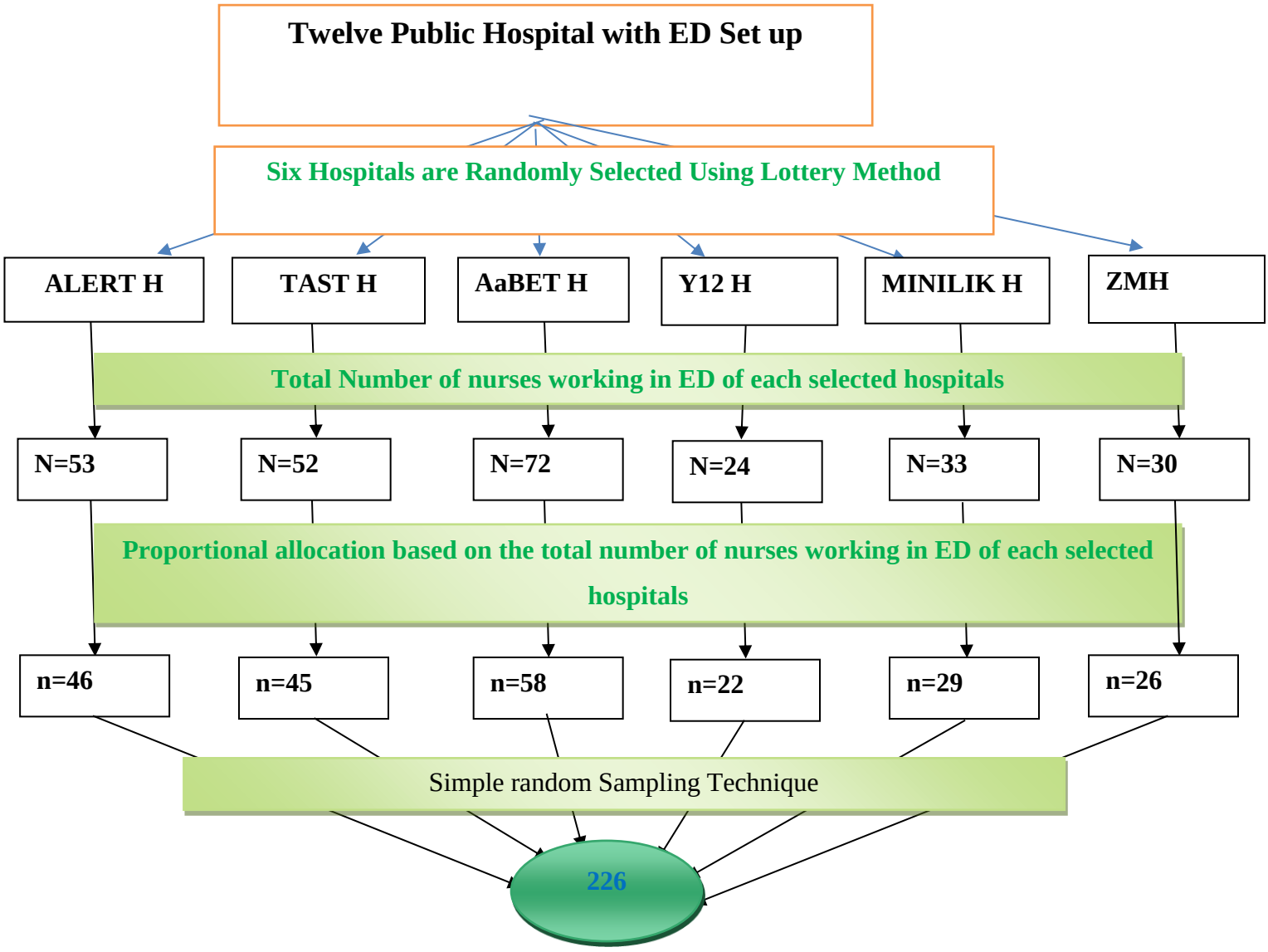

Figure 2: Schematic presentation of sampling procedures of the study on the assessment knowledge and practice of adult emergency department nurses towards post traumatic hypovolemic shock management in selected public hospitals in Addis Ababa Ethiopia, 2024.

4.5.3 Sample selection

Selection of the sampling unit is done by simple random sampling (lottery method) techniques.

4.6 Data Collection tool And Techniques

A structured self - administered questionnaire was used to assess the knowledge and practice of adult emergency nurses. The questionnaire was adopted from other researchers (5,6,17,24,25). And modified according to the set up. The questionnaire was divided into three sections as follows: section one contained 8 items of socio-demographic characteristics of study participants, while Section two contained 20 questions about the participants post traumatic hypovolemic shock management knowledge. In addition, the practice part included 20 questions. Structured questionnaire was collected by trained data collectors and supervisors. A total of three trained data collector nurses and two supervisors was participate during data collecting time. Each participants got more than 70% of asked question were considered good knowledge in post-traumatic hypovolemic shock management, those who scored less than 70% was considered having poor knowledge, and each participants got more than 70% of asked question were considered good practice and those who scored less than 70% was considered having poor practice.

4.7 Study Variables

4.7.1 Dependent Variables

- Knowledge of post traumatic hypovolemic shock management among adult emergency nurses.
- Practice of post traumatic hypovolemic shock management among adult emergency nurses**.**

4.7.2 Independent Variables

Socio Demographic variables: sex, Age, Marital Status, monthly income, work experience, professional qualifications and training on post traumatic hypovolemic shock management in adult

emergency departments

4.8 Operational Definitions

Knowledge: in this study, it refers to the correct question of response of the subject regarding post traumatic hypovolemic shock management which is measured as two scores obtained in the validated knowledge test (24).

- **Good Knowledge** : nurses who score more than 70%
- **Poor knowledge: nurses who scored** less than 70%**.**

Practice: in this study the practice of post traumatic hypovolemic shock management performed by nurses is with the help of self-administered questions in two categories.

- **Good practice: Nurse who scored more than 70% of practice assessing questions.**
- **Poor Practice:** Nurse who scored less than 70 % of practice assessing questions.

Adult emergency department: is a medical treatment facility specialized in emergency medicine the acute care of patients who present without prior appointment; either by their own means or by that of an ambulance.

Post traumatic hypovolemic shock: is life threatening blood loss, remains a common complication of traumatic injury arising from soft tissue or bony injuries.

Adult emergency department nurse – is responsible for assessing, triaging and treating patients that come through the hospital doors every day; this could entail treating injury, trauma or acute onset symptoms.

4.9 Data Quality Control and Management

Data collectors and supervisors were given orientation on how to use questionnaires and trained on the fundamentals of data collection techniques in order to assure the quality of the collected data. At each stage of data collection, the investigator verified that the data was comprehensive and that no information was missing. Pretest was done on 10% adult emergency nurses in Ras

Desta Damtew hospital to ensure that dependent and independent variables are relevant and to prevent any misinterpretation during the actual data collecting period. On-site supervision was provided to resolve any uncertainty with data collecting instruments and methods. Furthermore, data was checked during entry into the computer before analysis and the incomplete data were removed.

4.10 Data Processing and Statistical Analysis

After checking for completeness and consistency, data was entered to the kobo toolbox then downloaded to excel for editing and coding then exported to SPSS version 25 for analysis. Descriptive statistical analysis like frequency percentage and proportion was done. Binary logistic regression was done and variables with P-value less than 0.25 were candidate to multivariable model. In multivariable analysis, variables with P- value less than 0.05 were decided statistically significant and reported using adjusted odds ratio with95% confidence interval. Tables, texts and figures were used to report the findings.

4.11 Ethical Consideration

Before the data collection, an ethical approval letter was obtained from Addis Ababa University, College of health science Department of Emergency and Critical Care nursing and Addis Ababa public health and emergency management directorate. Before the actual data collection phase, a letter of consent was received from the medical directors of each study hospital and each adult emergency department head nurse received a letter of authorization. Participants in the study received comprehensive information regarding the study. The consent form was then signed by each participant before data collection started. They were informed during the consent process, both verbally and in writing, about the voluntary nature of participation, the guarantee of privacy for their information, and their right to withdraw from the study whenever they felt like it without any repercussions to their worker rights.

4.12 Dissemination of the Result

The result of the study was presented and submitted to Addis Ababa University, college of health scenic, department of emergency and critical care nursing. A copy of the results was submitted to the studied respective hospitals adult emergency departments, Addis Ababa public health and emergency management directorate. In addition, manuscripts will be submitted to national and international peer reviewed Journals for possible publication.

5. RESULT

5.1 Socio demographic Characteristics of the study participants

There were 226 nurses that participated in this study. A 95% response rate was obtained when 215 nurses volunteered to take part. Out of the 215 responders, 127(59.1), reported having between six months and five years of work experience. According to their professional background, 171(79.5%) of the nurses had a BSc degree. A significant portion of the 159 nurses (74.0%), lacked post-traumatic hypovolemic shock care training. **(Table 1).**

Table: Socio Demographic Characteristics of Participant nurses working in adult emergency departments of selected public hospitals of Addis Ababa, Ethiopia, 2024.

Variables		Frequency	Percent
Name of the institution	Tikur Anbessa Hospital	45	20.9%
	AaBET Hospital	47	21.9%
	Alert Hospital	46	21.4%
	Zewditu Memorial Hospital	26	12.1%
	Menelik II Hospital	22	10.2%
	Yekatit 12 Hospital	29	13.5%
Sex	Male	105	48.8%
	Female	110	51.2%
Age	20-25 yrs.	35	16.3%
	26-35 yrs.	167	77.7%
	>35 yrs.	13	6.0%

Marital status_	Married	86	40.0%
	Single	117	54.4%
	Widowed	6	2.8%
	Divorced	6	2.8%
Monthly Income	5000-10000	131	60.9%
	11000-15000	46	21.4%
	>15000	38	17.7%
work experience	6 month-5 year	127	59.1%
	6 year-10 year	70	32.6%
	>10 years	18	8.4%
Professional qualification	BSc	171	79.5%
	MSc	44	20.5%
Training regarding PTHS Management?	No	159	74.0%
	Yes	56	26.0%

5.2 Knowledge of nurses working in the adult emergency Department towards Post Traumatic hypovolemic shock management.

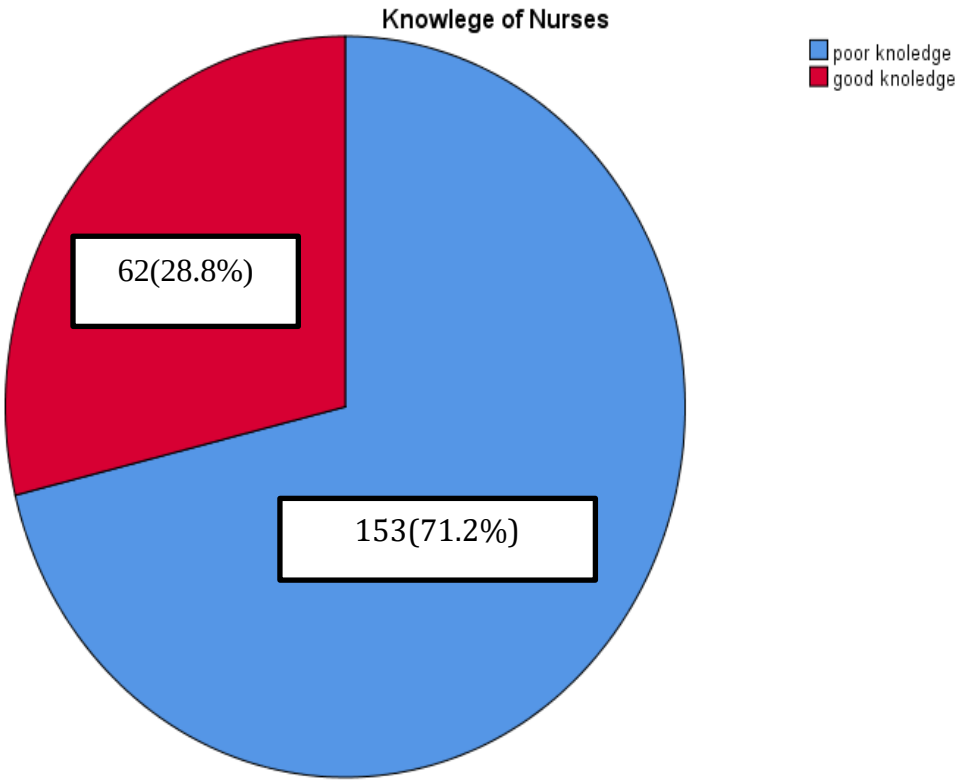

Figure 3: Knowledge Level of nurses working in the adult emergency Department of public hospitals of Addis Ababa, Ethiopia, 2024.

From this study, more than two third 153 (71.2%) with 95% CI (0.646- 0.771) of respondents had Poor knowledge regarding post traumatic hypovolemic shock management, whereas 62(28.8%) with 95% of CI (0.229- 0.354) nurses had good knowledge about post traumatic hypovolemic shock management.

The majority While 77 participants (35.8%) were unaware of the symptoms of post-traumatic hypovolemic shock, 143 respondents (66.5%) were aware of the definition of the condition. Furthermore, 89 respondents, or 41.4%, did not know how post-traumatic hypovolemic shock was diagnosed. On the other hand, 120(55.8%) of nurses were aware of the complications of Post traumatic hypovolemic shock management. Of the 144(67.0%) nurses were familiar with the stages of post-traumatic hypovolemic shock. Additionally, roughly two thirds of nurses were aware of the post-traumatic hypovolemic shock management's principal course of treatment. On the other hand, 82(38.1%) respondents did not know how a nurse would evaluate a patient who was shocked by hypovolemia. Of the 141 nurses, more than half (65.6%) were aware of the purpose of fluid resuscitation in cases of post-traumatic hypovolemic shock. However, 84 individuals, or 39.1%, were not (table 2).

Table 2: Knowledge Distribution of Participant nurses about post traumatic hypovolemic shock management in some selected Public hospitals of Addis Ababa Ethiopia, 2024.

Knowledge assessing Question and right answers	Correct n (%)	Incorrect n (%)
Post traumatic hypovolemic shock is?	143(66.5%)	72(33.5%)
Is the inability to meet the needs of cells for oxygen and nutrients due to?	134(62.3%)	81(37.7%
Common symptoms seen in patients with post traumatic hypovolemic shock?	138(64.2%)	77(35.8%)
Common cause of post traumatic hypovolemic shock?	138(64.2%)	77(35.8%)
How is post traumatic hypovolemic shock diagnosed?	126(58.6%)	89(41.4%)
Most common complications of post traumatic Hypovolemic Shock are?	120(55.8%)	95(44.2%)
PTHS occurs when the fluid volume is low?	137(63.7%)	78(36.3%)
Most cases of post traumatic hypovolemic shock are?	161(74.9%)	54(25.1%)

Orders for hypovolemic shock to occur, the patient would need to lose _____ of their blood?	121(56.3%)	94(43.7%)
Is **it a stage** of post traumatic hypovolemic shock?	144(67.0%)	71(33.0%)
Primary treatment for post traumatic hypovolemic shock?	142(66.0%)	73(34.0%)
How does a nurse assess for signs of hypovolemic shock?	133(61.9%)	82(38.1%)
How often should a nurse reassess a patient with post-traumatic hypovolemic shock?	148(68.8%)	67(31.2%)
First priority in managing a patient with post-traumatic hypovolemic shock?	149(60.3%)	66(30.7%)
Role of the nurse in preventing complications in a patient with post-traumatic hypovolemic shock?	138(64.2%)	77(35.8%)
Goal of fluid resuscitation in post-traumatic hypovolemic shock management?	141(65.6%)	74(34.4%)
How should fluid resuscitation be administered in post-traumatic hypovolemic shock?	142(66.0%)	73(34.0%)
Primary objective of blood transfusion in post-traumatic hypovolemic shock?	132(61.4)	83(38.6%)
PRBCs should be transfused if post traumatic hypovolemic shock patients remain unstable after 2000 mL of crystalloid resuscitation?	131(60.9%)	84(39.1%)
Recommended initial fluid for major trauma patients presenting in hypovolemic shock?	130(60.5%)	85(39.5%)

5.3 Factors Associated With Knowledge of Nurses

The bivariable logistic regression analysis of work experience, professional qualification and training were candidates for multivariable regression of post traumatic hypovolemic shock management knowledge of nurses with p-value of less than 0.25.

In the final adjusted regression model, nurses who had more experience 15 times likely to have good knowledge than those less experienced nurses [AOR = 15; CI: 4.49-49.8],and nurses who had professional qualification of master's degree had 9 times of more likely to have good knowledge than those bachelor degree nurses[AOR = 8.91; CI: 2.9-27.62]. Moreover those nurses who had training on post traumatic hypovolemic shock management had 20 times better knowledge than those who didn't take training [AOR = 20.01; CI: 12.5 -- 24.1] (**Table 3**).

Table 3: Factors Associated with knowledge of nurses working in the adult emergency department of Public Hospitals of Addis Ababa Ethiopia, 2024.

Factors		Overall knowledge				
		Poor	Good	COR (95%CI	AOR (95%CI)	P-value
Experience	6mo-5yr	113	14	1.0	1.0	
	5yr-10yr	27	43	12.6(6.2-26.8)*	15(4.49-49.8)	0.000**
Professional qualification	BSc	142	11	1.0	1.0	
	MSc	11	33	14.7(6.7-32.39)*	8.91(2.9-27.62)	0.000**
Training	Yes	16	40	15.7(7.47-32.44)*	20.01(12.5-24.1)	0.000**
	No	137	22	1.0	1.0	

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 Adult Emergency Department Nurses towards Post Traumatic Hypovolemic Shock Management

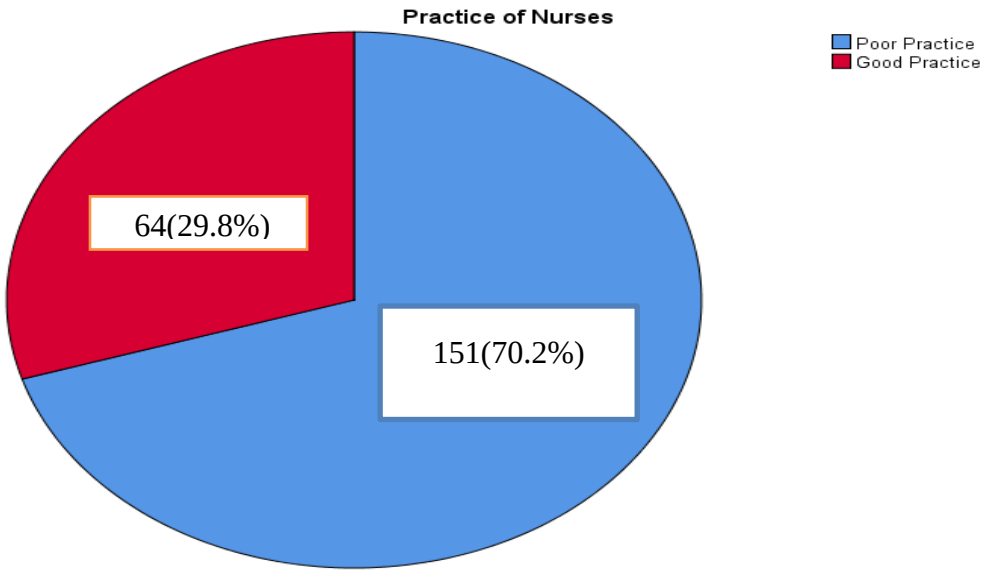

Figure 4: Practice of Adult Emergency Department Nurses towards Post traumatic hypovolemic shock management in Public Hospitals of Addis Ababa, Ethiopia, 2024.

In this study, 64(29.8%) with 95% CI (0.237-0.364) of nurses had good practice of post traumatic hypovolemic shock management, but majority 151(70.2%) with 95% CI (0.636-0.763) of nurses had poor practice of post traumatic hypovolemic shock management.

From this study, 138(64.2%) of participant nurses assess neurological examination (GCS, AVP) and majority 132(61.4%) of respondents administer warmed fluid to avoid hypothermia. Whereas 79(36.7%) of participants were not placed in the Trendelenburg position. Among participants 78(36.3) were not administered oxygen. 121(56.3%) of nurses monitor input and output. Regarding to transfusion, 85(39.5%) were not transfuse blood products for post traumatic hypovolemic shock patients, and most 146(67.9%) participants were assess and manage fluid status.157 (73.2%), 151(70.2%) of respondents apply proper hand washing and maintain detailed documentation respectively **(table 4).**

Table 4: Practice of adult emergency department nurses towards post traumatic hypovolemic shock management of some selected public hospitals of Addis Ababa Ethiopia, 2024.

Practice Assessing Questions	N (%) Yes	N (%) No
Proper hand washing?	157(73%)	58(27%)
Prepare all essential equipment?	158(73.5%)	57(26.5%)
Explain the procedure to a patient	143(66.5%)	72(33.5%
Ensure privacy to a patient?	126(58.6%)	89(41.4%)
Assess **neurological** examination (GCS, AVPU, and RBS)?	138(64.2%)	77(35.8%)
Administer warmed fluid to avoid hypothermia?	132(61.4%)	83(38.6%)
Place the patient in the Trendelenburg position?	136(63.3%)	79(36.7%)
Monitor vital signs **every 15 minutes to 1 hour** for an unstable patient, and every 4 hours for a stable patient?	156(72.6%)	59(22.45%)
Ensure a patient's airway?	157(73%)	58(27%)
Administer crystalloid fluids?	158(73.5%)	57(26.5%)
Obtain blood samples for complete blood percentage, blood group and match blood count in anticipation of transfusions?	138(64.2%)	77(35.8%)
Stop active bleeding by applying local pressure to the site of injury?	147(68.4%)	68(31.6%)
Administer oxygen to a patient in post-traumatic hypovolemic shock?	137(63.7%)	78(36.3%)
Monitor intake and output?	121(56.3%)	94(43.7%)
Insert urinary catheter?	115(53.5%)	100(46.5%)
Transfuse blood products?	130(60.5%)	85(39.5%)

Insert two large bore Cannula?	142(66%)	73(34%)
Implement strict infection control?	133(61.9%)	82(38.1%)
Assess and manage the patient's fluid status?	146(67.9%)	69(32.1%)
Maintain detailed documentation of the patient's progress, responses to interventions, and any modifications to the care plan?	151(70.2%)	64(29.8%)

5.5 Factors Associated With Practice of Nurses

In bivariable logistic regression, factors such as monthly income, professional qualification and training were candidates for multivariable regression of post traumatic hypovolemic shock management practice of nurses with p-value of less than 0.25.

From multivariable regression, nurses with monthly income more than 15000 ETB had 15 times better practice than those who had less than 15,000 monthly income[AOR = 14.79; CI: 5.93 -- 39.9]. And those nurses who had training on post traumatic hypovolemic shock management had 8 times of good practice than those who didn't took training[AOR = 7.74; CI: 1.76–7.93] **(Table 5)**

Table 5: Factors Associated with practice of nurses working in the adult emergency department of Public hospitals of Addis Ababa Ethiopia, 2024.

Factors		Over all practice				
		Poor	**Good**	COR (95%CI	AOR (95%CI)	P-value
Monthly income	5k-10k	106	25	1.0	1.0	
	10k-15k	36	10	1.18(0.5-2.7)	1.32(0.56-3.11)	0.53
	>15k	9	29	13.66(5.75-32.47)*	14.79(5.93-39.9)	0.000**
Professional qualification	BSc	126	45	1.0	1.0	
	MSc	25	19	2.13(1.07-4.23)*	1.21(0.53-2.8)	0.066
Training	Yes	28	28	3.42(1.8-5.49)*	7.74(1.76-7.93)	0.001**

	No	123	36	1.0	1.0	

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

6. DISCUSSION

It was found that 62(28.8%) of nurses had good knowledge and 64(29.8%) of nurses had good practice of post traumatic hypovolemic shock management.

In this study, the total proportion of good knowledge was 28.8%, with 95% CI (0.229, 0.354).

This finding is lower than with the study conducted in Egypt, Damietta general hospitals and port said government hospitals(24) in which 54% of nurses had good knowledge regarding post traumatic hypovolemic shock management. This disparity could be due to the difference in sample size used, difference of nurses in accessing information between countries, education, the difference in technological advancement and quality of on job training for nurses.

The finding of this study is also lower than the study done in Egypt at Benha university Hospitals (17) where 56.7% of nurses had satisfactory knowledge , Al Basrah teaching hospital, Iraq (5) showed that 58% of nurses had good knowledge on post traumatic hypovolemic shock management, Ain Shams University hospital, Egypt (25) where 46.67% of nurses had good knowledge regarding to post traumatic hypovolemic shock managements, this might be due to difference in the setup, sample size used, year of study conducted, access to knowledge related information, difference in curriculum and other factors.

In this study, nurse's work experience [AOR = 15; CI: 4.49-49.8], (p-value 0.000), professional qualification [AOR = 8.91; CI: 2.9-27.62], (p value 0.000) and training [AOR = 20.01; CI: 12.5–24.1], (p-value 0.000) were statistically associated with the knowledge of nurses about post traumatic hypovolemic shock management. The finding is in line with the study done in Ain Shams university hospital, Egypt (25) which nurses who had more experience, who had professional qualification of master's degree and had training on post traumatic hypovolemic shock management has more knowledge than those who did not had(p-value 0.05). Those findings

indicate that Experience, professional qualifications and training may be important factors for improving the knowledge and skills of nurses in this area.

In this study, 64 nurses (29.8%) had good practice, with a 95% confidence interval of 0.237 to 0.364. the finding is lower than the study conducted in Aim Shamus university hospital, Egypt((25) which revealed that the level of good practice was 43.3% and in Egypt Benha university hospital (17) where 73.3% of nurses had good practice of post traumatic hypovolemic shock management. This might be due to difference in study characteristics, the tool used to assess practice, the sample size used, criteria to classify practice and also the material that accessible.

This finding is also lower than studies conducted in Damietta general hospital and Port Said government hospital (24) where 66% of nurses had satisfactory practice of post traumatic hypovolemic shock management. Al Basrah teaching hospital, Egypt (5) where 72% of nurses had good practice, Komfo Anokye Teaching Hospital, Kumasi, Ghana (6) where 66% of participants had good practice. This difference in practice among nurses might be because of the implementation of continuous professional development among countries, cut points to classify practice of nurses, absence of skill-based simulation, the setup, training of nurses, economical status among countries and other factors made differences.

Nurses Monthly income [AOR = 14.79; CI: 5.93–39.9], (P=0.000) about post traumatic hypovolemic shock management and their training [AOR = 7.74; CI: 1.76–7.93], (0.001) were significantly associated with their practice. This finding is in line with the study done in Ain Shams university hospitals, Egypt (25) showed that there were significant association nurses' practices with training and with P value < 0.05. This could suggest that better-educated and trained nurses with more monthly income are more capable of performing post traumatic hypovolemic shock management in emergency department settings.

7. STRENGTH AND LIMITATION OF THE STUDY

7.1 Strength of the study

This study accomplished its goals and was multi-centered. In addition, pretest assessment instruments were employed. Furthermore, original data was gathered directly from nurses. This is the first study on assessing knowledge, practice and associated factors of nurses regarding post traumatic hypovolemic shock management among nurses working in the adult emergency department in public Addis Ababa hospitals and Found baseline information for future.

7.2 Limitation of the Study

The study only included nurses working in adult emergency departments of government hospitals. It does not include private hospital nurses. Moreover, it was cross-sectional study, it could not establish causal relationship between knowledge and practice with predictors.

8. CONCLUSION AND RECOMMENDATION

8.1 Conclusion

A smaller proportion of nurses had good knowledge and practice of posttraumatic hypovolemic shock management. Majority factors associated with good knowledge of nurses were work experience, professional qualification and training. In addition, the major factors associated with good practice of nurses were monthly income and training. Hence, posttraumatic hypovolemic shock management is the most routine care performed in the emergency departments for critical and stable patients. It is important to make nurses be knowledgeable and skillful through training, education and experience sharing programs.

8.2 Recommendations

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

Addis Ababa Health Bureau

Addis Ababa health bureau should train nurses regarding basic emergency department patient care i.e. post traumatic hypovolemic shock management to make them have updated knowledge. In addition to this, educational programs have to be arranged so that nurses may get the chance of upgrading their educational qualification. Besides, the health bureau should work jointly with non-governmental organizations so as to involve them in the provision of training, better professional qualification and more experienced nurses are needed for emergency departments.

Hospitals

The findings of this study may have implications for hospitals to invest in the education, training, and increase monthly incomes for emergency department nurses. Hospitals should facilitate peer learning programs to have experience sharing among nurses as well as conduct simulation programs which enables them to improve the skill of nurses. In addition, they should encourage nurses to prepare seminars and discuss patient care in the emergency department. Moreover, hospitals should ensure that nurses who perform the procedure are adequately trained and competent enough. Finally, hospitals should give regular feedback on the post traumatic hypovolemic shock management practices of nurses in order to help them improve their knowledge and skills.

Ministry of Health

The Ministry of Health should arrange educational programs, training and experience sharing abroad that enable nurses to have updated knowledge and latest evidence-based practices. Besides, the ministry of health should prepare workshops that involve nurses working in the emergency department thereby they can update their knowledge and skill.

Researchers

Researchers should conduct more studies about post traumatic hypovolemic shock management of nurses and assess the outcome of patients who underwent management prospectively.

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Annex I: Information Sheet and Informed Voluntary Consent

Information Sheet

Greeting: 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 adult emergency department nurses towards post traumatic hypovolemic shock management in some selected public hospitals in Addis Ababa, Ethiopia 2024.

The Aim of this study is: To assess knowledge and practice of adult emergency department nurses towards post traumatic hypovolemic shock management in some selected public hospital 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 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 in assessing knowledge and practice of adult emergency department nurses towards post traumatic hypovolemic shock management 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 from participating 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: Totally the questionnaire contains 48 questions. They have one answer as alternatives and it takes 10 to 15 minutes to respond.

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 my study. I the undersigned participated in the study on “assessment knowledge and practice of adult emergency department nurses towards post traumatic hypovolemic shock management in some selected public hospital in Addis Ababa, Ethiopia 2024 on my free will and interest after being oriented about the purpose of the study.

Can you sign for your voluntariness?

Yes ☐ No ☐ Signature ----------

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: Meseret Amare Derso Phone Number +251946619253

Email: meseretamare2018@gmail.com

Do you have any question that you want to ask me about studying?

Annex II: ENGLISH VERSION QUESTIONNAIRES

Part I: Socio Demographic Data[(1,2,5)**]. (Circle the letter you select for the answers)**

1. Name of the institution/Hospital?
   A.Tikur Anbessa Hospital C. ALERT Hospital E. Minilik II Hospital
   B. AaBET Hospital D. Zewditu Memorial hospital F. Yekatit 12 Hospital
2. Sex? A. Male B. Female
3. Age(write please) …….Years
4. Marital status A. Married B. Single C. Widowed D. Divorced
5. Monthly income (write please)…….ETB
6. Work experience/ years of service? A. 6 month -5yr B. 6 year -10 year C.> 10 year
7. Professional qualification/ educational level? A. Diploma. B. BSC. C. MSc. D. Other……
8. Did you get any training regarding post traumatic hypovolemic shock management? A. Yes B. No

PART II: Knowledge assessing questions (modified from post-traumatic hypovolemic shock management in adult emergency department and ICU nurses) (5,6,17,24,25)**. Circle the letter you select for the answer.**

1. Which of the following best describes post traumatic hypovolemic shock?

   A. Is a sudden drop in blood volume due to severe trauma or injury?
   B. It occurs after a traumatic event, leading to decreased blood flow and oxygen delivery to tissues. C. A state of shock caused by excessive bleeding following a traumatic incident D. All E. None

2. Post traumatic hypovolemic shock is the inability to meet the needs of cells for oxygen and nutrients due to? A. Loss of circulatory volume B. Cardiac arrhythmia C. Anaphylaxis D. All E. I don't know

3. Which of the following symptoms is **commonly** seen in patients with post traumatic hypovolemic shock?

A. High blood pressure B. Rapid heart rate/ tachycardia C. Low body temperature
D. Increased urine output E. **None** **F. I don't know**

4. Which of the following is a **common cause** of post traumatic hypovolemic shock?

A. Excessive bleeding B. Dehydration C. Heart attack D. Allergic reaction E. All

5. How is post traumatic hypovolemic shock diagnosed?

A. Blood tests B. Physical examination C. Imaging studies (such as CT scans) D. All E. None.

6. The most common complications of post traumatic Hypovolemic Shock are?

A. Coagulopathy B. Metabolic acidosis C. Hypothermia D. All E. I don't know

7. Post traumatic hypovolemic shock occurs when the fluid volume is too low?

A. interstitial B. Intravascular C. ALL D. I don't know

8. Most cases of post traumatic hypovolemic shock are?

A. Emergency B. Non-emergency C. None D. I don't know

9. As the nurse, you know that in order for hypovolemic shock to occur, the patient would need to lose _____ of their blood. A. <30% B. >25% C. >15% D. >10% E. None

10. Which of the following is NOT a stage of post traumatic hypovolemic shock?

A. Compensatory stage B. Progressive stage C. Refractory stage D. Recovery stage E. None

11. What is the primary treatment for post traumatic hypovolemic shock?

A. Fluid resuscitation B. Antibiotics C. Pain medication D. Surgery E. All

12. How should a nurse assess for signs of hypovolemic shock in a patient?

A. Checking BP and heart rate C. Performing a physical exam

B. Asking the patient about their symptoms D. All of the above E. I don't know

13. How often should a nurse reassess a patient with post-traumatic hypovolemic shock?

A. Every 4 hours B. Every 8 hours C. Every 12 hours D. Every 1 hour E. I don't know

14. What is the first priority in managing a patient with post-traumatic hypovolemic shock?

A. Administering pain medication C. Monitoring vital signs

B. Controlling bleeding D. providing emotional support E. I don't know

15. What is the role of the nurse in preventing complications in a patient with post-traumatic hypovolemic shock? A. Administering medications as prescribed by the physician.

B. Monitoring for signs of infection or organ failure.

C. Providing emotional support to the patient and family members. D. All E. I don't know

16. What is the goal of fluid resuscitation in post-traumatic hypovolemic shock management?

A. To increase urine output C. To prevent infection F. All

B. To restore tissue perfusion and oxygen delivery D. To reduce blood pressure fluctuations

17. How should fluid resuscitation be administered in a patient with post traumatic hypovolemic shock?

A. Slowly over several hours C. Only after consulting with a physician

B. Rapidly to restore blood pressure quickly D. In small, intermittent doses F.I don't know

18. What is the primary objective of blood transfusion in post-traumatic hypovolemic shock patients?

A. To prevent coagulopathy C. To reduce the risk of infections

B. To maintain arterial oxygenation D. To correct metabolic complications E. I don't know

19. PRBCs should be transfused if post traumatic hypovolemic shock patients remain unstable after 2000 mL of crystalloid resuscitation? A. No B. Yes C. I don't know

20. Which of the following is the recommended initial fluid for major trauma patients presenting in hypovolemic shock? A. Colloids B. Albumin C. Crystalloid fluid D. None E. I don't know

Part III: Practice Assessing questionnaires for adult emergency department nurses towards post traumatic hypovolemic shock management(modified from post-traumatic hypovolemic shock management in adult emergency department and ICU nurses (5,6,17,24,25) **(self administered).**

Make it "✓" or "X" your answers

S/N	Questions	Yes	No
1	Do you apply proper hand washing before you touch the patient?		
2	Do you prepare all essential equipment?		
3	Do you explain the procedure to a patient?		
4	Do you ensure privacy to a patient?		
5	Do you assess neurological examinations (GCS, AVPU, and RBS) of the patient?		
6	Do you administer warmed fluid to avoid hypothermia?		
7	Do you place the patient in the Trendelenburg position?		

8	Do you monitor the vital signs of post traumatic hypovolemic patients every 15 minutes to 1 hour for an unstable patient, and every 4 hours for a stable patient?		
9	Do you ensure the patient's airway?		
10	Do you administer important solutions to the patient (crystalloid fluids)?		
11	Do you obtain blood samples quickly, for complete blood percentage, blood group and match blood count in anticipation of transfusions?		
12	Do you work to stop active bleeding by applying local pressure to the site of injury?		
13	Do you administer oxygen to a patient in post-traumatic hypovolemic shock?		
14	Do you monitor intake and output of post traumatic hypovolemic patients?		
15	Do you insert a urinary catheter?		
16	Do you transfuse blood products for post traumatic hypovolemic shock patients?		
17	Do you insert two **large bore** Cannula?		
18	Do you Implement strict infection control measures to prevent infections if the patient has open wounds during treatment?		
19	Do you continue to assess and manage the patient's fluid status to maintain adequate hydration and prevent complications related to fluid imbalance?		
20	Do you maintain detailed documentation of the patient's progress, responses to interventions, and any modifications to the care plan to ensure continuity of care and effective communication within the healthcare team?		