ADDIS ABABA UNIVERSITY

HEALTH SCIENCE COLLEGE, SCHOOL OF MEDICINE

DEPARTMENT OF EMERGENCY MEDICINE

Title

Assessment of knowledge and practice of nurses' on initial management of acute poisoning at adult emergency department of two Public hospitals in Hawassa town, Hawassa, southern Ethiopia.

By Tamiru Beyene (BSc)

A Thesis to be submitted to school of graduate studies of Addis Ababa University, department of emergency medicine and critical care in partial fulfillment of the requirement for the degree of masters in emergency medicine and critical care nursing.

Advisors: Dr. Sofia Kebede(MD,Assisstant prof.& Em physcian)

: Mr. Asmamaw Abebe(Bsc,MSc in EM&CCN)

June 2017

Addis Ababa, Ethiopia

Declaration

I the under signed declared that this thesis is my original work ,has not been presented for degree in this or any other university and that all sources of material used for the thesis have been fully acknowledged.

Name of the student: Tamiru Beyene

Date._____ Signature _____

This thesis has been submitted for examination with our approval as university Advisors.

Approval of primary Advisors.

Name of the primary advisors:

1. Dr.Sofia Kebede 2. Mr.Asmamaw Abebe

Date._____ Signature _____ Date---------- Signature----------

Name of examiner

1. DR. Assefu W/Tsadik (MD,Anesthesiologist) Signature_____

Abstract

Background: Poisoning is a major health problem worldwide, and it causes significant morbidity and mortality. It is estimated that 350,000 people died worldwide from unintentional poisoning. As acute poisoning is common reason for visits to emergency departments and for hospitalization worldwide, it is essential that all ED nurses should be familiar with the clinical priorities in life-threatening situations in order to ensure that problems are identified and treated accordingly.

Objective: To determine the nurses' knowledge and practice on the initial management of acute poisoning among adult casualties seen at emergency department of Adare District Hospital(ADH)& Hawassa University Referral Hospital(HURH),Hawassa.

Methodology: Institution based cross sectional descriptive study that employs both qualitative and quantitative methods of data collection was employed on all nurses working at emergency department of Adare District Hospital & Hawassa University Referral Hospital.

Result: There were 67 nurses working at ED of both hospitals from which 63(94%) participated in the study**.** All ED nurses that participated in this study had unsatisfactory knowledge <75% (mean knowledge 61.50%) and practice level(mean practice 65.50%). The majority 58(92.10%) of ED nurses required training related to emergency and poisoning management.

Conclusion All ED nurses that participated in this study had unsatisfactory general knowledge on poisoning, knowledge on initial management of acute poisoning and practice .**Recommendation:** there Should be various type of emergency related training that focusing on poisoning management, IEMM etc that help in assessment diagnosis and management of casualties at ED by nurses.

Acknowledgement

Above all, I would like to give thanks and glory to my LORD JESUS CHRIST who gave me the courage to pursue my study and also who provide me everything through my study.

My special gratitude and appreciation goes to my advisors Dr. Sofia Kebede and Mr. Asmamaw Abebe for their encouragement, provision of important and constructive guidance from the beginning of my proposal development.

I would like to express my heartfelt gratitude to Addis Ababa University giving me this educative and golden opportunity and provision of financial support for this study; and also department of emergency medicine and critical care for the support and follow up throughout the whole course.

I would like to express my great thank to both Hawassa University Comprehensive referral hospital and Adare District hospital, both hospital staffs and all study participants who gave me their time and valuable data for this study.

Lastly my great thanks goes to my beloved wife Salamawit Thomas for her support in all aspects of my study and life

Table of contents

List of tables and figures

List of figures

List of abbreviations and acronyms

- ABC- Airway, Breathing and Circulation
- ADH- Adare district Hospital
- AVPU-Alert, Responsive to voice, Responsive to pain, Unconscious
- ED- Emergency Department
- BLS- Basic Life Support
- BSc- Bachelor of Science
- ERC- Ethics and Research Committee
- EM&CCN-Emergency medicine and critical care nursing
- FMOH-Federal Ministry of Health
- IEMM- Integrated Emergency Medical Management
- HURH- Hawassa University referral Hospital
- MOH-Ministry of Health
- MScN- Masters of Science in Nursing
- SPSS- Statistical Package of Social Science
- WHO- World Health Organization
- GCS- Glasgow Coma Scale
- GIT – Gastro-intestinal tract

Chapter one
Introduction

1.1Background

The word poison originates from the Latin word Potionem which means deadly draught. The Herald of modern Toxicology, Paracelsus, states that everything is poison and only the dose plays a pivotal role (1). Any substance when ingested in large quantities can be toxic (2).

Poison may be defined as any agent that can injure, kill or impair normal physiological function in humans producing general or local damage or dysfunction in the body by its chemical activity (3).

Poisoning occurs by the absorption of chemicals (poisonous) substances into the body through the GI tract, skin, respiratory tract or parentally causing damage to the body cells (4).

According to *Dorland's Medical Dictionary*, poisons are substances that can cause damage to organisms, usually by chemical reaction on the molecular scale [5].

Poisoning is a major health problem worldwide, and it causes significant morbidity and mortality.

Worldwide, poisonings account for 5-10% of all interventions (6). According to WHO more than three million poisoning with 251,881 deaths occur worldwide annually of which, 99% of the death occur in developing countries (3).

In developed countries, it has been shown that the leading cause for visit to the emergency department among patient aged 2 to 30 years is acute poisoning, whereas in developing countries, it is the second most common cause following infectious disease (7).

It is estimated that 350,000 people died worldwide from unintentional poisoning in 2002 [8,9].

It is believed that between 7,50,000-30,00,000 Organo-Phosphate poisoning cases occur globally every year. Mortality is higher in the developing countries where Organo-Phosphate pesticides are readily available and may be misused for suicide. They are estimated to cause 3,00,000 fatalities annually (10).

In Singapore, injuries(including poisoning) ranked as the fifth leading cause of death and the leading cause of hospitalization from 2007 to 2009. The pattern of poisoning has changed as the public is encountered with other new drugs and chemicals. New antidotes have also been developed for the management of such poisoning, and are now available for management of casualties [9].

WHO, of all case fatalities due to acute poisoning, Africa accounts 8% and Kenya 3.13% in 2015[11].

Few studies exist in Ethiopia that showed the greatest proportion of poisonings occurred in adults(below 30 years of age) and the most frequent circumstance was intentional poisoning. Organophosphate pesticide was the leading cause of poisoning. The case fatality rate was reported from 2.4%-8.6%[12].

Acute poisoning can be defined as exposure to a poison on one occasion or in a short period of time [13]. Acute poisoning is one of a life threatening conditions therefore, critical care and emergency nurses play important roles in the care and management of patients with acute poisoning that consists of four elements: initial life support, decontamination, in some cases antidotal administration and enhanced elimination. The initial life support consists of airway management and correction of circulatory status. Protecting the airway is essential in order to prevent aspiration and respiratory depression due to lowered level of consciousness. Arrhythmias and hemodynamic compromises are corrected and managed as similar to any patient in critical condition [14].

1.2 Statement of problem

Acute poisoning is a common reason to come to emergency departments and for hospitalization worldwide and a cause of both morbidity and mortality in many parts of the world. The toxic agents associated with the morbidity and mortality varies from one area to other due to the availability and use of various chemicals (13).

Globally it is estimated that poisoning events are responsible for more than one million illnesses annually [11].

Acute drug poisonings account for nearly one half of all poisonings reported [15].
One half million people die each year as a result of various kinds of poisoning [16].

In Egypt statistical data in 2013, it showed that the percentages of patients who were admitted for Acute Drug Poisoning was 51% , 53% and 54.9% in the year 2011,2012 and 2013 respectively.

WHO reported that acute poising accounts 0.5% of intentional and unintentional injuries in Ethiopia, in 2012 (17).
The case fatality rate was reported from 2.4%-8.6%[12].

Majority of these patients present in ED for their initial treatment. Their treatment poses numerous clinical challenges where severely poisoned patients can be medically unstable and require resuscitation, specific treatment, close observation and monitoring.
ED is an important access point for these clients who might be in dire need for emergent life-saving interventions. Further, they found out that without focused skills training and deeper understanding of the complexity of self-harm and therapeutic responses of emergency clinicians; nurses are likely to provide inadequate emergency care for this type of patients.

ED nurses are frequently the first health care professionals to come in contact with patients who have ingested poisons. Proper initial assessment, evaluation and treatment are very essential for patient survival. It is essential that all ED nurses are familiar with the clinical priorities in life - threatening situations in order to ensure that problems are identified and treated accordingly.
Poisoning is a common cause of mortality and morbidity around the world, with several million incidences reported annually.

Therefore, ED nurses should be equipped with professional knowledge and skills that enables them to manage poisoned patient accordingly.

1.3 Significance of the study

In Ethiopia currently there is increasing incidences of acute poisoning which range from ingestion of home cleansing bleach, illicit brews consumption and use of uncertified herbal medicine for treatments and unsafe abortion. ED nurses are often at the forefront when it comes to this initial and critical assessment of poisoned casualties.

Their knowledge and skills are fundamental to their practice and influence the overall patient outcome.

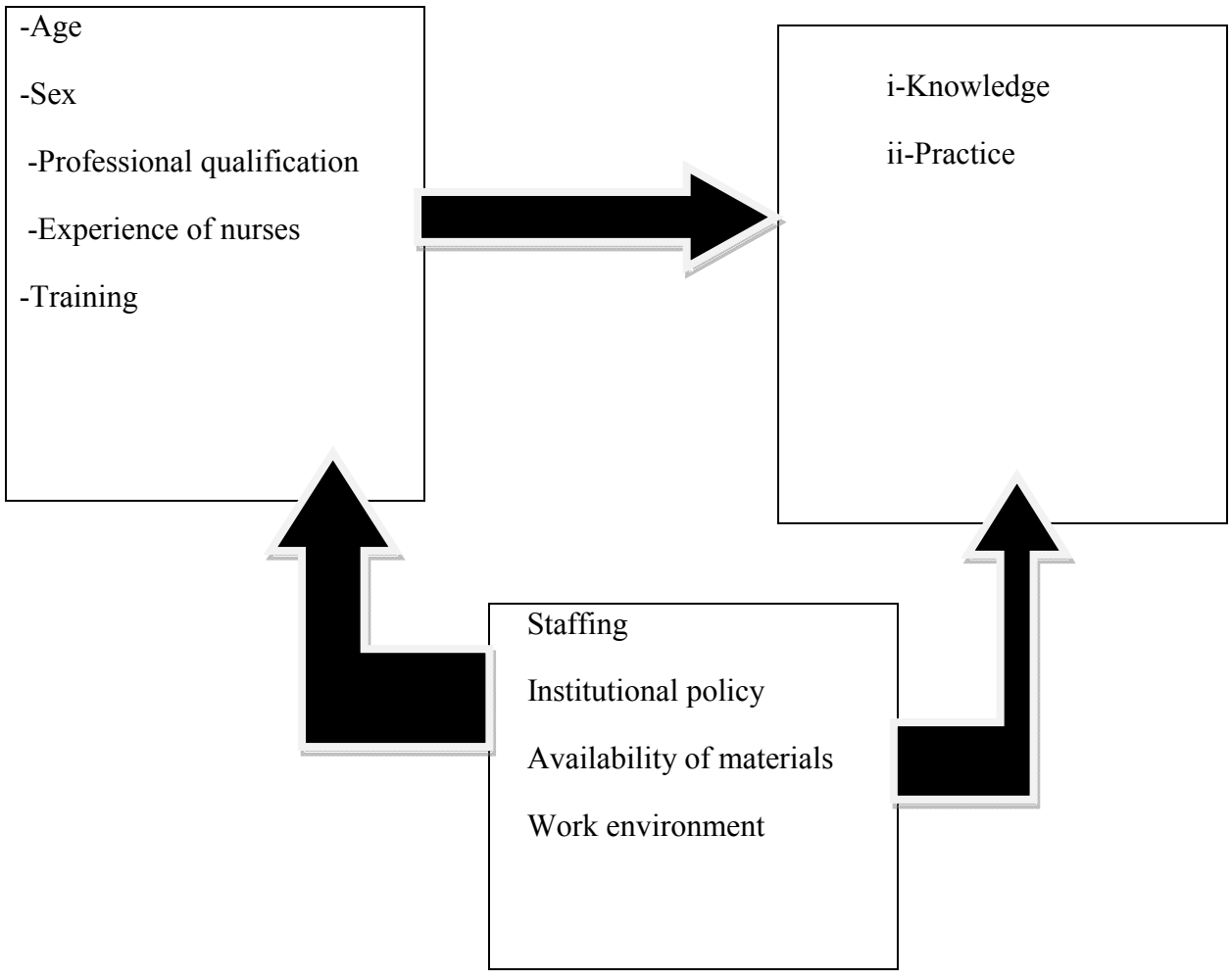
There is no study of the same that has been done in ADARE district hospital as well as HURH; specifically being the largest referral hospital in Southern region of Ethiopia. The findings of the study therefore will be valuable in understanding the capabilities of ED nurses in management of these patients.

Furthermore, the study will form a basis for improving the quality of service delivery in management of poisoned casualties at ED by nurses as a whole in Ethiopia.

Conceptual Framework

Individual nurses and situational factors (Independent variables) such as nursing professional qualification, ED experience and social demographic characteristics could enhance nurses' skills and practices on the initial management of acute poisoned casualties (dependent variables). Attaining the desired goals is indirectly influenced by ED resources, staff motivation and hospital policy (confounding variables). The relationships between the various variable are summarized in Figure 1.1

Independent variable **dependent variable**



Confounding variables

Fig.1. Conceptual frame work, partially adapted from Rutto's study with important modifications

Chapter two
Literature review

2.1. Incidence of hospitalizations

The global prevalence of acute poisoning especially in the developed nations reported as decreased. Not all contacts with the health care system due to acute poisoning lead to hospital admission. The proportion of patients treated by ambulance service or solely on emergency departments varies, depending on the area, from 20% to 80%. [16,22].

Acute drug poisonings account for between 0.7 and 15% of all emergency department admissions in different locations [16,24]. Intensive care is required in 3.7–40% of patients hospitalized due to drug poisoning. The highest rates of intensive care are in the Nordic countries, with the highest rate, 40%, in Oslo, Norway.

In Finland, approximately 10% of the patients admitted to hospital from the emergency department due to acute poisoning required intensive care[24,25]. Approximately 5.2% of all ICU admissions in Finland are due to acute drug poisoning [26]. The incidence of hospital admissions due to drug poisonings in the Nordic countries is reported to be 2–2.5/1000 inhabitants per year.[22,24].

It has been reported that 50–60% of patients admitted to hospital due to acute drug poisonings are female [23,26,28]. .

2.2. Incidence of drug poisoning deaths

The overall incidence of poisoning-related deaths in Finland in 2002 was16.6/100 000 inhabitants, which is approximately 50% higher than in the other Nordic Countries or the United Kingdom [24,28]. In Finland, the incidence of non-alcohol poisoning deaths was 6.8 in males and 3.2 in females per 100 000 inhabitants per year in 2005. None alcohol poisonings are the sixth commonest cause of death and the rate has increased over the last 30 years [25,26]. Most of the deaths from acute drug poisoning occur outside the hospital environment. [27].

The reported incidences of poisoning-related deaths are 15.6/100,000 inhabitants per year in the United States [14], and there has been an increase in incidents over the years, especially due to opioid toxicity [14,31,32].Most deaths are due to accidental poisonings and occur most often among people aged 30 or over [14].

WHO, of all case fatalities due to acute poisoning, Africa accounts 8% and Kenya 3.13% in 2015[11].

The case fatality rate in Ethiopia was reported from 2.4%-8.6%[12].

2.3. Signs and symptoms of acute poisoning

In most cases patients are able to tell what they have taken and symptoms have little diagnostic value. Many poison affect multiple body systems and symptoms are frequently numerous and non specific. Some of the signs and symptoms are listed in Table 2.1 below.

Alimentary signs	Pain and ulceration of the oral cavity, salivation, dry mouth, nausea and vomiting, abdominal pain and diarrhea
Cerebral and neuromuscular signs	Staggering and dizziness, coma, convulsions, delirium and hallucination, restlessness
Respiratory signs	Cyanosis, hypoventilation, coughing, wheezing, breathlessness, distress, broncho-spasm.
Cardiovascular features	Loss of pulse, tachycardia and bradycardia, and hypotension
Skin	Purpura, sweating, sting or injection marks.

2.3.1 General management of poisoning.

Acutely poisoned patients are commonly encountered in Emergency department. Acute poisoning (accidental or intentional) requires accurate assessment and prompt therapy. The necessity to prevent cross contamination during the initial evaluation should be emphasized. Early identification of the involved toxin/s is crucial and the majority will be identified by a thorough history and physical examination.

An ABC-approach should be followed ensuring a protected airway, adequate ventilation and hemodynamic stability. Supportive and symptomatic care remains the cornerstone of treatment. A stepwise approach may be followed to decrease the bioavailability of toxins. Indications, contra-indications, risks and dosage regimens for decontamination procedures including both termination of topical exposures and decreasing exposure to ingested toxins.[33,34].

In the management of poisoned cases, a quick and correct decision is always necessary. The familiar adage "TREAT THE PATIENT, NOT THE POISON" was appropriately stated. The first is the provision of good supportive care and the second is decontamination or elimination measures. Management begins with the evaluation, recognition that poisoning has occurred, identification of the agent, assessment of severity and prediction of toxicity. Supportive care is aimed at preventing or limiting the complications of a toxic exposure and is the main part of good management (34).

It is essential to ensure a patent airway, adequate ventilation and effective circulation. A thorough history is essential in determining management and assessing the risk posed by a particular poison.

Important historical factors include what exactly was taken, when it was taken, how it was taken, how much was taken, why it was taken, and what else was taken. As with any patient attending an emergency department, physical assessment of the poisoned patient starts with the airway, breathing and circulation (ABC). The patient must be capable of maintaining and protecting a patent airway. If there is any doubt, active airway management is required to protect against further compromise or aspiration. Evaluation of breathing involves measuring the respiratory rate and assessing the adequacy of ventilation (9,34).

Observation, auscultation of the chest, and oxygen saturation will confirm adequate ventilation in most cases, though arterial blood gases should be checked if there is any doubt. Evidence of inadequate ventilation requires immediate correction. Evaluation of the circulation includes a baseline pulse rate and blood pressure (BP)(9,34).

Serious poisoning requires continuous electrocardiograph monitoring and regular BP checks.

After assessment of ABC, a complete physical examination should be undertaken to look for other signs of poisoning, injection marks, trauma and other disease. The neurological assessment is quite important. Altered level of consciousness is a complication of poisoning and ranges from mild drowsiness to agitation, delirium, coma and seizures. A Glasgow Coma Scale (GCS) of 8 or less strongly suggests that the patient may be unable to protect airway and intubation is required. Pupil size and reaction are affected in many poisonings, and also muscle tone . Temperature should be recorded as many agents cause hyperthermia (9, 34).

2.3.2. Management of poisoning at ED by nurses

According to study conducted at a Nut Shell UK, on first contact with the poisoned patient, assessment of the level of consciousness is important. For an unconscious patient, careful evaluation of the ABC should be followed by active measures to not only secure these, but also to reverse the unconscious state, if possible(33).

The cornerstone on the management of poisoning is supportive that is, care of the airway and the maintenance of breathing and the blood circulation. Symptoms such as convulsion and arrhythmia should be monitored as their onset can be quite sudden. If the patient's history and physical examination support toxin ingestion, gut decontamination should be considered (9).

In the management of ingested poisons, after one hour, the amount of poison remained in gastro-intestinal tract will be much decreased because of absorption to body system. The choice of a decontamination procedure depends upon its relative efficacy, the associated complications, and the presence of contraindications.

After arriving at the emergency department(ED), all poisoned patients are triaged as being in a critical emergency condition, whether they are stable or not. This practice will ensure that the

patients can be seen almost immediately for stabilization and consideration of early gut decontamination, a Nutshell, UK [33].

2.4. Literature on knowledge of nurses

ED nurses are frequently the first health care professionals to come in contacted with patients who have ingested poisons. Knowledge of the proper initial evaluation and treatment of these patients are very essential. ED nurses should be equipped with the professional knowledge and skills to enable them to deal with a poisoned patient, and to assess the patients' and family structure professionally. It is essential that all ED nurses should be familiar with the clinical priorities in life-threatening situations in order to ensure that problems are identified and treated accordingly.

After arriving at the ED, all poisoned patients are triaged as being in a critical or emergency condition, whether they are stable or not. This practice will ensure that the patients can be seen almost immediately for stabilization and consideration for early gut decontamination [12, 33]. The process of assessment starts as soon as the patient arrives at the ED and incorporates the gathering of information regarding the patient's current physiological status along with a history of the present and any previous episodes.

There are two main elements in the management of poisoned patients. The first is the provision of good supportive care and the second is decontamination or elimination measures. It begins with a thorough evaluation, recognition that poisoning has occurred, identification of the agent involved, assessment of severity and prediction of toxicity. Supportive care is directed at preventing or limiting the complications of a toxic exposure and the cornerstone of good management [9,34].

Healthcare workers have an individual and collective responsibility to reflect on their own performance and address any deficits in knowledge or skills as well as to evaluate the strengths and weaknesses of their system as a whole [35].

“Chain of Response” should be in place, which shou1d be timely, effective, and different professional groups with in ED should contribute to different parts of the chain according to the local setting. The most important requirement is that the “overall team” is to posses’ competencies that cover assessment, recognition, intervention and communication to ensure help is obtained when needed [34].

Study conducted in Kenya in 2011 the general knowledge of nurses on poisoning was assessed using 14 items. The item for which nurses displayed the lowest knowledge level was the relationship between gender and ingestion of poison in the general population. Only 35 (51.5%) of the nurses were aware that women were more likely to take poison than men. Another question that was poorly scored was the alimentary signs and symptoms of acute poisoning during early stages, most nurses could not differentiate signs affecting gastrointestinal system and those affecting other body system. 44 (64.7%) thought that there was a euthanasia poisoning[35].

Study done in Kenya in 2012 there was very little variation in nurses’ knowledge on the initial management of acute poisoning practices. The mean scores for acute poisoning knowledge practices ranged from 7.2 among certificate nurses to 7.4 for higher diploma and degree nurses [36].

Study conducted in Egypt in 2015, all nurses in the studied sample (100 %) had unsatisfactory knowledge level (<75%) regarding detection and management of acute drug poisoning and the participant nurses gave the correct answers for questions raised on the types of poisoning, nursing diagnosis, antidote, basic knowledge, signs & symptoms, causes of poisoning in percentage of 90%, 77%, 70%, 66%,66% & 57% respectively. However, 60% provided incorrect answers in relation to nursing intervention with a subtotal mean knowledge score of 8.76 and a total mean knowledge score of 36.86 indicating unsatisfactory knowledge level[37].

2.5. Literature on the practice of nurses

In order to develop and maintain good management skills and practice, the nursing education must continue to design and develop units of study for casualty nurses. The study should focus on the therapeutic care of poisoned patients at pre- and post-Registration levels as well as in continuing professional education programs.

Study conducted in Kenya in 2012 out of 68 nurses included in the study, 13 (19.2%) gave the correct response to all the ten questions on initial management of acute poisoning practices. The area in which nurses displayed the least knowledge was in management of patients who had ingested controlled release preparations with 40 (58.8%) of nurses recognizing that these patients may benefit from decontamination even after a longer delay. Conversely, 64 (94.1%) of nurses rightly identified that the priority in managing severe acute poisoning is maintaining adequate airway, breathing and circulation [36].

Study conducted in Egypt in 2015 on ED nurses revealed that all of the studied subjects had unsatisfactory practice level (less than 75%) regarding detection and management of acute drug poisoning. Participant nurses responded that the most frequently done activities were assessment of the type of poison, nursing interventions for ingested poison, injected poison and inhaled poison in percentages of 83%, 80%, 67% & 63% respectively [37].

Chapter three

Study objectives

3.1 General objective

To assess the nurses' knowledge and practice on initial management of acute poisoning among adult casualties seen at ED of ADH& HURH from Dec 2016-June 2017.

3.2 Specific objectives

1- Assess the nurses' knowledge in prioritizing, rapid assessment and intervention in the management of poisoned casualties at ED of ADH and HURH.

2. To assess the level of practice of ED nurses on initial management of acute poisoning, at ED of ADH& HURH

3-To determine whether work experience and educational qualification of nurses' have any impact on general knowledge and the initial management of poisoning at ED of ADH and HURH.

Chapter four

Method and materials

4.1 Study area and period

Both ADH and HURH are found in the Southern Nations Nationalities and People's Region State (SNNPRS), Ethiopia. Both hospitals are located in Hawassa town, the capital of SNNPR, Ethiopia which is 273 km far from Addis Ababa. The HURH is established and started its activities in 2005, serving a catchment population of 5 million. The hospital is selected purposively since it is the largest referral hospital in the region which provides a range of services in its outpatient and inpatient units and Adare district hospital is also found in Hawassa town and it is sidama zone's district hospital and serving catchment population of 359558.

The study was conducted at both hospitals from Dec 2016-June 2017. HURH is a referral hospital with a bed capacity of approximately 400 patients and ADH is a district hospital with a bed capacity of 141 . They provide services for patients with in southern Ethiopia.

For effective and efficient administration, Nursing services in both hospitals have been categorized into Emergency, Obstetrics/Gynecology/Radiotherapy, Pediatrics, Surgery (Minor and Specialized), Orthopedics, ENT, ophthalmology, Patient Health Education and Research Unit, Counseling and Continuing Education departments. The department operates 24 hours and handles an average of 309 and 285 patients in a day respectively. Out of these, 9.6% and25% are emergency victims and the rest are treated as outpatients, directed to consultant clinics for senior reviews or admitted to respective wards depending on their presenting condition. They operates in collaboration with the Hawassa University (HU) College of Health Sciences and Medical school in offering teaching, training and research to students in their respective medical field.

4.2 Study design

Institutional based cross sectional descriptive study that employs both qualitative and quantitative methods of data collection was employed.

4.3 Source population

Source population for the study was all nurses that are employed and working at both hospitals.

4.4 Study population

The study population was all nurses working at ED during the time of study.

4.5 Sample size determination and sampling technique.

All nurses working at ED of both hospitals were my sample since their number is fewer. To select the subjects, non- probability sampling was used and specifically purposive sampling. So; all Nurses working at ED were eligible to participate in this study as long as they met the subject's inclusion criteria.

4.6 Subject's inclusion and exclusion criteria.

4.6.1 Inclusion criteria.

- Nurses working at HURH and ADH.

-They should assigned in ED during the time of study.

-They should directly involved in patient care.

-Nurses who were voluntary to participate in the study.

4.6.2 Exclusion criteria

-Nursing students in ED placement doing basic trainings.

-Nurses who were on leave during time of study.

-All ED nurses who declined to participate in the study.

4.7. Study variables

Independent variables	Dependent variables
Professional qualification	-knowledge of initial management of poisoning
Training	-practice on initial management of poisoning
Experience	
Age	
Sex	

4.8. Data collection

4.8.1 Study tools

Structured questionnaire and interview check list were used to collect the data.

4.8.2 Data collectors

Four data collectors holding a Bachelor of Science in nursing (BSc) qualification were recruited to assist in data collection. They were trained on how to collect the data using various data collection instruments.

4.8.3 Pilot study

After obtaining approval to carry out the study from AAU- Ethics and Research Committee (ERC). Pilot study was conducted at Kibru primary hospital on 10 nurses, which found in close proximity to ADH and shares the same catchment area of poisoning cases. Poisoned casualties attending both health institutions share the same characteristics in one way or another as they are served by the same catchment area of Hawassa town and its nearby areas.

4.8.4 Data collection methods

4.8.4.1 Questionnaires

The questionnaire comprised four sections as indicated below

1. Socio-demographic data
2. General knowledge on poisoning
3. Initial management of acute poisoning
4. Nurses practice self- report

4.8.4.2 Interview and observational Checklist

The focus of the observational and interview checklists was assessment of actual practice of nurses on how they apply and implement their knowledge and skills on the initial management of acute-poisoning. Checklist was used to ascertain what the nurses were doing to the patient at that given moment

4.9 Data management

4.9.1 Data quality control

Data was cleansed, checked for completeness and store carefully.

4.9.2 Data Analysis

Data was entered to Epi info™ version7 then transferred to SPSS version 20 and analyzed by using statistical program SPSS version 20. Statistical measures like correlation chique squre, cross tables were employed to determining the association between some of independent and dependent variables.

4.9.3 Data presentation

Data were presented by using frequency tables, bar graphs and figures. Inferential statistics was presented in relation to their level of significance.

4.10 Operational definitions

Emergency nurse. Any qualified nurse deployed at accident and emergency department with or without accident and emergency specialization during time of study.

Acute poisoning: When the body is exposed to a toxic substance in a high dose, on one occasion and during a short period of time. Symptoms develop in close relation to the exposure.

Adults: Anyone who is above 18 years.

Deliberate self-harm: An act with fatal or non-fatal outcome in which an individual deliberately initiates a non-habitual behavior that without intervention from others will cause self-harm, or deliberately ingests a substance in excess of the prescribed or generally recognized therapeutic dosage.

Emergency department: This is where all casualties brought to the hospital are received.

Initial assessment: Management and care given by nurses to poisoned patient on arrival at emergency department as part of patient stabilization. The care ends when the patient's physiological parameters are within normal and patient is out of life threatening situations.

Knowledge: Familiarity with acute poisoning management among emergency nurses. It includes; information, facts and skills acquired through experience and education on poisoning.

Satisfactory knowledge: knowledge level from 75-100% score for the given general knowledge and initial management of acute poisoning items.

Unsatisfactory knowledge:-knowledge level below 75%.

Nursing practice: Actual provision of nursing care using the nursing process to poisoned casualties.

Satisfactory practice: practice level from 75-100% score for the given acutely poisoned casualty management items of practice.

Unsatisfactory practice: practice score of level below 75%.

4.11 Ethical Consideration

Ethical clearance of the proposal will be granted by AAU-ERC. Permission to carry out the study will be granted by the Ministry of Science and Technology and MOH administration. All ED nurses will be informed in advance that participation in the study is voluntary and the identities of those who participated will be withheld throughout the study. Purpose of the study will be explained to them, and those who are willing to participate will be provided a written consent by signing a consent form provided.

4.12 Dissemination plan

The result of this study was disseminated to Emergency Department of AAU, and FMOH, SNNPR Health bureau, HURH, ADH, and Sidama zone health bureau.

Chapter five

Result and discussion

5.1. Results

5.1.1. Socio-demographic characteristics of ED nurses

Out of 67 nurses working at ED of HURH and ADH, 63 participated in the study which was 94% response rate and 4(6%) non response rate. Of these participants 48(76.2%) were from HURH and 15(23.8%) were from ADH. There were 33(52.4%) male and 30(47.6%) were female nurses.

Majority 44(69.8%) were aged between 20-29 years and only 1(1.6%) aged between 40-49. 24(38.1%) of participant nurses held Diploma, 38(60.3%) had BSc and 1(1.6%) had MSc. The average number of years since first qualified was 14.25 years and the earliest qualified 28 years ago, as shown on the table below.

Table 1 Social demographic characteristics of ED nurses, HURH &ADH

Variable	Characteristics	Frequency	Percent
Sex	Male	33	52.40
	Female	30	47.60
Age	20-29	44	69.80
	30-39	18	28.60
	40-49	1	1.60
Level of education	Diploma	24	38.10
	BSc	38	60.30
	MSc	1	1.60
Total		63	100

Table 2 Emergency experience and post qualification training among ED nurses, HURH&ADH

	Frequency	Percent
Emergency experience		
1-5	58	92
6-10	5	8
Total	63	100
Training on management of acute poisoning		
Yes	2	3.20
No	61	96.80
Total	63	100
Current training related to ED		
Yes	2	3.20
No	61	96.80
Total	63	100
BLS	22	34.90
EM&CCN	7	11.10
IEMM	1	1.60
No got any training	33	52.40
Total	63	100

5.1.2. ED experience and post qualification training of respondent nurses.

Out of 63 nurses participated in the study 58(92%) had ED work experience below five years and only 5(8%) had above five years of ED experience.

Regarding to post qualification training; more than half 33(52.4%) of participant nurses had no got any of training related to ED and the training that more nurses got was BLS 22(34.9%) and the least was IEMM 1(1.6%). Only 2(3.2%) of participant nurses had formal training on acute poisoning management, as shown in the table above. **20**

Table 3 Responses of ED nurses on their general knowledge of poisoning, HURH&ADH.

Knowledge on poisoning		Responses	
		Correct n(%)	Incorrect n(%)
1	Poison is any substance capable of producing damage or dysfunction in the body by its chemical activity. (T)	61(96.80%)	2(3.20%)
2	Dose ingested and time of ingestion are not very necessary consideration when managing poisoning cases in ED.(F)	37(58.80%)	26(41.30%)
3	As an ED nurse it is always very important to treat the poison not the patient.(F)	35(55.6%)	28(44.4)
4	The commonest cause of poisoning in developing countries is pesticide poisoning.(T)	44(69.80)	19(30.20%)
5	Women are more likely to take deliberate poison in general population to commit suicide than men.(T)	47(74.60%)	16(25.40%)
6	Cause of poisoning among casualties attending any ED, according to motive and nature of use, can be classified as:		
	i. Deliberate poisoning(T)	16(25.40%)	47(74.60%)
	ii. Accidental poisoning(T)	23(36.50%)	40(63.50%)
	iii. Homicidal poisoning(T)	4(6.30%)	59(93.70)
	iv. Euthanasia poisoning(F)	20(31.70%)	43(68.30%)
7	Alimentary signs and symptoms of acute poisoning during early stages include :		
	i. Dry mouth, abdominal pain and salivation(T)	8(12.70%)	55(87.30%)
	ii. Nausea, vomiting, hallucinations and convulsions(F)	20(31.70%)	43(68.30%)
	iii. Coughing, cyanosis, hyperventilation and salivation(F)	20(31.70%)	43(68.30%)
	iv. Tachycardia, hypotension, diarrhea and breathlessness(F)	15(23.80%)	48(76.20)

5.1.3. General knowledge of nurses on poisoning

The general knowledge of nurses on poisoning was assessed using 7 questions that has 13 items. For the given 13 questions only 2(3.2%) answered all and the range being 9. The item for which nurses displayed the highest knowledge level was on the definition of poison which was 62(96.8%) and the item with lowest knowledge level was both classification of poison based on its motive and cause, and Alimentary signs and symptoms of acute poisoning at early stage; which was homicidal poisoning 4(6.3%) and 8(12.7%) respectively. The mean knowledge score was 8.0(SD-1.97) which was only 61.50% of the items given. As shown on the table above.

Table 4 professional qualification versus general knowledge on poisoning among ED nurses

Profession	Number	Mean(SD)	P-value
Diploma	24	7.25(1.78)	0.01
BSc	38	8.37(1.89)	
MSc	1	12 -	
Total	63	8.00(1.97)	

5.1.4. Professional qualification versus general knowledge on poisoning among ED nurses of HURH &ADH.

Based on the given 13 items to assess the general knowledge of nurses on poisoning ,the score ranges between 4 to 13 with the range of 9 and mean score of 8.00 (SD-1.97) for the entire respondents. Diploma nurses score a mean of 7.25(SD-1.78), BSc nurses score a mean of 8.37(1.89) and MSc nurse score a mean of 12 being the highest score, with the mean score of 8.00(SD-1.97) and p-value being 0.01.Which shows there was statistically significant association between professional qualification and general knowledge of nurses on poisoning since p-value was <0.05.

Table 5 Nurses length of experience versus general knowledge on poisoning among ED nurse

Length of experience	Number	Mean(SD)	p-value	Range
0-4 years	29	8.03(1.64)	0.27	9(max-13,
5-9 years	26	7.46(1.90)		Min-4)
10 and above years	8	9.63(2.56)		
Total	63	8.00(1.97)		

5.1.5. Nurses length of experience versus general knowledge on poisoning.

Nurses were assessed using 13 item on general knowledge of poisoning and the score of each nurse and each group based on their experience was evaluated. The score range from 4(min) to 13(max) the range being 9 and the entire mean score was 8.00(SD-1.97) that was 61.50% for the given items that was less than 75% which was unsatisfactory level of knowledge.

On the bases of their length of experience , nurses with 0-4 years of work experience had a mean score of 8.03(SD-1.64),nurses with 5-9 years of work experience has a mean score of 7.46(SD-1.90) being the least score and nurses with 10 and above years of work experience had a mean score of 9.63(SD-2.56) being the highest score and p-value was 0.27 which was statistically insignificant association, as shown on the table above.

Table 6 ED nurses responses on initial management of acute poisoning practices.

No	Statement/question	Response	
		Correct n(%)	Incorrect n(%)
1	In severe acute poisoning, maintaining adequate airway, respiration and circulation are always a priority.(T)	52(82.50%)	11(17.50%)
2	In case of organophosphate poisoning atropine should not be administered in any circumstance.(F)	45(71.50%)	18(28.60%)
3	Nearly all poisoning encountered in accident and emergency department have their specific antidote.(F)	20(31.80%)	43(68.30%)
4	The decision to perform Gastrointestinal (GI) decontamination should be based upon the specific poison(s) ingested, time from ingestion to presentation, and the predicted severity of the poison.(T)	54(85.70%)	9(14.30)
5	Emesis is to be considered in an alert, conscious patient who has ingested a substantial amount of a toxic substance within 60 minutes of presentation.(T)	45(71.40%)	18(28.60%)
6	Activated charcoal can increase absorption of a wide range of poisons from the gastro-intestinal tract to the entire human system.(F)	31(49.20%)	32(50.80)
7	Gastric lavage is indicated for patients who have ingested kerosene or corrosive substances within an hour of presentation.(F)	18(28.60%)	45(71.40%)
8	The effectiveness of gastric lavage increases as the time between ingestion and treatment increases.(F)	26(41.20%)	37(58.70%)
9	The volume of lavage fluid aspirated should approximate to the amount of fluid given.(T)	54(85.70%)	9(14.30%)
10	Patients presenting following ingestion of controlled/ slow released substances may benefit from decontamination even after a longer delay (e.g. more than 2-4 hours).(T)	39(61.90%)	24(38.10%)

5.1.6. ED nurses responses on initial management of acute poisoning.

Out of 63 nurses participated in the study none of them answered all the 10 questions correctly. The area were majority of nurses answered correctly on the initial management of poisoning were on the decision to perform gastro-intestinal decontamination and the volume of lavage fluid which is 54(85.7%); and maintaining adequate airway, respiration and circulation in severe acute poisoning. The least answered was indication of gastric lavage which was 18(28.6%), mean 6.37(SD-1.57) which is 63.70% from the give 10 items, as shown on the table above.

Table 7 ED nurses' professional qualification versus knowledge on initial management of acute poisoning practices

Professional qualification	Number	Mean(SD)	p-value	Range
Diploma	24	5.62(1.16)	0.002	7(Max-9,
BSc	38	6.79(1.38)		Min-2)
MSc	1	8.00		
T0tal	63	6.37(1.57)		

5.1.7. Professional qualification versus knowledge on initial management of acute poisoning.

The knowledge of each nurse on initial management of acute poisoning at ED was assessed using 10 items. The response of the nurses range between 2(min) to 9(max) the range was 7 and the entire mean score was 6.37(SD-1.57) which was 63.70% of the given items.

The mean score for each professional group was computed ; Diploma nurses score a mean score of 5.62(SD-1.16) which was the least score, BSc nurses score a mean of 6.79(SD-1.38) and MSc scoring a mean of 8.00 which was the highest score, the p-value was 0.002.

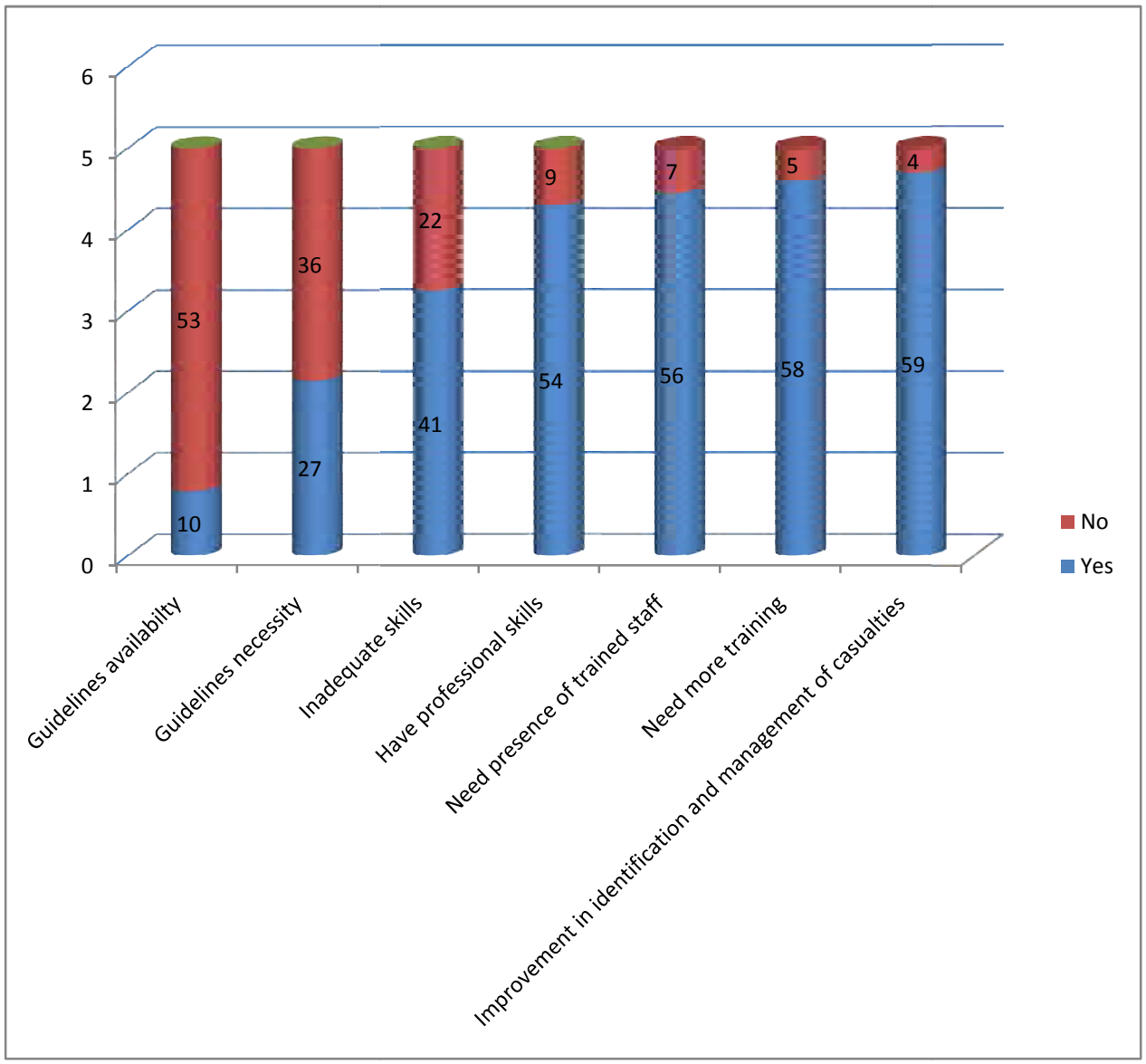


Fig. 5.1. Nursing practice self report among HURH and ADH ED nurses.

5.1.8. Self reported nursing practice.

Out of 63 nurses participated in the study, 10(15.9%) respond that guidelines or flow charts were available at ED and 27(42.9%) indicated that guidelines were necessary to assist in the management of poisoned casualty at ED. 41(65.1%) of participant nurses felt insecure in the management of poisoned casualty because they lack the necessary skill and confidence and 56(88.9%) require trained or experienced staff while responding to poison related cases; 58(92.1%) need more training on the management of poisoning. 54(85.7%) respond that they have professional skills to handle poisoned casualty; as show in the figure 5.2 above.

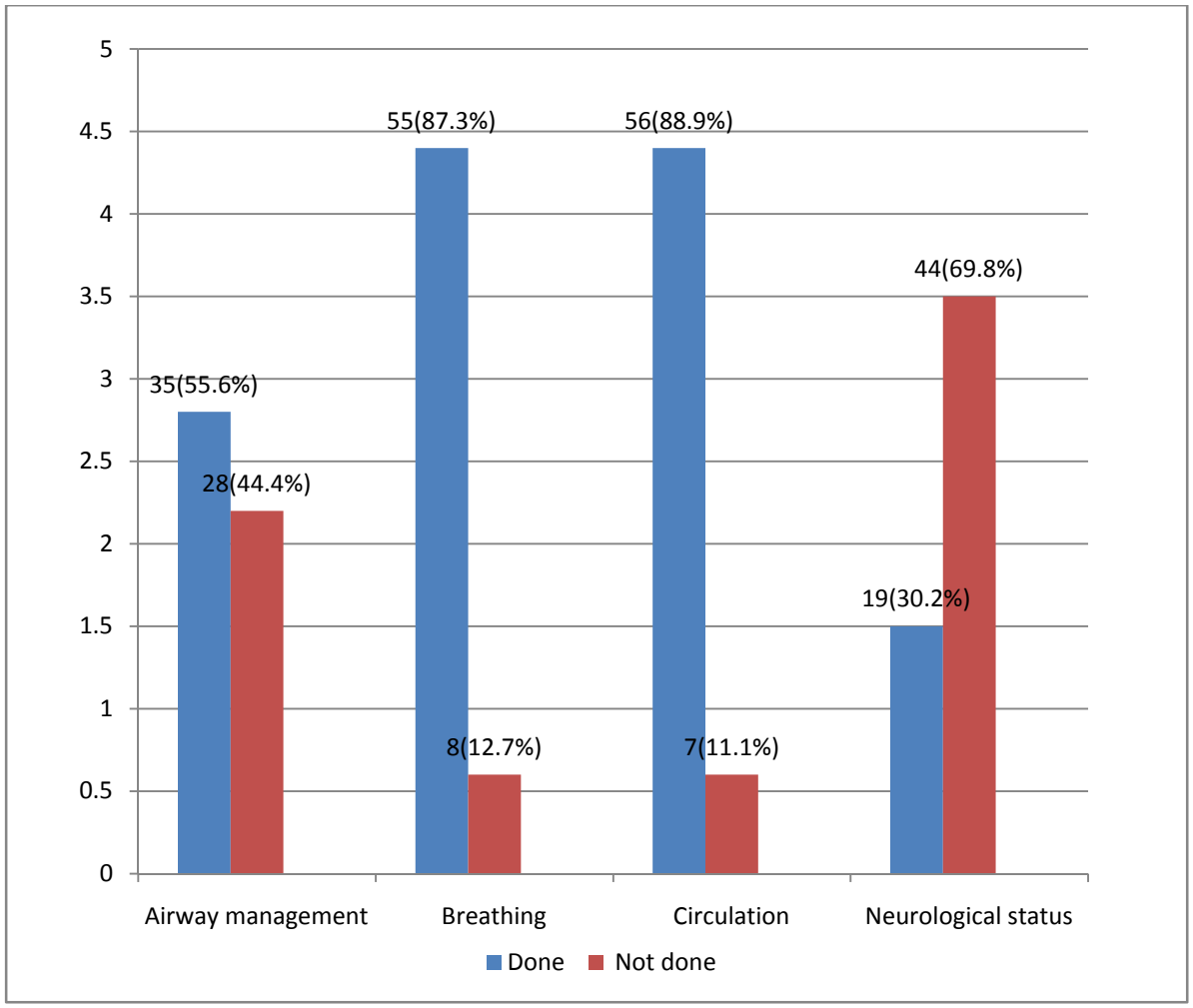


Fig .5.2. shows management of ABCD of acute poisoning by nurses at ED of HURH and AD

Practice part

5.1.9. Assessment of ED nurses on the management of acute poisoning practice.

Practical competence of participant nurses was assessed by using both actual practices on poisoned casualties as its availability during data collection; simulation cases were given with interview checklist and questions to evaluate the practical knowledge of each participant following ABCD:-

Airway management

Airway management of poisoned casualty by ED nurses was assessed using lists like check the patient level of consciousness, check airway patency, assist in oro-pharyngeal or naso-pharyngeal airway, inspect and remove foreign bodies and assist in intubation. Out of participant nurses 35(55.6%) correctly did all the airway managements activities, while 28(44.4%) didn't manage correctly.

Breathing

Management of breathing of poisoned patient by nurses was assessed using checklist like regulation of rate and rhythm of respiration, recognition of normal and compromised breathing and Oxygen therapy. Generally, majority 55(87.3%) of participants managed breathing correctly and only 8(12.7%) fail to do.

Circulation

Generally majority of participant nurses, 56(88.8%) managed and responded all practical questions given on the management of circulatory problems like shock, bleeding, etc and only 7(11.1%) fail to do.

Neurological status assessment and monitoring.

Nurses' practical knowledge of neurological assessment and monitoring of poisoned casualty

was assessed using checklists recognition of normal and abnormal neurological status,

neurological assessment and monitoring and recognition of altered level of consciousness. Generally neurological status assessment and monitoring was the least managed part of practice by nurses. Only 19(30.2%) of nurses assesses and managed neurological status of the casualties using AVPU and GCS correctly, while 44(69.8%) fail to manage correctly; as shown on the figure 5.2 above.

Table 8.drugs given to manage acute poisoning casualty by ED nurses of HURH and ADH

No	Treatment given	Frequency	Percent
1	Antidote and other drugs	30	47.60
2	Fluid	19	30.20
3	All	14	22.20
	Total	63	100

5.1.10. Drugs

To manage acutely poisoned casualty at ED , nurses had awareness and give the ordered therapies like antidote and other drugs like antibiotic to treat aspiration pneumonia ,fluid therapy to manage and treat shock, circulatory insufficiency, fluid loss and all therapies accordingly. 30(47.6%) of participant nurses give antidote and other drugs as ordered and 14(22.2%) give antidote, other drugs and fluid therapy as ordered based on type of poison ingested, duration of time between ingestion and presentation as shows on the table 5.8 above.

Table 9. shows GI decontaminator used to manage acute poisoning casualty at ED by nurses

No	Decontaminator used	Frequency	Percent
1	Activated charcoal	14	22.20
2	Activated charcoal & Gastric lavage	10	15.90
3	Gastric lavage	34	54
4	Whole bowel irrigation	5	7.90
	Total	63	100

5.1.11. Gut decontamination

The GI of acutely poisoned casualties were decontaminated by ED nurses using Gastric lavage 34(54%) in its correct time interval(with in 1hour of ingestion mostly) and indication ,Activated charcoal 14(30.2%) , whole bowel irrigation5(7.9%) and 10(15.9%) used both activated charcoal and Gastric lavage in their correct indication , but none of nurses use emesis, as shown on the table 5.10 above.

5.2. Discussion

5.2.1. Introduction

This is institution based cross sectional descriptive study that used both quantitative and qualitative methods of data collection was aimed to assess the general and practical knowledge of nurses on the management of poisoned casualties seen at Adult ED of HURH and ADH.

5.2.2. General knowledge versus professional qualification and work experience

The general knowledge score of nurses was assessed according to their professional qualification and work experience. Those nurses with higher professional qualification had high mean score than those with lower professional qualification, 7.25(SD-1.78), 8.37(SD-1.89) and 12; for Diploma, BSc and MSc nurses respectively and had a mean general knowledge score of 8.00(SD-1.97) which was 61.50% for the given general knowledge items, and the p-value was 0.01. The general knowledge of nurses on poisoning has positive correlation with their professional qualification since $p<0.05$.

On the bases of work experience, ED nurses were assessed for their general knowledge on poisoning and scored a mean value; 0-4 years of experience 8.03(SD-1.64), 5-9 years of experience 7.46(SD-1.90) and 10 and above years of experience 9.63(2.56) respectively; with the total mean of 8.00(SD-1.97) for the entire group and 61.50% for the given items; and the p-value was 0.27.

The current study was in agreement with the study conducted at Kenya (2011 and 2012) on assessment of nurses' KAP on initial management of acute poisoning at adult ED on 68 nurses and at Egypt (2015) on nurses' knowledge and practice regarding detection and management of acute drug poisoning on 30 nurses which revealed nurses had unsatisfactory knowledge level that was less than (<75%) even if they had increasing mean knowledge score as their professional qualification (35,36,37); and

This study also shows that nurses had unsatisfactory knowledge level less than 75% which was 61.50% of mean general knowledge with increasing mean score with increasing their professional qualification as well as their experience.

But this study was in contrary with both studies(35,36,37) that revealed general knowledge and professional qualification has no significant association and nurses with experience of 5-9 years had mean score higher than below 5 and above 10 years of work experience.

The result of this study the showed that there was a significant association between professional qualification and general knowledge of nurses since p-value was 0.01 which was $p<0.05$.

In my point of view this might be due to increasing professional qualification of nurses increase the general knowledge of nurses on poisoning management as well as their general medical knowledge and as the years of experience increases the mean general knowledge of nurses become high due to increased exposure to different poisoning cases at ED and different medical illnesses and their management as well as they might got different trainings.

5.2.3. Professional qualification versus initial management of acute poisoning practice.

The mean knowledge score of nurses on initial management of acute poisoning practice were evaluated using 10 items.

Nurses who had higher professional qualification score high mean score than those with low qualification. 5.62(SD-1.16), 6.79(SD-1.38) and 8.00; for Diploma, BSc and MSc respectively with entire knowledge mean of 6.37(SD-1.57) which is only 63.70% for the given items on initial management of poisoning with the p-value of 0.002. Which show nurses had unsatisfactory knowledge and practice level on initial management of acute poisoning.

This study was also in agreement with the study done in Kenya 2011 and 2012 on KAP of nurses' on initial management of acute poisoning at adult ED and in Egypt 2015 on knowledge and practice of nurses on detection and management of acute drug poisoning which revealed that nurses had unsatisfactory knowledge and practice level on initial management of acute poisoning even though their mean knowledge level increase with increasing professional qualification(35,36,37).

But there was contrary result with both of studies in that; their study concluded that there was no significant statistical association between professional qualification of nurses and initial management of acute poisoning; in the current study the result shows that there was statistically significant association since p-value =0.002 which shows positive association $p<0.05$.

This was from the fact that as the professional qualification of the nurses' increases there should be increase both the general knowledge of nurses medically as well as results in increase in confidence in the care and management of casualties. This was why there was a positive correlation.

5.2.4. Emergency related training among ED nurses.

The current study findings showed less than half of all ED nurses 30(47.62%) trained emergency related training;

of which 22(34.9%) trained BLS, 7(11.10%) trained Em&Ccn, 2(3.2%) and 1(1.6%) trained poison management and IEMM respectively; and 33(52.38%) did not trained none of the courses.

The result of this study was in agreement with the study done in Egypt 2015 on nurses' knowledge and practice in detection and management of acute drug poisoning which revealed that all nurses got any of emergency related training that result in unsatisfactory knowledge and practice level(37).

5.2.5. Nurses' self response on poisoning management related to ED practice.

From participants of this study ED nurses, 56(88.9%) requires the presence of staff member trained or experienced in poison management, 58(92.10%) need more training or education pertaining to the management of poison management, and 59(93.70%) of participant nurses indicated that it was necessary to develop procedures that improve in the identification and management of acutely poisoned casualties seen at ED.

This study was in agreement with the study done in Kenya 2011 and 2012 by Rutto which revealed that 60(88.2%) of ED nurses need training that would help them in improvement in identification, diagnosis, intervention and management of poisoned cases(35,36).

5.2.6. Actual practice of nurses' on the management of acutely poisoned casualties at ED.

The results of current study showed that the mean practical knowledge was unsatisfactory which was 65.50%; Out of participant nurses, 28(44.4%) didn't manage airway correctly, breathing including O_2 therapy 8(12.7%) fail to manage and 7(11.1%) fail to manage circulation correctly, and In the assessment and monitoring of neurological status by using AVPU and GCS 44(69.8%) fail to manage correctly as per (9&34 guidelines).

The result of current study was in agreement with the findings of both study done in Kenya 2011 and 2012 by Rutto and in Egypt 2015 by El.sayed which revealed that nurses managing poisoned casualties sometimes fail to recognize problems in respirations, circulation, neurological status; and differentiate early signs of poisoning in different body systems. Nurses' lack of practice was attributed to lack of attending emergency related trainings, lack of continuous education and nursing shortage (35, 36, 37).

5.2.7. Gut decontamination.

To decontaminate poisoned casualties at ED nurses were aware the benefits, the duration of presentation and used procedures like:- 5(7.9%) whole bowel irrigation, 14(22.2%) activated charcoal, the majority 44(69.9%) used gastric lavage.

This study was in agreement with the study done in Kenya 2012 and as Dr. Ali D Abas guideline for nurses on poison management and MOH guideline which revealed that majority of ED nurses were aware and used gastric lavage to decontaminate poisoned casualties in the time range between 1 hour from time of ingestion for common poisons to 4 hours for controlled or slow released substances to time of presentation to ED (9, 34, 36).

5.2.8. Strength and limitation of the study.

5.2.8.1. Strength of the study.

This study tried to assess both the general knowledge, knowledge of initial management of acute poisoning and practice knowledge level of nurses working at ED of both hospitals.

The study also included all nurses working at ED of both hospitals and both public hospitals that located at Hawassa town; thus the sample was representative and can be generalized for the study population.

The questionnaire was adapted from previous studies done in similar settings in other countries and pretest was done to check for completeness, and to avoid any difficulty during data collection and necessary modification was made.

5.2.8.2. Limitations of the study.

- As the study was based on only two institutions located in one town and professionals involved in the study were from those institutions; so, generalization as whole was not considered.
- The study period was very short and data collection and analysis was very difficult.
- As ED nurses were very busy it was very difficult to assess all participants in actual practical observation

5.3. Conclusion

The findings of this study revealed that:-

- All ED nurses that participated in this study had unsatisfactory general knowledge on poisoning, knowledge on initial management of acute poisoning and practice .
- Socio-demographic characteristics such as professional qualification had impact on general knowledge and initial management of poisoning.
- The majority of ED nurses required training related to emergency and poisoning management.

5.4. Recommendations

As the result of current study revealed that all participated ED nurses had unsatisfactory knowledge and practice level ; so, there:-

- Should be various type of emergency related training focusing on poisoning management, IEMM(Integrated emergency medical management), etc that help in assessment diagnosis and management of casualties at ED by nurses.
- Flow chart or guidelines that will enhance easy identification and management of poisoning casualties should be set and utilized at ED by nurses and other professionals.
- Stakeholders like FOH,SNNPR health bureau and Sidama Zone health bureau should facilitate and give training related to poisoning management and emergency care for ED nurses.

References

1. Rajanandh MG, Santhosh S, Ramasamy C. Prospective analysis of poisoning cases in a super specialty hospital in India. J of pharmacology and toxicology,2013; 8(2):60-66.

2. Chiu L, Lim B, Vasu A, PhuaDH. Poison exposure in the emergency department: a Singaporean experience. Hong Kong J. of Emerg Med, 2011; 18(4):97-202.

3. Hakim A, Khurshid R, Mufti S, Krishan K, Singh Y.Pattern, profile and outcome of poisoning cases: a study at a large teaching hospital in India. JK practitioner, 2014; 19(1-2): 36-40.

4. Kara H, Bayir A, Degirmenci S, Akinci M, Ahmet AK, Kayis SA. Causes of poisoning in patients evaluated in a hospital emergency department in Konya, Turkey. J Pak Med Assoc, 2014; 64(9):1042-1048.

5. Yu-Hui Hu1, Hsiu-Ling Chou2, Wen-Hua Lu2, Hsien-Hao Huang1, Cheng-Chang Yang3,David H.T. Yen1,4*, Wei-Fong Kao1, Jou-Fan Deng3, Chun-I Huang1(2010)-Features and Prognostic Factors for Elderly With Acute Poisoning in the Emergency Department.

6. Susic TP, Ketis ZK,Grzinic KM, Kersnik J. Glasgow Coma Scale in acute poisonings before and after use of antidote in patients with history of use of psychotropic agents. Srp Arh Celok Lek, 2010; 138(3-4): 210-213.

7. Carter G, Reith DM, Whyte IM, McphersonM. Repeated self-poisoning: Increasing severity of self-harms a predictor of subsequent suicide. British J of Psychiatry, 2005; 18(6):253-257.

8. Janne Liisanantti Acute drug poisoning, out come and factors affecting outcome

9. MOH Clinical Practice Guidelines Dec/2011-Management of Poisoning.

10. Kiran N, Rani S, Jaiprakash V, VanajaK. Pattern of poisoning reported at south Indian tertiary care hospital.Ind J of Forensic Med and Toxicol,2012; 2(2):72-76.

11. World Health Organization (2014). Poisons information, prevention and management. Geneva: WHO, 2014.

12. Esayas Tadesse G/Mariam* and Belayneh Kefale Gelaw,2016-Global epidemiology of acute Poisoning with an Emphasis to Ethiopia: Systematic Review.

13. Malangu, N., Ogunbanjo G.A., (2009). A profile of acute poisoning at selected hospitals in South Africa: South Africa Journal of Epidemiology. 24(2),14-16.

14 Frithsen, I. L. & Simpson, W. M. (2010). Recognition And Management Of Acute Medication Poisoning. American Family Physician , 81(3); 316-323.

15. Bohnert AS, Fudalej S & Ilgen MA (2010) Increasing poisoning mortality rates in the United States, 1999–2006. Public Health Rep 125(4): 542–547.

16. Hovda KE, Bjornaas MA, Skog K, Opdahl A, Drottning P, Ekeberg O, et al.Acute poisonings treated in hospitals in Oslo: a one-year prospective study (I): pattern of poisoning. Clin Toxicol. 2008;46:35–41.

17. World Health Organization, (2011) Drug Poisoning visited at (16 December 2013). : Retrieved from -http://www.who.int/environmental_health_emergencies/poisoning/en

18. Azazh A (2010). Case series of 2, 4-D poisoning in Tikur Anbessa Teaching Hospital. Ethiop Med J. 48:243-6.

19. Hutton J, Dent A, Buykx P, Burgess S, Flander L & Dietze P (2010) The characteristics of acute non-fatal medication-related events attended by ambulance services in the Melbourne Metropolitan Area 1998–2002. Drug & Alcohol Review 29(1): 53–58.

20. Koliou M, Ioannou C, Andreou K, Petridou A& Soteriades ES (2010) The epidemiology of childhood poisonings in Cyprus. Eur J Pediatr 169(7): 833–838.

21. Prescott K, Stratton R, Freyer A, Hall I & Le Jeune I (2009) Detailed analyses of self-poisoning episodes presenting to a large regional teaching hospital in the UK. Br JClin Pharmacol 68(2): 260–268.

22. Heyerdahl F, Hovda KE, Bjornaas MA, Nore AK, Figueiredo JC, Ekeberg O,et al. Pre-hospital treatment of acute poisonings in Oslo. BMC Emerg Med.2008;8:15.

23. Tieto Health Care (2011) The Finnish Consortium of Intensive Care Data. Tieto Health Care Finland. URI: http://www.intensium.fi/web/suomi/tehohoito.

24. Andrew E, Irestedt B, Hurri T, Jacobsen P & Gudjonsdottir G (2008) Mortality and morbidity of poisonings in the Nordic countries in 2002. Clinical Toxicology 46(4):310–313.

25. Exiara T, Mavrakanas TA, Papazoglou L, Papazoglou D, Christakidis D & Maltezos E(2009) A prospective study of acute poisonings in a sample of Greek patients. CentEur J Public Health 17(3): 158–16

26. Lam SM, Lau ACW, Yan WW. Over 8 years- experience on severe acute poisoning requiring intensive care in Hong Kong, China. Hum Exp Toxicol. 2010; 29: 757 -765.

27. Health Statistics Quarterly (2007) Deaths related to drug poisoning in England and Wales, 2002–06. Health Statistics Quarterly (36): 66–72.

28. Kivisto JE, Mattila VM, Parkkari J & Kannus P (2008c) Incidence of poisoning deaths in Finland in 1971–2005. Hum Exp Toxicol 27(7): 567–573.

29. Bjornaas MA, Jacobsen D, Haldorsen T, Ekeberg O. Mortality and causes of death after hospital-treated self-poisoning in Oslo: a 20-year follow-up. ClinToxicol. 2009;47:116–23.

30. Centers for Disease Control and Prevention (CDC) (2007) Unintentional poisoning deaths -United States, 1999–2004. MMWR - Morbidity & Mortality Weekly Report 56(5):93–96.

31. Warner M, Chen LH & Makuc DM (2009) Increase in fatal poisonings involving opioid analgesics in the United States, 1999–2006. NCHS Data Brief (22): 1–8.

32. African Journal of Emergency Medicine,2011-Emergency management of acute poisoning.

33. S L Greene, P I Dargan, A L Jones,2016-Acute poisoning: understanding 90% of cases in anutshell.

34. Dr. Ali D. Abbas / Instructor, Fundamentals of Nursing Department, College of Nursing, University of Baghdad, ali_dukhan@yahoo.com, 2011-Emergency Nursing: Poisoning.

35. JAPHETH KIPKOSGEI RUTTO(MSC IN CCN, 2011)- Nurse's knowledge, attitude and practice on the initial management of acute poisoning among adult casualties: study at accident and emergency department, Kenyatta national hospital, Kenya.

36. Japheth Rutto*, James Mwaura, Angeline Chepchirchir, Theresa Odero, 2012- Nurse's knowledge, attitude and practice on the initial management of acute poisoning among adult casualties: Study at Kenyatta National Hospital, Kenya.

37. Yahia El.Sayed, Warda Youssef, Hisham A.Alshekhepy, Hanaa Elfeky,2015- Nurses' Knowledge and Practices regarding Detection and Management of Acute Drug Poisoning at Cairo University Hospitals.

Annex I

Consent Explanation

I am Tamiru Beyene a second year postgraduate student at the AAU, College of Health Sciences Department of Emergency medicine &critical care pursuing a Masters degree in Emergency Medicine and Critical Care Nursing.

Dear participant

I intend to carry out a study on **"*The initial nursing management of acute poisoning among adult casualties seen at emergency department of Adare District Hospital (ADH) and Hawassa University Referral Hospital (HURH)"*** as part of my course requirement. The study seeks to evaluate nurses' skills and knowledge on the initial management of acute poisoning among adult casualties seen at emergency department, ADH&HURH. The study has no any material or monetary benefits.

Your participation is on voluntary basis and will not result in any physical or psychological harm. You will have the right to withdraw at any time without any penalty. We will require you to fill a questionnaire which will take about 30 minutes and you will be guided through. You are free to ask any question about the study any time. Study findings will be used to develop strategies on how to improve poisoning management and service quality.

The information you provide will be kept confidential and anonymous, and on that note, you will not write any of your personal particulars. Your participation will be highly appreciated

In case of any questions or clarifications feel free to contact the principal investigator on mobile number 0910119799.

Thank you

Tamiru Beyene (Principal investigator)

Informed Consent

I have read consent explanation and understood it's content.I have been given opportunity to discuss all my concerns.So,I agree voluntarily to participate in the study on "the assessment of knowledge and practice of nurses on tne initial management of acute poisoning at adult ED of ADH&HURH at Hawassa town.

Signiture of participant…….Date…….

Signiture of data collector…….Date…….

Signiture of investigater……Date…….

Questionnaire code_____

Research Questionnaires
Date_____
Directions: You are requested to fill this form about some of your demographic data. Please answer every question if possible.
SECTION A: Social and Demographic Data
1. 1. Gender: Female 1. Male 2.

2. What is your age?

1. 20-29 yrs.

2. 30-39yrs

3. 40-49yrs

4.> 50 Yrs

3. Highest nursing education earned:

1. Diploma

2. BSC

3. Masters

4. PhD 5. Others

4. Number of years since you first qualified as a nurse: _____

5. How many years of experience do you have in emergency environment(department).

1. < 2 years 4. 6-7 years

2. 2-3 years 5. 8-9 years

3. 4-5 years 6. >10 years

6. Have you train(gote) any of the following courses since you first qualified as a nurse:

1. BLS(Basic life support) which year_____

2. IEMM(Integrated Emergency Medical Management) which year _____

3. emergency and Critical care nursing(CCN) which year_____

4. Any other course relevant to your field? 1. Yes 2. No

If yes which course? _____

7. Is there any course you are currently pursuing related to your nursing field?

1. Yes

2. No

If yes which course? _____

8. Have you had any formal training on the management of acute poisoning since you first qualified as a nurse?

1. Yes

2. No

SECTION B: General Knowledge on Poisoning

Direction: Indicate whether the following statements are **True**, **False** or you are **Not Sure** regarding poisoning. Tick the correct response in the space provided.

No	Question/statement	True	False	Not sure
1	Poison is any substance capable of producing damage or dysfunction in the body by its chemical activity.			
2	Dose ingested and time of ingestion are not very necessary consideration when managing poisoning cases in ED.			
3	As an ED nurse it is always very important to treat the poison not the patient.			
4	The commonest cause of poisoning in developing countries is pesticide poisoning.			
5	Women are more likely to take deliberate poison in general population to commit suicide than men.			
6	Cause of poisoning among casualties attending any ED, according to motive and nature of use, can be classified as:			
	i. Deliberate poisoning			
	ii. Accidental poisoning			
	44			

	iii. Homicidal poisoning			
	iv. Euthanasia poisoning			
7	Alimentary signs and symptoms of acute poisoning during early stages include ;			
	i. Dry mouth, abdominal pain and salivation			
	ii. Nausea, vomiting, hallucinations and convulsions			
	iii. Coughing, cyanosis, hyperventilation and salivation			
	iv. Tachycardia, hypotension, diarrhea and breathlessness			

SECTION C: Initial Management of Acute Poisoning Practices

When managing acute poisoned patient, indicate your management view if the following statements are **True, False** or you are **Unsure**. Indicate the correct answer at the beginning of each statement, **T** for true, **F** for False and **US** for Unsure

1. _____In severe acute poisoning, maintaining adequate airway, respiration and circulation are always a priority.

2. _____ In case of organophosphate poisoning atropine should not be administered in any circumstance.

3. _____ Nearly all poisoning encountered in accident and emergency department have their specific antidote.

4. _____The decision to perform Gastrointestinal (GI) decontamination should be based upon the specific poison(s) ingested, time from ingestion to presentation, and the predicted severity of the poison.

5. _____Emesis is to be considered in an alert, conscious patient who has ingested a substantial amount of a toxic substance within 60 minutes of presentation.

6. _____Activated charcoal can increase absorption of a wide range of poisons from the gastro-intestinal tract to the entire human system.

7. _____Gastric lavage is indicated for patients who have ingested kerosene or corrosive substances within an hour of presentation.

8. _____ The effectiveness of gastric lavage increases as the time between ingestion and treatment increases.

9. _____ The volume of lavage fluid aspirated should approximate to the amount of fluid given.

10. _____ Patients presenting following ingestion of controlled/ slow released substances may benefit from decontamination even after a longer delay (e.g. more than 2-4 hours).

SECTION D: Nursing Practice Self Report

Instruction: Indicate by ticking the correct box either **Yes** or **No**

No	**Nurses Practice**	Yes	No
1	I have professional skills to handle patients with acute poisoning.		
2	I feel insecure dealing with poison patient as I lack necessary skills and confidence.		
3	I need more training/education pertaining to the management of acute poisoned casualties.		
4	While responding to poison related attendances in ED, I require the presence of a staff member trained or experience in poison management		
5	It is necessary to developing procedures for improving the identification and management of acute poisoning on casualties seen at ED department		
6	Are there any guidelines or flowcharts in place at ED to assist you in management of poisoned casualties?		
7	Are guidelines to ED staff on the management of poisoning really necessary?		

Interview and Observational Checklist

CHECKLIST ON THE MANAGEMENT OF POISONED PATIENT.

Indicate whether the following activities were **done, not done** or **not necessary** by ticking the appropriate box. Provide comment on the performance if any,

	Date_____ **Check list**	**Done**	**Not Done**	**Not Applicable**	**Comment(s)/ Remarks**
A	**Emergency Management**				
	1.Airway				
	i. Check the patient level of consciousness				
		46			

	ii. Check airway patency				
	iv. Assist in insertion of oro-pharyngeal or naso- pharyngeal tube				
	vi. Oral cavity inspected and any obvious foreign bodies such as food or broken dentures removed.				
	2. Breathing				
	i. Rate and rhythm of respiration				
	ii. Recognition of normal breathing patterns				
	iii. Recognition of compromised/Distressed Breathing				
	iv. Oxygen therapy, given				
	3. Circulation				
	i. Checked pulse rate and rhythm				
	ii. Checked blood pressure				
	iii. Recognition of normal and abnormal cardiovascular status				
	iv. Cardiovascular monitoring of any changes				
	v. Resuscitation fluids given				
	vi. Stop obvious bleeding				
	4. Neurological status (use of AVPU and GCS)				
	i. Recognition of normal and abnormal neurological status				
		47			

	ii. Neurological assessment and monitoring				
	iii. Recognition of altered LOC				
	5. Drugs				
	i. Given specific antidote (*Specify*)				
	ii. Given any other drug (*Specify*)				
	iii. Fluid therapy (*Specify*)				
B	**Medical History:** ascertain whether the following where noted during history taking; (*Specify where necessary)*				
	i. Type of drug or poison ingested				
	ii. Dosage and amount if available				
	iii. Time of ingestion				
	iv. Reason for taking the drug or poison				
	v. Any presence of suicide intent **(** *yes/no***)**				
	vi. Current symptoms noted (*yes/ no*)				
	vii. Any treatment received prior *(yes/none)*				
	viii. Past suicide attempts *(yes/ no*)				

C	**Gut decontamination:** Indicate the gut decontamination used by ticking at the appropriate box and give comment if appropriately used.	**Decontaminator used**	**Comment(s)**
	i. Gastric lavage		
	ii. Emesis		
	iii. Activated charcoal		
	iv. Whole bowel irrigation		