



بسم الله الرحمن الرحيم

ELSHAIKABDALLAH ELBADRY UNIVERSITY

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Assessment of Emergency Drug Administration
Among Nursing Staff in Atbara Teaching
Hospital In (2021).

Research submitted partial fulfillment of requirement
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الآية

بسم الله الرحمن الرحيم

قال تعالى :

{ مِنْ أَجْلِ ذَلِكَ كَتَبْنَا عَلَىٰ بَنِي إِسْرَائِيلَ أَنَّهُ مَن قَتَلَ نَفْسًا بِغَيْرِ نَفْسٍ أَوْ فَسَادٍ فِي الْأَرْضِ فَكَأَنَّمَا قَتَلَ
النَّاسَ جَمِيعًا وَمَنْ أَحْيَاهَا فَكَأَنَّمَا أَحْيَا النَّاسَ جَمِيعًا ۗ وَلَقَدْ جَاءَتْهُمْ رُسُلُنَا بِالْبَيِّنَاتِ ثُمَّ إِنَّ كَثِيرًا مِّنْهُمْ بَعَدَ
ذَلِكَ فِي الْأَرْضِ لَمُسْرِفُونَ }

سورة المائدة (32)

Dedication

To our mothers and our fathers

All ways doing the best for us ...

For everyone who was teaching us a letter ...

For everyone helped us in this research.

Appreciation

To our God, who guided us through the way.

To Dr .Nora Osman

*For her effort of supervising us, to
Accomplish this fine work.*

*To our families and friends, they were a great source of
support and encouragement.*

We thank them all and wish them all the best in their life's.

To those who have been with us step by step.

To every person gave us something to light our pathway

We thank them for believing in us...

Abstract

Background: emergency drugs have been defined as the drugs administered to patients with life-threatening conditions, in which if its administration is omitted or delayed will result in a risk of patient harm.

The aim of this study is to assess administration of emergency drugs in Atbara teaching hospital. **Study design:** This was Descriptive cross-sectional study, conducted to assess emergency drug administration among nursing staff in Atbara teaching hospital, was carried out at the period from June to November 2021, study covered all nurses in hospital (70 nurses), closed-ended questionnaire was used for data collection. Collected data was analyzed using computer software SPSS.

Result: The study revealed that majority of participants' nurses (71.4%) have lack of knowledge and administration.

Conclusion: The study concludes that majority of nurses participants have lack of knowledge and administration about emergency drugs in 2021.

Recommendation: We recommended nurses that it is essential to improve their knowledge by training programs.

المخلص :

المقدمة: تعرف أدوية الطوارئ بأنها هي الأدوية التي تعطى للمرضى الذين يعانون من حالات مهددة لحياتهم والتي إذا أهملت يكون المريض عرضة للأذى الجسيم.

الهدف: الهدف من الدراسة تقييم كيفية إدارة أدوية الطوارئ في مستشفى عطبرة التعليمي.

نوع الدراسة: اجريت هذه الدراسة الوصفية في مستشفى عطبرة التعليمي في الفترة من يونيو الى نوفمبر شملت الدراسة كل الممرضين العاملين في المستشفى و عددهم 70 . تم جمع البيانات باستخدام استبيان قياسي مغلق الأسئلة. باستخدام برنامج التحليل الحزمي للبيانات بالحاسوب.

النتائج: كشفت الدراسة أن أغلبية الممرضين المشاركين (71,4%) لديهم نقص في المعرفة وادارة أدوية الطوارئ.

التوصيات: من هذه الدراسة نوصي الممرضين بأنه من الضروري تحسين وتطوير معرفتهم بأدوية الطوارئ وإدارتها ببرامج و دورات تدريبية.

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Abbreviations

No	Abbreviation	Phrase
1	US	United State
2	ME	Medication Errors
3	WHO	World Health organization
4	NHS	National Health Services
5	UK	United Kingdom
6	CPAP	Continuous Positive Airway Pressure
7	ECG	Electrocardiogram
8	AACN	The American Association of critical care nurses
9	ICU	Intensive care unite
10	ED	Emergency drug
11	UTI	Urinary Tract Infection

1.1 Introduction

Drugs are one of the most crucial pillars in the provision of healthcare services and achieving Universal Health coverage. Emergency Drugs are the drugs that save someone's life, require immediate administration in most of the cases, as they sustain life, and prevent complication. They were defined by the Drugs Bank in 2017 as: "Life Saving Drugs are those drugs which save lives in case of emergency. Also, these drugs have the capability to hold life or prevent further damage and complications. These drugs are used in emergency situation, intensive care unit. These drugs help patient close to life. (1)

Critical nurse emergency nurse is a highly skilled nurse who monitoring and diagnosis of patients with life threatening and makes appropriate intervention. (2)

Statistical study of hospital deaths in the United State conducted at the University of Toronto in 2007 revealed that pharmaceutical drugs kill more people every year. The frequency of administration errors ranges from 2.4% to 47.5%, depending on the drug distribution system in place. Medication errors were estimated to account for more than 7,000 deaths annually in the U.S alone. In the United Kingdom (2010), a recent report by the National Patient Safety Agency indicated that 56.5% of reported errors associated with severe harm or death occurred at the administration step. (3)

In developing countries, no clear statistics about the incidence of medical errors are reported. However, the lack of clear statistical data about medication errors does not imply that there is no medication errors the experts predict that due to some structural weaknesses in the National Health System, the rate of medication errors must be very high. According to the Ministry of Health and Medical Education, billions of dollars are spent every year to provide care services for hospitalized patients who have become a victim to ME and thus have been faced with complications and prolonged stay in hospitals. These errors could directly inflict damage upon the patient and increase health care costs and could indirectly harm the

healthcare personnel on professional and personal levels and reduce their self-esteem and performance. Several strategies have been proposed by various studies to prevent and reduce medication errors among which we may note the following: staff training, communicating information regarding new drugs, availability of pharmacology books in clinical wards, and holding pharmaceutical conferences.(4)

1.2 problem statement:

There is increasing in emergency drug administration internationally and regional it may attached statistically mortality and morbidity of country population.

In our region and state there is lack at information about the medical error and especially emergency drugs error.

1.3 Justification:

These limited statistic report and publish regarding administration errors such like this our state. The result of the study may provide useful information for our health system and use it as guideline to improve nurses practice and then to save patient life.

1.4 objectives:

General objectives:

Assessment of Emergency Drug Administration Among Emergency Nurse Staff in Atbara Teaching Hospital 2021.

Specific objective:

1. To assess nurses knowledge about indication of emergency drug.
2. To assess nurses skill regarding administration of emergency Drug.
3. To evaluate nurses knowledge about emergency drug complication ability to control.
4. To identify association between nurses knowledge and years of experience.
5. To identify Correlation between nurses knowledge and training program.

2. literature review

2.1 Emergency drugs definitions:

Emergency medicines have been defined by the WHO as medicines used for the prevention and treatment of life-threatening emergency medical cases of the community. (1)

Other definition by WHO defined as priority medicines that improving health, saving lives, and having the biggest impact on reducing morbidity and mortality. (1)

2.2 Uses:

According to the NHS, UK, Critical drug have been defined as the drugs administered to patients with life-threatening conditions, in which if it is administration is omitted or delayed will result in a risk of patient harm.

Emergency drug use for the treatment of specified emergency situation including severe bleeding , hypertensive emergency, myocardial infarction, respiratory failure, anaphylactic shock, hypoglycemia, pain relief in emergency rescue situation , acute asthmatic attack , severe and nebulizer bronchodilators therapy, and other emergency situation(1).

2.3 Types:

These drugs include anticoagulants, antiepileptic, anti platelet and thrombolytic, antiviral, chemotherapy, clozapine, corticosteroids, decompressing, immunosuppressant, insulin and other hypoglycemic agents, neuromuscular agents, opioid analgesics, Parkinson disease medications. (1)

2.4 Drugs:

Oxygen is essential for human metabolism and lack of oxygen is generally fatal within 5-6 minutes it is a vasoactive drug and should be prescribed by Indication: for oxygen therapy are cardiac and respiratory arrest, hypoxia of any cause, cardiac failure, myocardial infarction, chest pain ,pulmonary disease, chronic obstructive .(5)

Administer intranasal catheters these provide a low concentration of oxygen of between 25-40% (1-2l/min in children) used in patients with mild hypoxia or cardiac failure or myocardial ischemia Plastic face masks provide oxygen concentration of between 35-70% (4-15l/min) use for patients with moderate hypoxia or shock Tight fitting face masks (CPAP

masks) provide oxygen concentration close to 100% use in patients with severe hypoxia or with cardiac arrest. Side effects: the administration of oxygen causes hypoventilation and an increase in the carbon dioxide level in patient who suffer from chronic obstructive airway disease and elevated carbon dioxide levels. (5)

Diazepam Is a benzodiazepine derivative available for oral administration as tablets containing 2 mg or 10mg diazepam uses for anxiety disorder acute alcohol withdrawal impending or acute delirium tremens and hallucinosis. Contraindication Hypersensitivity to diazepam myasthenia gravis, severe respiratory insufficiency, severe hepatic insufficiency, and sleep apnea syndrome. Side effects are Drowsiness, fatigue, muscle weakness, and ataxia. Dose: 25mg/kg IV, 35mg /kg IV after 15min continuous infusion 5_15mg/hr. (6)

Dopamine Is isotropic, vasopressin use for heart failure 'shock 'and septicemia, symptomatic bradycardia. Contraindication Tachyarrhythmia's, hypersensitivity, pheochromocytom. Side effect are Headache, dyspnea , hypotension, angina, ECG change palpitation, vasoconstriction ,nausea.

Dose: 10mch/kg/min infusion 2_20mcg/kg/min. (7)

Adrenaline (epinephrine) Is a clear colorless sterile solutions containing 1mg/ml .1ml of adrenaline solutions contains 1mg epinephrine '9mg sodium chloride '1mg sodium metabisulfite 'hydrochloric acid to adjust PH and water for injection uses for cardiac arrest, anaphylaxis hypotension and sever bradycardia (4).(8)

Side effect Restlessness ,tremor ,weakness ,dizziness ,sweating ,palpitation ,pallor ,nausea and vomiting ,headache and respiratory difficulties .Dose ; short term use for systemic hypotension 0,1_0,3 ml /kg/ IV or IO (0,01_0,03mg/kg) . For continuous infusion start at 0,05mcg/kg /min to maximum of 1 mcg/kg/min. Rapid IV push followed by 0,5_1ml NS flush may repeat every 3_5 min .(8)

Furosemide is a loop of diuretic that prevent body from absorbing too much salt. Use for high BP, Congestive heart failure, edema and liver disease. Contraindication: patient with urea and history of hypersensitivity to Furosemide .Side effect etching, hearing loss, appetite loss and gastric pain. Dose 20_40 mg IV (maximum single dose 200 mg) over dose can cause irreversible hearing loss. (9)

Calciumgluconate Indicated for treat of acute symptomatic hypocalcaemia. Contraindication for it in hypercalcemia, neonate (28 days of age or younger) receiving ceftriaxone. Side effects from injection are local soft

tissue inflammation, necrosis, vasodilatation, decreased BP, bradycardia, cardiac arrhythmia, cardiac arrest. Dose: can give it bolus or continuous infusion via a secure intravenous line. single dose vial 1,000mg per 10ml (100mg per ml) , single dose vial 5,000mg per 50 ml (100mg per ml). (10)

Hydrocortisone Is 100 mg powder for solution for injection /infusion. Uses for treat shock, following surgery, hypersensitivity , inflammatory or allergic condition. Side effect: pulmonary embolus, acute pancreatitis , stomach pain ,ulcers ,dryness . Dose: Tablet 5mg, 10mg, 20mg .Powder for injection 100mg, 250mg, 500mg, 1g. (11)

Atropine Is anticholinergics, antimuscarinics, Uses for poisoning muscarinic symptom of nerve agent and certain insecticide. Contraindication there are no contraindication for atropine. Side effect dryness of mouth, blurred vision , photophobia ,confusion ,headache, dizziness, tachycardia, palpitation, urine retention, constipation, nausea and vomiting. Dose: person has 2 or more mild symptom use 1 auto injector wait 10 min if person develop sever symptom use 2 additional auto injector, one right after the other .(12)

Morphine sulfate is opioid agonist injection is intended for intravenous administration use for management of pain. Contraindication of it is hypersensitivity respiratory depression in absence of resuscitative, severe bronchial asthma, paralytic ileus. Side effects of it are respiratory depression, apnea, shock, cardiac arrest, euphoria, dysphoria, hallucinations, tremor, constipation, syncope, urinary retention, skin rashes. Dose usual starting dose in adults is 0,1 mg to 0,2 mg perkg every 4 hour.(13)

Voltaren (diclofenac sodium enteric-coated tables): is a benzene-acetic acid derivative. Indication of it are osteoarthritis, rheumatoid arthritis, ankylosing spondylitis. Contraindication are hypersensitivity asthma urticaria or other allergic.(14)

Side effects are abdominal pain, constipation, diarrhea, GI ulcers, abnormal renal function, anemia, dizziness, infection, sepsis, hypertension, gastritis, melena, confusion ,blurred vision, dysuria, colitis.Dose Oraltables 75 mg (light pink) chemical name is 2-(2,6 dichlorophenyl)amino benzeneacetic acid.(14)

Dextrose 10% 0,1 gm 1 ml Indication use for hypoglycemia, hyperkalemia Dose:0,2gm/kg/dose IV as D10W then continuous infusion of D10W at a GIR of 4-8mg/kg/min IV Contraindication :allergy to corn product patient

who are anuric, intraspinal hemorrhage, patient in hepatic coma. Side effect Dehydration , fluid retention , low blood potassium. (15)

2.5 Administration concepts:

Administration concepts are direction coordination and control of many persons to achieve some purposes or objective. Administration is an enabling process and in the sense in which it is usually understood it covers the whole art of carrying in to effect any policy plan or under taking whether conceived by government public or private agency.(16)

Routes of administration: there are many routes of administration medication such as orally, rectally, subcutaneous, intramuscular, intravenous...etc, The five right which must be follow to achieve good

Administration are right drug, right dose, right time , right route and right Client. (16)

Administration errors is poor administration on the patient chart and failure to comply with the prescription order, wrong drug is errors in which no drug and inappropriate drug are indicated for the diagnosis, wrong dose it is medication strength or quantity different from that indicated , wrong route of administration is errors in which medication are prescribed or administered in route other than the recommended, wrong number of dose it is frequency of medication per day different from that indicated. (16)

Omission error is the failure to administer dose of an ordered drug to a patient before the next scheduled dose. (16)

They are many factors associated with health care professional: lack of the therapeutic training, inadequate drug knowledge and experience, inadequate knowledge of the patient, inadequate perception of risk, overworked of health care professional, physical and emotional issues, poor communication between health care professional and with patients.(16)

Illegible prescription in which the name of the drug dose dosage regimen dosage form route of administration and length of the therapy are difficult to make out or read, length of therapy is errors in which no or in appropriate length therapy is indicated.(16)

2.6 Nurses:

Patient safety is one of the main concepts in the field of health care provision and a major component of health services quality. One of the important stages in promotion of the safety level of patients is identification of medication errors and their causes. (17)

Critical care nurse must maintain a focus on providing care to critically ill Patients and their families and promoting a patient health care, the AACN Defined critical care nursing as the specialty within nursing that deals specifically with human responses to life-threatening problem. A good nurse observes evaluates and reacts to the changing condition of every critically ill patient.(18)

So the progress of patient depends upon the right medication ,treatment and it is the responsibility of the nurse to assess ,record and interpret that progress to achieve the intended result. Nurses are the primary care giver and advocates for all patients, without nurses, there is no health care.(18)

Previous study

Study conducted in American regarding medication error by

Kenneth N. Barker et al. and all published study in American. The aim of this study: to identify the prevalence of medication error. Study design is prospective cohort study. Result in the 36 institutions,19% of the doses (605/3216) were in errors. The most frequent errors by cat-egory were wrong time (43%) ,omission(30%) ,wrong dose 17% ,and unauthorized drug 4% .seven per-cent of the error were judged potential adverse drug events .Errors rates in the 3 settings ($p=.82$)or by size ($p=.39$) . ER(.04). conclusions 1 of every 5 dose in the typical hospital and skilled nursing facility).The percentage of error rated potentially harmful was 7%, or more than 40 per day in a typicall 300- patient facility. The problem of defective medication administration systems.(19)

Study conducted in Italy regarding medication error by

N. GIANNETTA, S. DIONISI, et al, the study was conduct in Italy and Malta, in 2020,the aims of this study was to examine the knowledge, attitudes and behavior of Itali an and Maltese intensive care nurses in relation to medication errors, the study was cross-sectional study ,Findings showed good psychometric properties and reliability. MANOVA demonstrated significant differences in nurses' perception of the pharmacist

presence during medication process and of the use of computerized provider order entry. MANOVA also demonstrated significant differences in the control of vital parameters and the application of the right, these findings support the contention that knowledge, attitude and behavior of nurses is similar across different contexts in different countries wherein nurse training is harmonized and regulated through a transnational directive. (20)

Study conducted in India regarding medication error by

VANITHA JYOTHI^{1*}, BHARATHI D. R.², PRAKRUTHI G. M.³, conduct study in India in 8 April 2018, The aims of this study was to evaluate the drug-drug interactions in General medicine, ICU and Emergency departments, this was prospective-observational study. A total of 250 subjects were enrolled in the study, The majority (23.6%) of cases were identified in the age group 51–60 y old, Higher rate of DDIs was identified in the male gender prescriptions. 70% moderate interactions, 33.6% Minor interactions, 6.4% serious interaction found in general medicine, ICU and Emergency departments. Polypharmacy, age and co morbid condition were took part major role in drug-drug interaction. (21)

Study conducted in Malaysia regarding medication error by

Marco Dimuzio, Carolina Marzuillo, Corrado DE VITO. et al, conduct study in Italain in 2015, the aims of this study was to assess knowledge, attitudes and professional behavior of Italian nurses towards preparation and administration of intravenous medications in ICUs, this was a cross-sectional study, was conducted on sample of nurses In ICU through a self-administered questionnaire, in total, 123 nurses it is interesting to note that appropriate knowledge weighs negatively on correct behavior (OR 0.06, 95% CI 0.04-0.42). The results of this pilot study are encouraging. Experience and competence gained by nurses in ICUs is crucial for implementing appropriate behaviour in order to prevent medication errors. (22)

Study conducted in Tehran regarding medication error by

Seyyedeh Roghayeh Ehsani¹, Mohammad Ali Cheraghi². et al, conduct study in Tehran from 30 June, 2010 to 30 June 2011, the aims of this study was to explore the medication error reporting rate, error types and their

causes among nurses in the emergency department, the study was descriptive study was conducted on 94 nurses of the emergency department of Imam Khomeini Hospital Complex were selected based on census. The most prevalent type of medication error was related to errors in infusion rates, administration of two doses of medicine instead of one and omission of medicine. This study showed that the risk of medication errors among nurses is high and medication errors are a major problem of nursing in the emergency department. (17)

Study conducted in Saudi Arabia regarding medication error by

Menyfah Q Alanazi¹Majed I Al-Jeraisy^{2,3} . et al, a conduct study in Saudi Arabia in 4 June 2015, the aims of this study was to evaluate ATB prescriptions in an emergency department of a tertiary care facility, this was Across-sectional study, Broad-spectrum coverage ATBs were prescribed for 76% of the cases. Before the prescription, 82% of pediatrics had their weight taken, while 18% had their weight estimated. Allergy checking was done in 8% only. Prevalence of inappropriate ATB prescriptions with at least one type of error was 46.2% (pediatrics =58% and adults =39%). Errors were in ATB selection (2%), dosage (22%), frequency (4%), and duration (29%). Dosage and duration errors were significantly predominant among pediatrics (P, 0.001 and P, 0.0001, respectively). Selection error was higher among adults (P= 0.001), Prevalence of ATB prescription errors in this emergency department was generally high and was particularly common with cephalosporin, narrow-spectrum ATBs, and UTI infections. (23)

Study conducted in Addis Ababa regarding medication error by

Gediwon Negash, Yonathan Kebede, Segewkal Hawaze, conduct study in Addis Ababa in may 2011, the aims of this study was to assess incidence and type of Medication Errors in Tikur Anbesa Specialized Hospital, this was cross-sectional study, Medication errors were found to be 22781 (54.84%) with rate of 30.70 errors per patient and 1627.21 errors per day. Prescription errors, administration errors from recorded ones, absence of administration record were 7314 (32.11%), 991 (4.35%), and 14476 (63.54%) respectively. Moreover, necessary information on factors within the healthcare delivery system that predispose healthcare professionals to commit errors have been pointed, which should be addressed by healthcare professionals through multidisciplinary efforts and involvement of decision makers at national level. (24)

Study conducted in Sudan regarding medication error by

Hssananat eibashir. The study was conducted in Sudan in December 2016, the aims of this study was to determine nurses knowledge of initial treatment during an emergency management of patient with acute myocardial infarction, this was descriptive study, most of studies subject had poor level of knowledge regarding thrombolytic agents specifically about characteristics of streptokinase, indications, contraindication and complication, even among trained nurses the studies subject had poor level of knowledge related to the drugs used for initial management of acute myocardial infarction specifically those related to understand the thrombolytic agent. (25)

3. Methodology:

3.1 Study design:

This was Descriptive cross-sectional study, conducted to assess emergency drugs administration among nursing staff in Atbara Teaching Hospital in 2021

3.2 Study area:

This study was conducted in Sudan, River Nile state in Atbara city. Atbara is located in the north police station, west railway station consists of the following section, medical and surgical section, intensive care unit, cardiac care unit, nursery, obstetrics and gynecology, electrocardiogram, dialysis unit, ear, nose and throat ophthalmic.

3.3 Study Setting:

The study was done in Atbara Teaching Hospital.

3.4 Study population:

All nurses in Atbara Teaching Hospital during time of study.

3.5 Sample size:

The study was total coverage 70 of nurse with various certificates diploma, bachelor and master in nursing.

3.6 Sample technique:

The sampling selected through randomizes.

3.7 Data collection tool:

Tool used in this research questionnaire based on literature review closed ended questioner was been developed by researcher.

3.8 Data analysis technique:

The data was analyzed by using statistical package of social science frequency presented mean and standard deviation, paired test and cross tabulation were used to data analysis as statistical test and excel program was used for figure and was presented in table figures presentation include paragraphs.

3.9 Ethical consideration:-

The proposal was approved by the institutional ethics committee of the Elsheikh Abdullah Albadri university, and permission was taken from general hospital manager and the head nurse to conduct the research.

4. Results:

Table (1): Distribution of study group according to age group:

Age group	Frequency	Percent
20-30 years	54	77.1%
31-40 years	9	12.9%
Above 40 years	7	10%
Total	70	100%

figure (1): Distribution of study group according to age group

Most of nurses (77.1%) their age between (20 – 30) years.

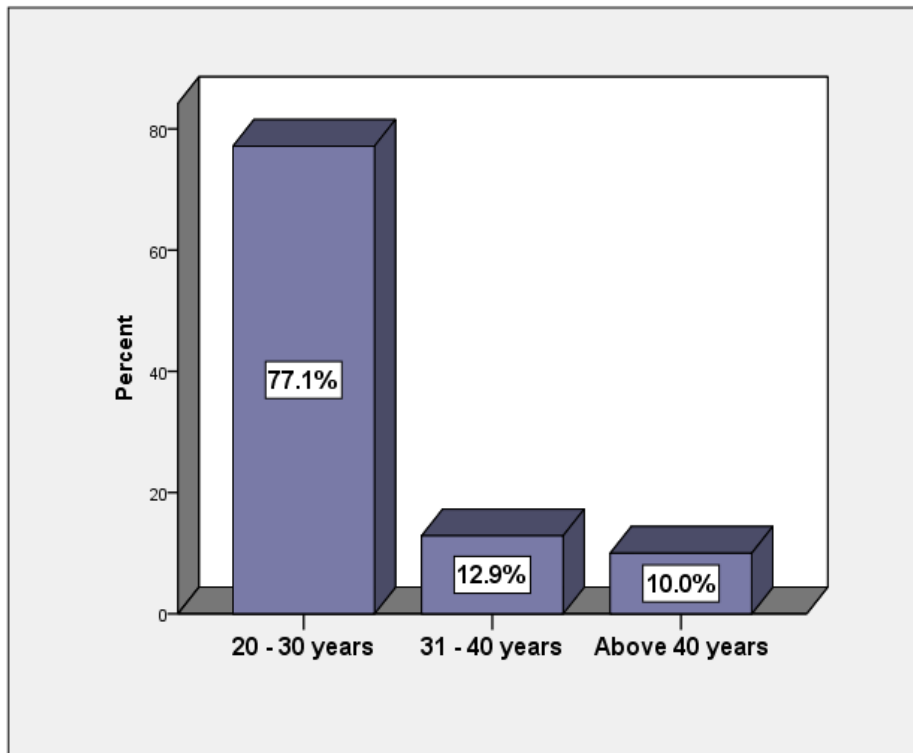


Table (2): Distribution of study group according to gender:

Gender	Frequency	Percent
Male	8	11.4%
Female	62	88.6%
Total	70	100%

Table (3): Distribution of study group according to level of education:

Level of education	Frequency	Percent
Diploma	18	25.7%
Bachelor	50	71.4%
Master	2	2.9%
Total	70	100%

Table (4) Distribution of study group according to years of experience:

Years of experience	Frequency	Percent
< 1 year	6	8.6%
1 - 5 years	46	65.7%
6 - 10 years	10	14.3%
11 - 15 years	2	2.9%
> 15 years	6	8.6%
Total	70	100%

Table (5): Distribution of study group according to attended training course of emergency drugs administration:

Course of emergency drugs administration	Frequency	Percent
Attend	29	41.4%
Not attend	41	58.6%
Total	70	100%

The majority of nurses (58.6%) not attended training course of emergency drugs administration.

Table (6): Distribution of study group according to attended training course of advance life support:

Course of life support	Frequency	Percent
Attend	28	40%
Not attend	42	60%
Total	70	100%

The majority of nurses (60%) not attended training course of advance life support.

Table (7): Distribution of study group according to their knowledge about adrenaline:

Knowledge about adrenaline	Frequency	Percent
Good	16	22.9%
Moderate	34	48.6%
Bad	20	28.6%
Total	70	100%

Most nurses (48.6%) have moderate knowledge about adrenaline.

Distribution of study group according to route of adrenaline:

Route	Frequency	Percent
Good	3	4.3%
Moderate	19	27.1%
Bad	48	68.6%
Total	70	100%

Table (8): Distribution of study group according to their knowledge about anticonvulsants (diazepam):

Knowledge about	Frequency	Percent
Good	16	22.9%
Moderate	38	54.3%
Bad	16	22.9%
Total	70	100%

Most nurses (54.3%) have moderate knowledge about anticonvulsants (diazepam).

Distribution of study group according to route of diazepam:

Route	Frequency	Percent
Good	2	2.9%
Moderate	7	10%
Bad	61	87.1%
Total	70	100%

Table (9): Distribution of study group according to their knowledge about antidotes (calcime gluconate):

Knowledge about	Frequency	Percent
Good	19	27.1%
Moderate	31	44.3%
Bad	20	28.6%
Total	70	100%

Most nurses (44.3%) have moderate knowledge about antidotes (calcime gluconate).

Distribution of study group according to route of calcime gluconate:

Route	Frequency	Percent
Good	64	91.4%
Moderate	3	4.3%
Bad	3	4.3%
Total	70	100%

Table (10): Distribution of study group according to their knowledge about atropine:

Knowledge about	Frequency	Percent
Good	15	21.4%
Moderate	34	48.6%
Bad	21	30%
Total	70	100%

Most nurses (48.6%) have moderate knowledge about atropine.

Distribution of study group according to route of atropine:

Route	Frequency	Percent
Good	1	1.4%
Moderate	63	90%
Bad	6	8.6%
Total	70	100%

Table (11): Distribution of study group according to their knowledge about adrenergic stimulants (dopamine):

Knowledge about	Frequency	Percent
Good	17	24.3%
Moderate	43	61.4%
Bad	10	14.3%
Total	70	100%

Most nurses (61.4%) have moderate knowledge about adrenergic stimulants (dopamine).

Distribution of study group according to route of dopamine:

Route	Frequency	Percent
Good	65	92.9%
Moderate	4	5.7%
Bad	1	1.4%
Total	70	100%

Table (12): Distribution of study group according to their knowledge about diuretics:

Knowledge about	Frequency	Percent
Good	24	34.3%
Moderate	42	60%
Bad	4	5.7%
Total	70	100%

Most nurses (60%) have moderate knowledge about diuretics.

Distribution of study group according to route of diuretics:

Route	Frequency	Percent
Good	1	1.4%
Moderate	68	97.1%
Bad	1	1.4%
Total	70	100%

Table (13): Distribution of study group according to their knowledge about dextrose:

Knowledge about	Frequency	Percent
Good	17	24.3%
Moderate	45	64.3%
Bad	8	11.4%
Total	70	100%

Most nurses (64.3%) have moderate knowledge about dextrose.

Distribution of study group according to route of dextrose:

Route	Frequency	Percent
Good	58	82.9%
Moderate	8	11.4%
Bad	4	5.7%
Total	70	100%

Table (14): Distribution of study group according to their knowledge about pain killer (morphine):

Knowledge about	Frequency	Percent
Good	20	28.6%
Moderate	31	44.3%
Bad	19	27.1%
Total	70	100%

Most nurses (44.3%) have moderate knowledge about pain killer (morphine)

Distribution of study group according to route of morphine:

Route	Frequency	Percent
Good	27	38.6%
Moderate	4	5.7%
Bad	39	55.7%
Total	70	100%

Table (15): Distribution of study group according to their knowledge about oxygen:

Knowledge about	Frequency	Percent
Good	29	41.4%
Moderate	35	50%
Bad	6	8.6%
Total	70	100%

Most nurses (50%) have moderate knowledge about oxygen

Distribution of study group according to route of oxygen:

Route	Frequency	Percent
Good	18	25.7%
Moderate	40	57.1%
Bad	12	17.1%
Total	70	100%

Table (16): Distribution of study group according to their knowledge about hydrocortisone:

Knowledge about	Frequency	Percent
Good	20	28.6%
Moderate	35	50%
Bad	15	21.4%
Total	70	100%

Most nurses (50%) have moderate knowledge about hydrocortisone.

Distribution of study group according to route of hydrocortisone:

Route	Frequency	Percent
Good	1	1.4%
Moderate	56	80%
Bad	13	18.6%
Total	70	100%

Table (17): Distribution of study group according to their total knowledge about emergency drugs:

Knowledge about	Frequency	Percent
Good	20	28.6%
Moderate	37	52.9%
Bad	13	18.6%
Total	70	100%

Most nurses (52.9%) have moderate knowledge about emergency drugs.

Table (18): Association between total knowledge about emergency drugs & age group:

Age group		Total Knowledge			Total
		Good	Moderate	Bad	
20 - 30 years	Count	13	29	12	54
	%	24.1%	53.7%	22.2%	100.0%
31 - 40 years	Count	2	6	1	9
	%	22.2%	66.7%	11.1%	100.0%
Above 40 years	Count	5	2	0	7
	%	71.4%	28.6%	0.0%	100.0%
Total	Count	20	37	13	70
	%	28.6%	52.9%	18.6%	100.0%

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.080 ^a	4	.089
Likelihood Ratio	8.231	4	.083
Linear-by-Linear Association	5.492	1	.019
N of Valid Cases	70		

a. 6 cells (66.7%) have expected count less than 5. The minimum expected count is 1.30.

Symmetric Measures

	Value	Asymp. Std. Error ^a	Approx. T ^b	Approx. Sig.
Interval by Interval Pearson's R	-.282-	.101	-2.425-	.018 ^c
Ordinal by Ordinal Spearman Correlation	-.246-	.110	-2.093-	.040 ^c
N of Valid Cases	70			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.

P. value significant if ≤ 0.05

P. value =0.018

Table (19): Association between total knowledge about emergency drugs&gender:

Gender		Total Knowledge			Total
		Good	Moderate	Bad	
Male	Count	3	4	1	8
	%	37.5%	50.0%	12.5%	100.0%
Female	Count	17	33	12	62
	%	27.4%	53.2%	19.4%	100.0%
Total	Count	20	37	13	70
	%	28.6%	52.9%	18.6%	100.0%

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.445 ^a	2	.800
Likelihood Ratio	.446	2	.800
Linear-by-Linear Association	.434	1	.510
N of Valid Cases	70		

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is 1.49.

Symmetric Measures

		Value	Asymp. Std. Error ^a	Approx. T ^b	Approx. Sig.
Interval by Interval	Pearson's R	.079	.117	.656	.514 ^c
Ordinal by Ordinal	Spearman Correlation	.080	.118	.659	.512 ^c
N of Valid Cases		70			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.

P. value significant if ≤ 0.05

P. value =0.514

Table (20): Association between total knowledge about emergency drugs & level of education:

Level off education		Total Knowledge			Total
		Good	Moderate	Bad	
Diploma	Count	6	9	3	18
	%	33.3%	50.0%	16.7%	100.0%
Bachelor	Count	13	27	10	50
	%	26.0%	54.0%	20.0%	100.0%
Master	Count	1	1	0	2
	%	50.0%	50.0%	0.0%	100.0%
Total	Count	20	37	13	70
	%	28.6%	52.9%	18.6%	100.0%

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.085 ^a	4	.05
Likelihood Ratio	1.394	4	.05
Linear-by-Linear Association	.021	1	.05
N of Valid Cases	70		

a. 4 cells (44.4%) have expected count less than 5. The minimum expected count is .37.

Symmetric Measures

	Value	Asymp. Std. Error ^a	Approx. T ^b	Approx. Sig.
Interval by Interval Pearson's R	.017	.120	.144	.05 ^c
Ordinal by Ordinal Spearman Correlation	.028	.121	.228	.052 ^c
N of Valid Cases	70			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.

P. value significant if ≤ 0.05

P. value =0.05

Table (21): Association between total knowledge about emergency drugs & years of experience:

Experience		Total Knowledge			Total
		Good	Moderate	Bad	
< 1 year	Count	4	2	0	6
	%	66.7%	33.3%	0.0%	100.0%
1 - 5 years	Count	9	25	12	46
	%	19.6%	54.3%	26.1%	100.0%
6 - 10 years	Count	3	7	0	10
	%	30.0%	70.0%	0.0%	100.0%
11 - 15 years	Count	0	1	1	2
	%	0.0%	50.0%	50.0%	100.0%
> 15 years	Count	4	2	0	6
	%	66.7%	33.3%	0.0%	100.0%
Total	Count	20	37	13	70
	%	28.6%	52.9%	18.6%	100.0%

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.972 ^a	8	.043
Likelihood Ratio	18.694	8	.017
Linear-by-Linear Association	1.280	1	.058
N of Valid Cases	70		

a. 11 cells (73.3%) have expected count less than 5. The minimum expected count is .37.

Symmetric Measures

	Value	Asymp. Std. Error ^a	Approx. T ^b	Approx. Sig.
Interval by Interval Pearson's R	-.136-	.119	-1.134-	.0261 ^c
Ordinal by Ordinal Spearman Correlation	-.066-	.129	-.545-	.588 ^c
N of Valid Cases	70			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.

P. value significant if ≤ 0.05

P. value =0.026

Table (22): Association between total knowledge about emergency drugs & attended course of emergency drugs:

Emergency drugs		Total Knowledge			Total
		Good	Moderate	Bad	
Attend	Count	10	13	6	29
	%	34.5%	44.8%	20.7%	100.0%
Not attend	Count	10	24	7	41
	%	24.4%	58.5%	17.1%	100.0%
Total	Count	20	37	13	70
	%	28.6%	52.9%	18.6%	100.0%

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.329 ^a	2	.515
Likelihood Ratio	1.330	2	.514
Linear-by-Linear Association	.152	1	.000
N of Valid Cases	70		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.39.

Symmetric Measures

	Value	Asymp. Std. Error ^a	Approx. T ^b	Approx. Sig.
Interval by Interval Pearson's R	.047	.122	.388	.000 ^c
Ordinal by Ordinal Spearman Correlation	.053	.123	.438	.000 ^c
N of Valid Cases	70			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.

P. value significant if ≤ 0.05

P. value =0.000

Table (23): Association between total knowledge about emergency drugs & attended course of advance life support:

Advance life support		Total Knowledge			Total
		Good	Moderate	Bad	
Attend	Count	11	12	5	28
	%	39.3%	42.9%	17.9%	100.0%
Not attend	Count	9	25	8	42
	%	21.4%	59.5%	19.0%	100.0%
Total	Count	20	37	13	70
	%	28.6%	52.9%	18.6%	100.0%

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.771 ^a	2	.250
Likelihood Ratio	2.746	2	.253
Linear-by-Linear Association	1.302	1	.254
N of Valid Cases	70		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.20.

Symmetric Measures

	Value	Asymp. Std. Error ^a	Approx. T ^b	Approx. Sig.
Interval by Interval Pearson's R	.137	.121	1.144	.255 ^c
Ordinal by Ordinal Spearman Correlation	.144	.122	1.200	.234 ^c
N of Valid Cases	70			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.

P. value significant if ≤ 0.05

P. value =0.025

5.1 Discussion:

This study is cross sectional study in Atbara teaching hospital included (70 nurse).most of nurse are female (88.6%), the common age of them between (20-30) years (77.1%) , the two-third of them were bachelor degree (71.4 %),their experience years between (1-5) years which act (65.7%).less than half of participant were attended to training course of emergency drugs administration and advance life support (41.4 %).

(28.6%) of the participant have good knowledge about emergency drugs the result of study show this knowledge is essential to reduce medication error this result similar to result of study of medication error in the emergency department ;knowledge attitude behavior and training need of nurses which 88.6% consider knowledge on drugs essential in order to reduce medication error (20).

it is also similar to result of study of determine nurses knowledge of initial treatment during an emergency management of patient with acute myocardial infarction ,which show poor level of knowledge among nurse related to initial management drugs.(25)

24 from total participants who are good in the emergency drugs administration which act one third of total nurse, there are high significant association between good administration and knowledge that lead to reduce medication errors during administration phase. The statistical show that common causes that contribute in good administration are level of education, years of experience, course training and advance life support, it is similar with previous study conducted by Giannetta N, et al, in May 2020.(10)

This finding support that good knowledge of nurse staff leads to high quality of drug administration, we recommended nurse to improve their level of knowledge to avoid mortality cases which related to medication error.

5.2 Conclusion:

The study conclude the most of nurses participant lack knowledge and administration about emergency drugs .The common association factors of good knowledge and administration are level of education ,years of experience and training courses .

5.3 We recommended that:

- The nurses to attend training course of emergency drugs and make course of advance life support.
- Targeted educational programs are needed to improve the expertise of nurses to reduce medication error during drug administration phases.
- It is essential to invest in training programs for nurses and promote an adequate knowledge and awareness.
- The health system to do manual courses or training about emergency drugs every six months.

Reference

1. Mohamed EM, Habbani KS, Awad M. Life-Saving Drugs in Sudan: A Matter of Definitions and concepts, January 2021.
2. BT, Basavanthappa, MN, PHD. Medical Surgical Nursing, 2015.
3. Dumo AM. Factors affecting medication errors among staff nurses: basis in the formulation of medication information guide. IAMURE Int J Health Educ. 2012;1(1):88-149.
4. Izadpanah F, Nikfar S, Imcheh FB, Amini M, Zargaran M. Assessment of frequency and causes of medication errors in pediatrics and emergency wards of teaching hospitals affiliated to Tehran University of Medical Sciences (24 Hospitals). Journal of Medicine and Life . 2018 Oct;11(4):299 .
5. CABELLO, juane B., et al. Oxygen therapy for acute myocardial infraction Cochrane database of Systematic reviews ,2016,12
6. KRAMP, P.; RAFAELSEN, O. J. Delirium tremens: a double-blind comparison of diazepam and barbitol treatment. Acta Psychiatrica Scandinavica, 1978, 58.2: 174-190.
7. RAU, Ramesh. Clinical Cardiology Made Easy. JP Medical Ltd, 2015
8. SOOD, Jai-deep, et al. Too much of a good thing, is it bad? Adrenaline on trial. The New Zealand Medical Journal (Online), 2007, 120.1252.
9. STANDARD, Omega. Pr FUROSEMIDE INJECTION (Furosemide). 2013.
10. KIM, Ivone. Acting Team Leader: Eileen Wu, PharmD. 2019.
11. STUART, Mark C.; KOUIMTZI, Maria; HILL, Suzanne R. (ed.). WHO model formulary 2008. World Health Organization, 2009.

12. DEWAN, A.; HE, Fengsheng. Monograph on Atropine.
13. ARGOFF, Charles E. Opioid Therapy for Chronic Pain. *benefits*, 2001, 13: 36-38.
14. TABLCTS, Enteric-coated. *ta ren*® diclofenac sodium.
15. HANKINS, Judy. **PHYSIOLOGY RELATED TO DELIVERY OF PARENTERAL SOLUTIONS**. *Infusion Nursing-E-Book: An Evidence-Based Approach*, 2011, 229.
16. Malakeh Malak, RN, MSN, Ahmed AL Maharmeh, RN, MSN. *Fundamental of Nursing*, 2008.
17. Ehsani SR, Cheraghi MA, Nejati A, Salari A, Esmailboor AH, Nejad EM. Medication errors of nurses in the emergency department. *Journal of medical ethics and history of medicine*.2013;6.
18. **CRITICAL CARE NURSING GUIDELINES, STANDARDS AND COMPETENCIES** ,Drafted as of JULY 1,2014.
19. Barker KN, Flynn EA, Bepper GA, Bates DW, MikeAL RL, Medication errors observed in 36 health care facilities. *Archives of Internal medicine*. 2002 Sep 9;162(16):1897-903.
20. Giannetta N, Dionisi S, Cassar M, Trapani J, Renzi E, Di Simon E, Di muzio M. Measuring knowledge, attitudes and behavior of nurses In medication management: cross-cultural comparisons in Italy and Malta. *Eur rev med pharmacol sci*.2020 May 1;24(9):5167-75.
21. Jyothi NV, Bharathi DR, Prakruthi GM. Evaluation of drug-drug interaction in patients of general medicine, ICU And emergency department at a tertiary care hospital. *Int J Curr Pharm Res* . 2018;10(3):68-71.
22. Di Muzio M, Tartaglino D, Marzuillo C, La Torre G, De Vito C. Knowledge, attitudes, behaviour and training needs of ICU nurses on medication errors in the use of IV drugs: a pilot study. *Signa vitae: journal for intensive care and emergency medicine*. 2016 May 1 ;11(1.):182-206.

23. Alanazi MQ, Al-Jeraisy MI, Salam, M. Prevalence and predictors of Antibiotic prescription errors in an emergency department, Central Saudi Arabia. *Drug, Health care and patient safety*. 2015;7:103.
24. Negash D, Kebede Y, Hawaze S. Medication errors in the adult emergency unit of tertiary care teaching hospital in Addis Ababa. *Archives of pharmacy practice*. 2013 Oct 1;(4).
25. Mustafa HE, Elfaki BA. Determination nurses knowledge about initial Drugs used during emergency management of acute myocardial Infarction. *Journal of nursing education and practice*. 2017;7(5).

Appendix