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Original Research Article

Nurses Knowledge and Practices Regarding Crash Cart in a Government Hospital Lahore

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Abstract

This study was conducted to assess the nurses' knowledge & practices regarding crash cart. "Emergency nurses require a strong knowledge base in every area of nursing during their practices, from pathophysiology to psychology, pharmacology, policies and procedures, and everything in between" [1]. Drug administration is a fundamental part of every day in nursing profession. No medication is completely safe and protected in this manner. Therefore, nurses need to have an intensive and broad knowledge of the medications and its method of organization in the compelling treatment of patients whose life lies in her grasp [2]. A quantitative descriptive cross-sectional study design was performed to assess the nurses' knowledge and practices regarding crash cart. Data was collected through simple random sampling technique. I select public health tertiary hospital to collect relevant information and data of my study from nurses working in it. There are 265 nurses in hospital I selected 160 of them by using sampling technique with 5% estimation error. The data was analyzed through SPSS 16 version. The results were shown in tables and graphs. The main results found are,(n= 94) 58.8% participant are respondent medication checked periodically and exchanged based date on expiry, and (n=66) 41.3% participant are respondent medication not checked periodically and exchanged based date expiry. In conclusion, I would say the areas of improvement entitle to the nursing staff with increased knowledge, practice and responsibility, accountability for improving management for crash cart within the public health tertiary hospital Lahore.

Keywords: Emergency, Practices, nursing, SPSS, nurse.

INTRODUCTION

"Emergency nurses require a strong knowledge base in every area of nursing during their practices, from pathophysiology to psychology, pharmacology, policies and procedures, and everything in between" [1].

Drug administration is a fundamental part of every day in nursing profession. No medication is completely safe and protected in this manner. Therefore, nurses need to have an intensive and broad knowledge of the medications and its method of organization in the compelling treatment of patients whose life lies in her grasp [2].

Human life is very valuable. When any person is admitted to critical care unit, life is critical or dangerous situations. The nurses who face such complex should have expert skills, knowledge and judgment to manage such critical incidents. They need to be updated their knowledge according to modern nursing research and practices. They must be able to apply their knowledge in practice successfully. The nurse who monitor patient continuously in the critical care units acts as drugs administrator and is the co-coordinator and collaborator of services as well. But the prominent role in emergency situations is a drug administrator's role [3].

Emergency Nursing is a special type of nursing in which nursing staff look after patients in the crisis or basic period of their disease. In ordinary routine of nursing, a patient first analyzed by a doctor and the staff nurse, must manage the patient according to the findings and recommendations of doctors, where as in emergency nursing, obligations of a nurse as a medical caretaker are different because diagnosis has not yet been made and the reason for the issue is unknown. In this circumstance, the nurse must be skilled, will be able to take physical examination, has ability to recognize life threatening disease very quickly, will have a capacity of utilization of medical equipment properly, and in some cases, the requesting of testing and medications as per "development treatment rules" or "standing requests" set out by the doctors. Emergency nurses are employed in emergency departments of

hospitals, though they may also work in freestanding urgent care [4].

Nurses and doctors are the first in line that provide life support to the patients and help bringing their lives in normal. They should always be aware of the location and placement of the emergency cart, their contents and their uses properly. Staff must be familiar with all of life saving equipment within their working area [5].

Emergency trolley readily accessible to health care staff and strategically placed in sites in a hospital where patients commonly 'emergency, i.e.; undergo acute cardiovascular decomposition ER, ICU. It is a collection of emergency drugs and equipments that can be moved from one place to another and have readily available for resuscitation effort [6].

Emergency cart is a trolley specially designed to deal with emergency situations, used for transporting medicines and equipments at the emergency site in life saving measures. Physicians, nurses, pharmacists, and other paramedical staff must become familiar with the contents of this cart. It contains necessary equipments to handle an emergency. Emergency cart is enabling healthcare providers to manage medical emergencies easily and confidently [7].

The cart is easily movable and readily accessible to all areas in the department and it is easy to take equipments and drugs during crisis. Health care environment in which a patient may suffer a medical emergency needs to have the equipment to deal with that emergency efficiently.

A crash cart is the special trolley that contains different types of equipments and drugs that are used to save lives in different departments of hospital like in emergency room, intensive care unit and other critical areas. It is moveable and readily accessible within hospital. Equipments and drugs within it can be changed very quickly from situation to situations [8].

Emergency nurses should design crash cart according to the patient population and procedures perform and modify crash cart inventory regularly according to by medical staff instructions. They should prepare a document for the list inventory of crash cart used on average and recommend a purchase requisition for any shortage of drugs [9].

It is a routine work of a nurse to check the resuscitation trolley and cardiopulmonary equipment. As skilled nurses, they are required to check and refill the crash cart after every shift, verify the expiry date of every item in the crash cart. Here the investigator felt the need to assess the practice of crash cart among staff nurses and develop a protocol to help them in practicing the organized crash cart system [10].

Purpose of the Study

The main purpose of this study is to assess the nurses' knowledge and practices regarding emergency trolley in government hospital Lahore.

Significance and Rational of the Study

The study finding it helps the organization to formulate the slandered criteria of emergency cart and enhance the standard of patient care and safe procedures. Check up the trolley at the beginning of each shift the in charge nurse should check the equipment and medication if they are prepared for use in critical situation and ensure that drug is in good statues (check the expiry date) as this paper &the quantity of each medication.

Research Question

This study revolves around the following question:

- Does the Nurses knowledge regarding emergency trolley?
- Does the nurses practices regarding emergency trolley?

The main objectives of my study were

- To assess the Knowledge of staff nurses regarding emergency trolley.
- To assess the Practice of staff nurses regarding emergency trolley.

Definition of Key Terms

Assess

It is the organized, systematic and continuous process of collecting data and the statistical measurement of knowledge regarding emergency trolley by adopted questionnaire.

Conceptual

An emergency trolley contains the equipment and medications that were require treating a patient in the first thirty minutes in emergency.

Operational

The worst thing ever is to reach for a piece of emergency equipment or an emergency medication and find it expired. It is important that the emergency cart check regularly and maintain

Knowledge

In this study, it refers to the understanding regarding emergency trolley among staff nurses by adopted questionnaire.

Practice of emergency trolley

A study was to assess the checking emergency resuscitation trolley. The finding discovered that basic trolley checking procedure was not followed, leaving the trolley unchecked and not prepared in an appropriate manner. Study recommended that hospital

should regularly review compliance with policies and procedures for the checking of resuscitation trolley.

Variable

Dependent Variable

The Dependent variable for the study is nurses' *practice regarding emergency trolley*

Independent variable

The independent variable of this study is nurse's *knowledge regarding emergency trolley*

LITERATURE REVIEW

A study was carried out to assess the required knowledge, skills and competencies to deal medical emergency incidents successfully. Study finding showed that there is superficial knowledge on medical emergencies, drug and equipments among health professionals working emergency unit [11].

A study was conducted to assess the essential knowledge, skills and competencies regarding medical emergency event. Study finding revealed that there is a most valuable and advance knowledge on medical emergencies, medications and life saves equipments among health professionals working emergency unit. The results showed that there was lack of organizational support from top level management, lack of proper knowledge on equipments and basic essential skills that affect the performance of registered nurses in the provision of CPR [12].

The nurses' knowledge regarding medication safety was evaluated using an 18-item medication safety knowledge assessment tools. The result showed that a change in knowledge didn't necessarily produce a change in practice. Continue the follow-up and to encourage the nursing staff increases the likelihood of a practice change and is recommended [13].

As medical caretakers nurses play a major role in the provision of health care services and they must refill the crash cart after every shift. They are responsible to verify the presence and expiry date of every item in the crash cart. Nurses should maintain their consistency ménage of crash carts in a proper way. By doing so, two objectives are identified, assess the Knowledge of staff nurses for regarding ménage emergency trolley technique, and assess the Practice of staff nurses' emergency cart [14].

A study was directed to check and verify the approach for revival trolley on medical, surgical and pediatric wards. The finding showed that basic fundamental way of trolley checking was not followed, leaving the trolley unchecked and not properly equipped. Study recommended that hospital should take routinely audit consistently and use relevant techniques for the checking of revival trolley regularly [15].

A study was led to investigate the present status of cardiopulmonary revival in Malaysia and pointed out different factors that undermine the success. The study finding showed that resuscitation is first attempted by junior doctors or nurses. Unfortunately, they don't have sufficient knowledge, skills and experience and resuscitation trolley were poorly equipped [16].

As one of the primary purposes of the literature on crash carts is to find different articles on design, supply, restocking, hospital wide programs and exchange programs, and the list go on and on. One thing that can be conclude from the literature review is that there are the same number of various methods for drawing closer crash carts as there are organizations and offices that have them. The resuscitation trolley is mainly used for the purpose of CPR and management of other emergencies in any health care setting [17].

A standard checklist of compulsory equipment and drugs must be attached with the trolley to assist in systematic, visual and functional testing. Cardiopulmonary arrest requires a quick response successful outcome in the hospital. Most of the cardiac arrests are sudden and unexpected occurrences. That's why an immediate action is required to handle it. Successful CPR depends on proper functioning of necessary resuscitation equipment and appropriate drugs available in a well-equipped resuscitation trolley and on the skills of staff [18].

According to their finding it was concluded that most of CPR attempts were delayed and not successful due to lake of drugs and proper functioning of equipment found in their surveys that there were serious shortages of emergency trolleys in many hospitals. Reported that most of the nurses and doctors are familiar with the drugs and equipment of emergency trolleys that make the actions unsuccessful [19].

METHODALOGY

A quantitative descriptive cross sectional study designs was used adopted questionnaire to assess the nurse's knowledge and practices concerning emergency trolley at a government hospital Lahore. The questionnaire recommended by the Emergency Crash Cart Checklist 2010 was adopted for the assessment of policies and procedures in practices to ménage emergencies cart in the hospital. Resuscitation equipment must be checked daily [10].

"Slovin's formula was applied to calculate the sample size." A large number of research studies used Slovin's (or sometimes Sloven's) formula for obtaining the sample size. Denoting by **n** the sample size, Slovin's formula is given by $n=N/1+ (N) (E)^2$

Formula is given by $n=N/1+ (N) (E)^2$

The Sample size will be calculated as

N = 265 N Mean total population
e = 0.05 Margin Error of confident interval of 95%

Solution:
n = 265/ (1+265(0.05) ^2)
n = 265/ (1+265(0.0025) Multiplying it with N
n = 265/ (1+1) Adding 1 and dividing N
n = 265/2
n = 160 Calculated sample size

A simple random sampling technique was used for the collection of data. I select a government hospital named Lahore General Hospital to collect relevant information and data of my study from nurses working in it. I obtained all relevant information regarding nurses from nurse's office. There are 265 nurses in the hospital and I selected 160 of them by using sampling technique with 5% estimation error. A pen and a paper were used as research tools to assess the nurse's knowledge and practices of high alert medications to analyze known medication errors for ménage emergency trolley. The data were analyzed by using the Statistical Package for Social Sciences (SPSS) (Version 21.0). Data was analyzed by using tables, graph and in percentages. Some nurses hesitated to provide insider secret information about wards. Those who are willingly participating in this study all registered nurses are meeting the inclusion criteria of the study and who are exclusive in this study willingly not participate.

Ethical Considerations

Yes. Ethical clearance was obtained from the ethical committee of the Lahore school of nursing. Administrative permission should be obtained from the concerned authorities to conduct the study from selected hospital. A written consent should be obtained from the samples and confidentiality will be assured, for assess the nurses' knowledge and practices regarding emergency trolley in selected. The Research and Ethics Committee of University of Lahore, the Department of Lahore School of Nursing, also granted approval that the study could be conducted. After receiving my approval letter, I got permission from the Medical Superintendent, Lahore General Hospital and started to conduct my research work.

Data Analysis

This chapter focuses on to data analysis. Main statistical procedures applied on data were discussed on chapter number 4 and in this chapter after application of statistical procedures results are also discussed.

Demographic Characteristics

Table-1 below summarizes the characteristics of respondents (n=160) on the base of their gender (Male, female), age (25 years, 26-35 years, 36-50 years), Years of education (registered nurse Diploma, specialized) and experience (1 year,1-5 year, 6-10 year, and above 10 year).

Table-1: Demographic Characteristic of Respondents

	N	%
	160	100
GENDER		
Male	Nil	Nil
Female	160	100
Educational Back ground		
Registered nurse	131	81.9
Specialized	29	18.9
Age Group		
18-25	23	14.4
26-35	83	51.9
36-50	54	33.8
Experience		
1year	19	11.9
1- 5years	95	59.4
6-10 years	40	25.0
Above 10 years	6	3.8

Table-2: Statistics

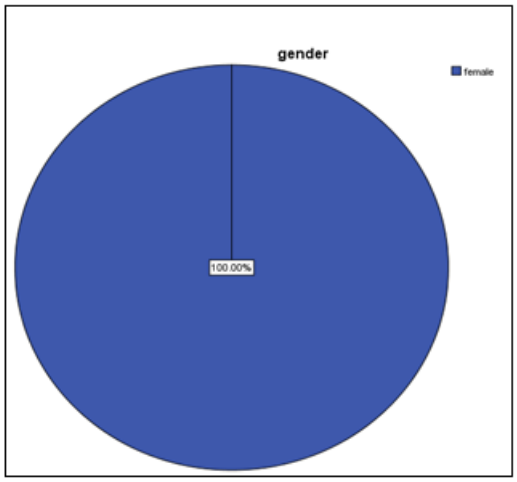
Statistics					
		gender	age	Qualification	experience
N	Valid	160	160	160	160
	Missing	0	0	0	0
Mean		2.00	2.19	1.18	2.21
Std. Error of Mean		.000	.053	.031	.055
Median		2.00	2.00	1.00	2.00
Std. Deviation		.000	.668	.386	.692
Std. Error of Skewness		.192	.192	.192	.192
Std. Error of Kurtosis		.381	.381	.381	.381
Skewness			-.244	1.671	.393
Kurtosis			-.776	.801	.310

DEMOGRAPHIC ANALYSIS

Data was collected from female genders. Statistics shows that 100% responses were taken from the female employees. Distribution can be seen in given table and graph.

Table-3: Gender

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	female	160	100.0	100.0	100.0

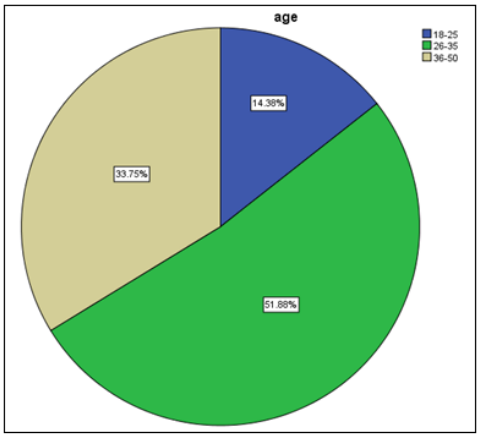


AGE

The whole proportion of sample size comprised on female nursing staff working in public hospitals employees (n=160,100%). The respondents were 25 years old (n= 23)14.4% and 26 to 35 years (n=83) 51.9% and (n=54)36 to 50 years 33.8%.

Table-4: Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-25	23	14.4	14.4	14.4
	26-35	83	51.9	51.9	66.3
	36-50	54	33.8	33.8	100.0
	Total	160	100.0	100.0	

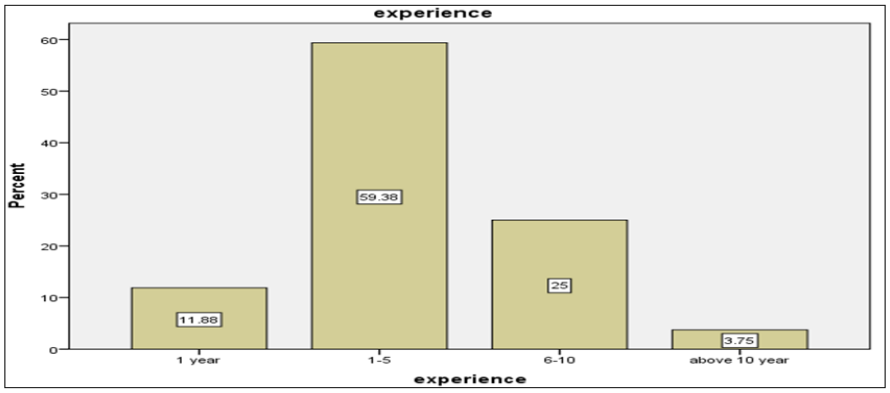


EXPERIENCES

Years of education (registered nurse Diploma, specialized) and experience (1 year,1-5 year, 6-10 year, and above 10 year). 1 year (n= 19) participant 11.9% were respondent and 1-5 year participant (n= 95) 59.4%, 6-10 year (n= 40) 25.0%, above 10year (n=6) 3.8% respondent.

Table-5: Experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 year	19	11.9	11.9	11.9
	1-5	95	59.4	59.4	71.3
	6-10	40	25.0	25.0	96.3
	above 10 year	6	3.8	3.8	100.0
	Total	160	100.0	100.0	



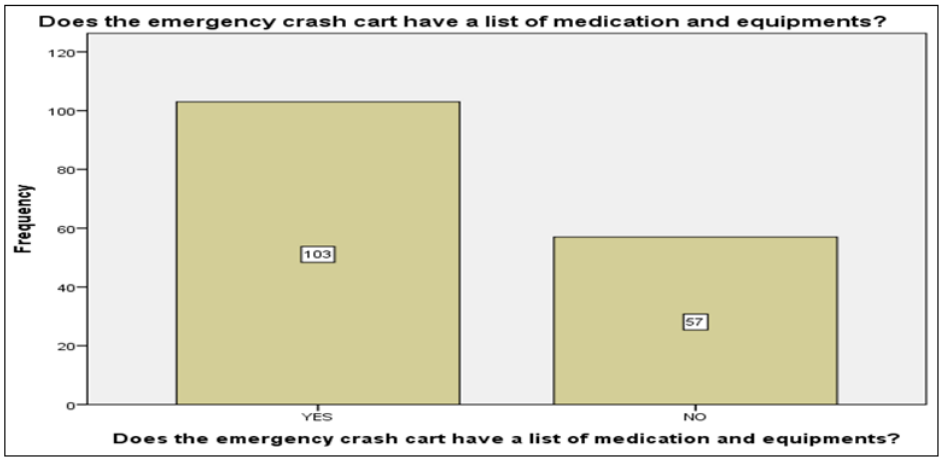
DESCRIPTIVE ANALYSIS

Nurses' knowledge and practices regarding ménage emergency trolley, medications and fluids are label, check expiry and arrange according to their action is an important part of the emergency cart**.** Adopted questionnaire were used recommended by the Emergency Crash Cart Checklist 2010.

list of emergency cart medication and equipments

Does the emergency crash cart have a list of medication and equipments? Table 1.4 shows that (n=103)64.4% are have the emergency cart list of medication and equipments (n=57) 35.6% participants is not having it.

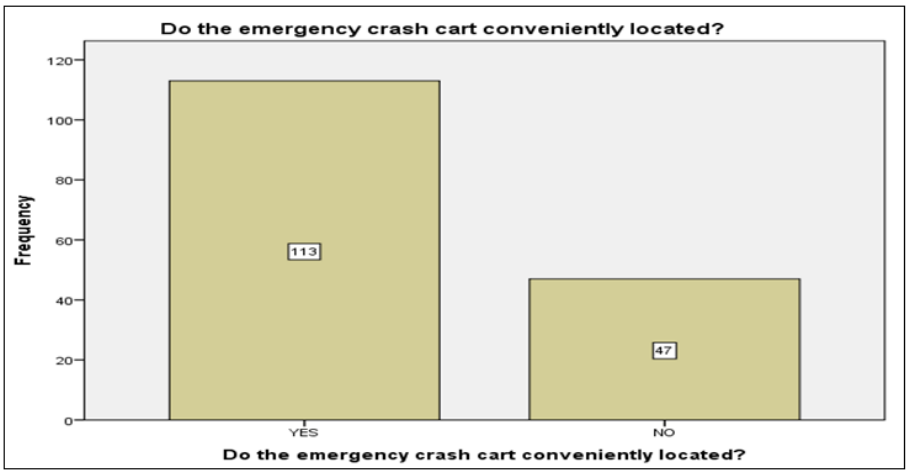
Does the emergency crash cart have a list of medication and equipments?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	103	64.4	64.4	64.4
	NO	57	35.6	35.6	100.0
	Total	160	100.0	100.0	



Do the emergency crash cart conveniently located?

This table shows (n=113)70% participant respondent emergency crash cart is conveniently located and (n=47) 29.4% it is not conveniently located.

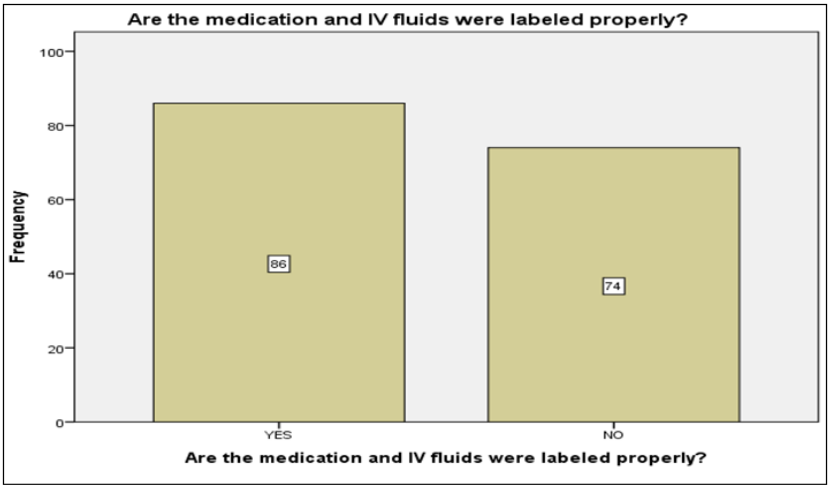
Do the emergency crash cart conveniently located?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	113	70.6	70.6	70.6
	NO	47	29.4	29.4	100.0
	Total	160	100.0	100.0	



Are the medication and IV fluid were labeled properly?

This table shows (n= 86) 53.8% participant are respondent medications and IV fluids were labeled properly and (n=74) 46.3% it is not maintained.

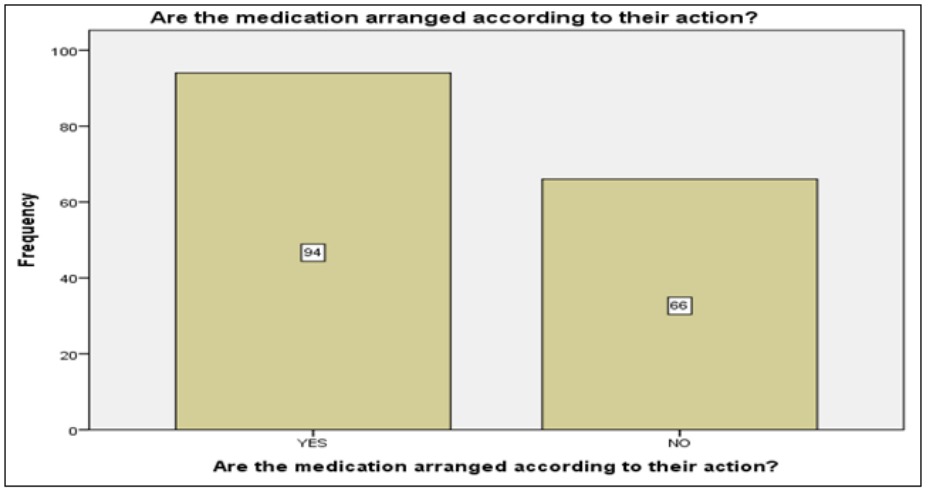
Are the medication and IV fluids were labeled properly?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	86	53.8	53.8	53.8
	NO	74	46.3	46.3	100.0
	Total	160	100.0	100.0	



Are the medication arranged according to their action?

This table shows (n= 94) 58.8% participant are respondent Medications are arranged according to their action and (n= 66) 41.3% participant are respondent medicines were not arranged according to their action.

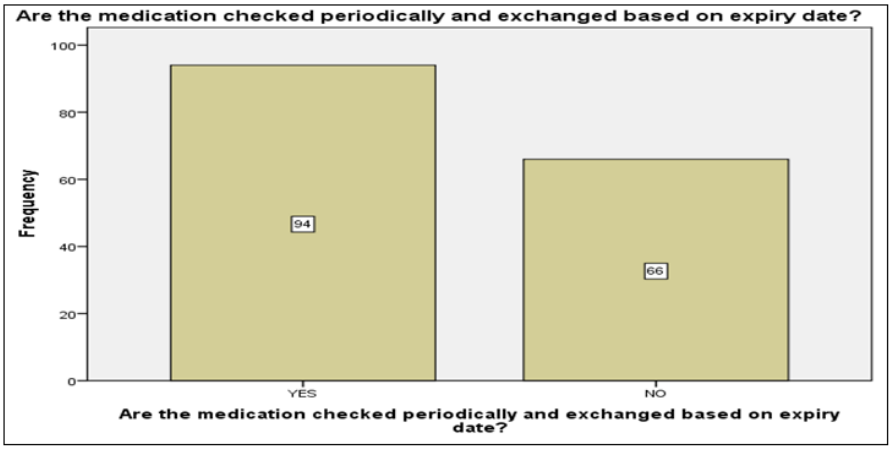
Are the medication arranged according to their action?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	94	58.8	58.8	58.8
	NO	66	41.3	41.3	100.0
	Total	160	100.0	100.0	



Are the medication checked periodically and exchanged based on expiry date?

This table shows (n= 94) 58.8% participant are respondent Medication checked periodically and exchanged based date on expiry, and (n=66) 41.3% participant are respondent medication not checked periodically and exchanged based date expiry.

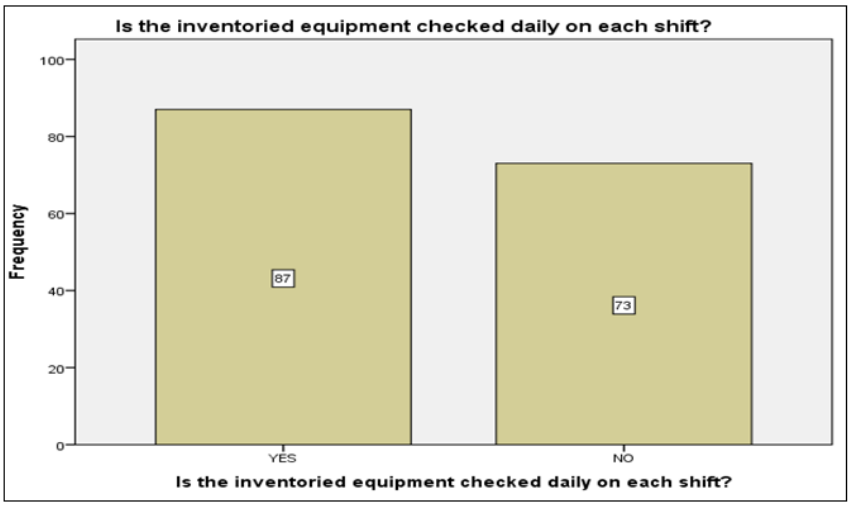
Are the medication checked periodically and exchanged based on expiry date?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	94	58.8	58.8	58.8
	NO	66	41.3	41.3	100.0
	Total	160	100.0	100.0	



Is the inventoried equipment checked daily on each shift?

This table shows (n=87) 54.4% participant are respondent have Inventoried equipment checked daily on each shift and (n=73)45.6% are not checked daily on each shift.

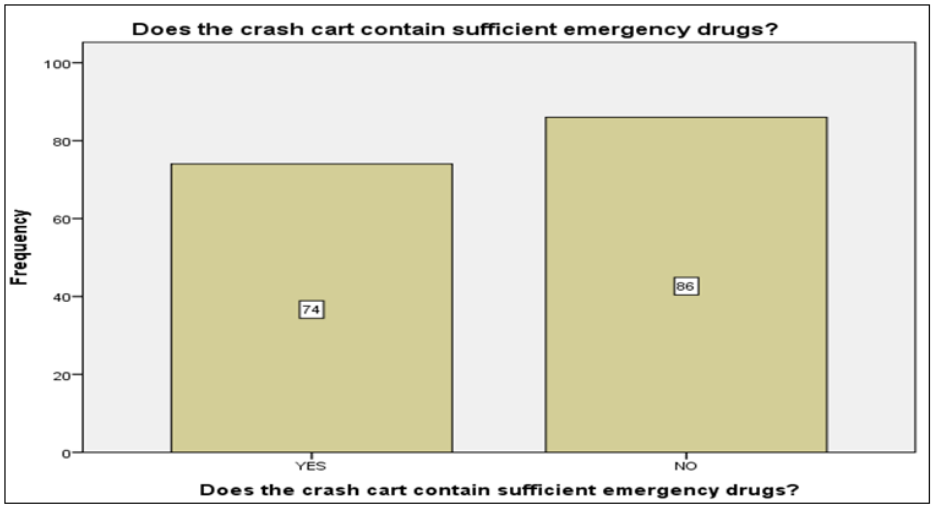
Is the inventoried equipment checked daily on each shift?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	87	54.4	54.4	54.4
	NO	73	45.6	45.6	100.0
	Total	160	100.0	100.0	



Does the crash cart contain sufficient emergency drugs?

This table shows (n=74)46.3% participant are respondent crash cart have sufficient emergency drugs and (n=86) 53.8% participant are respondent not sufficient emergency drugs.

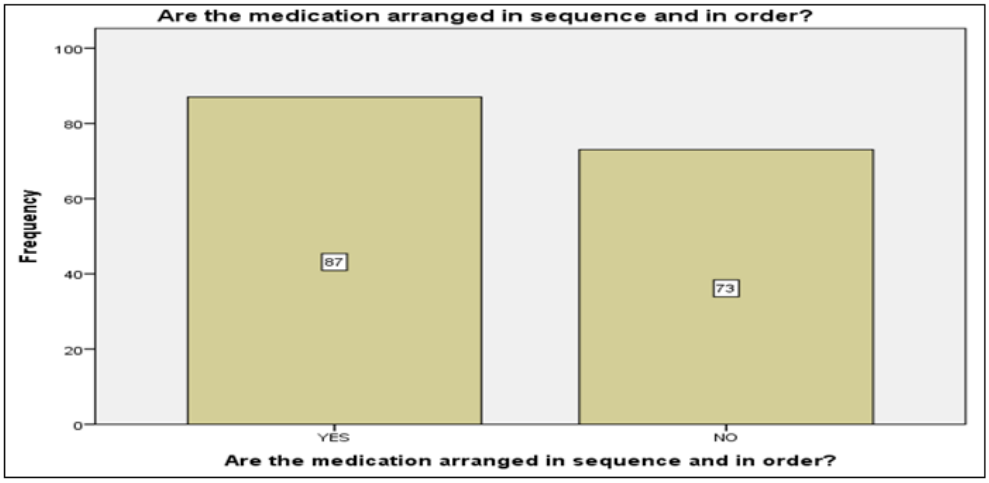
Does the crash cart contain sufficient emergency drugs?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	74	46.3	46.3	46.3
	NO	86	53.8	53.8	100.0
	Total	160	100.0	100.0	



Are the medication arranged in sequence and in order?

This table shows (n=87) 54.4% participant are respondent have medication arranged in sequence and in order, (n=73) 45.6% are respondent not medication arranged in sequence.

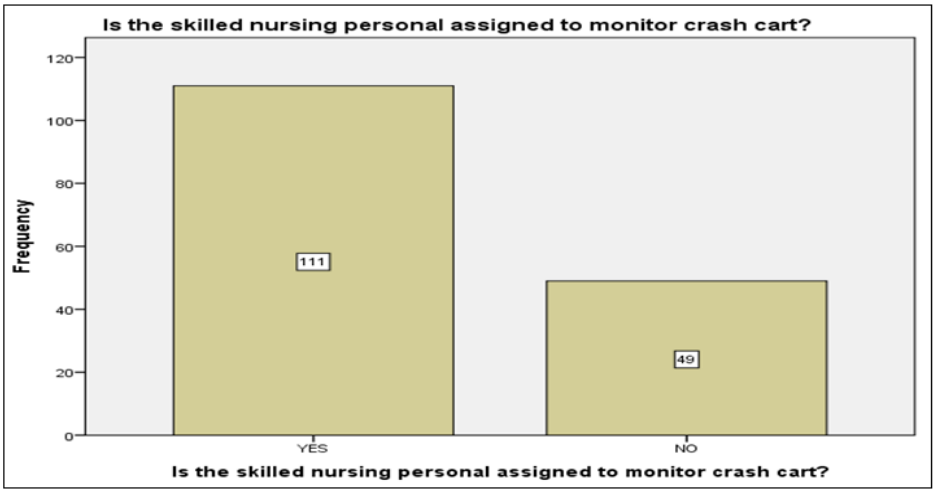
Are the medication arranged in sequence and in order?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	87	54.4	54.4	54.4
	NO	73	45.6	45.6	100.0
	Total	160	100.0	100.0	



Is the skilled nursing personal assigned to monitor crash cart?

This table shows (n=111) 69.4% participant are respondent have skilled nursing personal assigned to monitor crash cart and (n=49) 30.6% respondent not skilled to monitor emergency cart system.

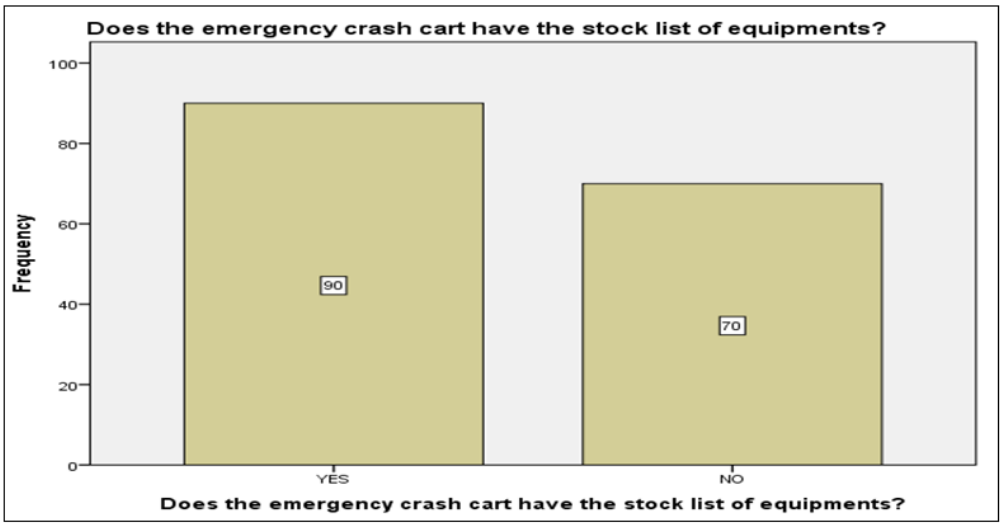
Is the skilled nursing personal assigned to monitor crash cart?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	111	69.4	69.4	69.4
	NO	49	30.6	30.6	100.0
	Total	160	100.0	100.0	



Does the emergency crash cart have the stock list of equipments?

This table shows (n=90) 56.3% participant are respondent emergency crash cart have the stock list of equipments and (n=70) 43.8% have not emergency crash cart equipments list.

Does the emergency crash cart have the stock list of equipments?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	90	56.3	56.3	56.3
	NO	70	43.8	43.8	100.0
	Total	160	100.0	100.0	



DISCUSSION

The improvement in these results could be attributed to the conduct of educational sessions on the emergency equipment that equipped the nurses with appropriate knowledge and skills in using the emergency equipment. The study conducted in the public health tertiary hospital Lahore nurses knowledge and practices regarding emergency cart system, with valuable insight to enhance the standard of patient care and safe procedure to maintain of the crash carts and the level of standardization.

The present study showed that sufficient drugs were available, but the quantity of each was not arranged. Are the medication arranged according to their action? This table shows (n= 94) 58.8% participant are respondent Medications are arranged according to their action and (n= 66) 41.3% participant are respondent medicines were not arranged according to their action.

My study 'Is the inventoried equipment checked daily on each shift?' This table shows (n=87) 54.4% participant are respondent have Inventoried equipment checked daily on each shift and (n=73) 45.6% are not checked daily on each shift. Thus, there are chances of stock out situations. Stock control and management levels were not at standardized level. Due to this, there are high chances of inter-mixing of stock of various sizes which can create confusions, gross medical errors in the already stressful situation of conducting a CPR [20].

Successful advanced life support (ALS) relies on the availability of a resuscitation trolley that provides the required equipment and recommended drugs. Missing or faulty equipment can significantly compromise ALS [10].

Local policy enhances periodic checking regularly and maintains stock at required level in resuscitation trolleys, and checklists are provided for this purpose. Lack of training among nurses about crash carts make it less effective. Nurses were provided with educational sessions in emergency resuscitation to increase their knowledge in use of the emergency equipment [10].

As per the Nursing practice educator, the quantity should depend upon the anticipated work load in terms of nature of work and throughput of patients. Availability of equipment from nearby departments where certain equipment may be shared between areas could include the location of auto -mated external defibrillators (AEDs). Also, the nursing staff should be aware of the location and contents of resuscitation trolley, as they will also be acting in the capacity of the First responder" during initial stages of the resuscitation [21].

The protocol for labeling of drawers, containers with the name of the item, expiry date is mandatory, as per the accreditation guidelines. This aids in the reduction of medication errors and timely return of the drugs reaching near expiry. As recommended by signage's defining the signs showing the direction and location of the carts, defibrillators, oxygen cylinders would help create awareness for the users [22].

The resuscitation equipment must be checked on a daily basis. Also, intubation and IV equipment packs contain disposable (single use) items, except for the laryngoscope handle is being practiced in the department. As recommended by the Standards for Resuscitation, New Zealand resuscitation council, single use equipment, and infection control issues should be considered [23]. Therefore, it is recommended that institutions should adopt common cardiac arrest equipment based on standards and should ensure that regular equipment checks are performed [24].

Although the rational use of drugs and defibrillation in resuscitation has been standardized

according to national and international guidelines, there had been no such standardization of resuscitation equipment, until recommendations were given by the Resuscitation Council in 2001 which is considered as the Gold Standard benchmark to describe in detail the availability of relevant resuscitation equipment in cardiac arrest trolleys [25].

CONCLUSION

It also showed that achieving change in clinical practice was challenging, in the management of emergency equipment so that regarding the checking and maintenance of emergency equipment could be adopted. In the study undertaken, the availability of the drugs was adequate; however, stock out situations can arise for which the basic stock needs to be defined and implemented. The equipment checking procedures were not followed properly and the role of the nursing. But the nursing staff should be well aware of the functionality of the equipment.

Finally, analyzing after a real emergency can ensure that all staff nurses provide inputs regarding target areas for improvement. This descriptive study has highlighted that the procedures being followed or recommended should be standardized in all the clinical areas of the hospital except the quantity of items which should be defined according to the workload and past utilization.

The areas of improvement entitle to the nursing staff with increased responsibility and accountability for improving management within the departments. It has to be accepted that with continuous sensitization and administrative support, can be achieved even with the current workload. Nurses a well-equipped, adequately stocked, properly managed crash cart is of vital importance.

RECOMMENDATIONS

Developing the Standard Operating Procedures in-service education could improve the system of checking, replacing and repairing the equipment of the emergency trolleys. This would help to increase accountability. Stand by manual equipment like portable oxygen, ambu bags should be available in case of electricity failures. Regular audits should be done by nurse administrators of specific emergency trolleys and the outcomes of these audits should be recorded for future comparative purposes.

Departmental managers and senior nursing officials should be held accountable for the maintenance, checking upkeep and recording of all items that should be a part of the emergency trolleys. The equipment that is used for CPR (including defibrillators) and the layout of the equipment and the drugs on resuscitation trolleys should be standardized throughout the institution. The emergency trolley's location should be in identical locations.

So that remedial actions can be instituted. Minimizing the complexity of the emergency trolley, standardizing the equipment, standardizing the checklist, enhancing nurses 'knowledge levels, identifying deficits and immediate replacement of emergency equipment would reduce time delays and errors during CPR.

LIMITATIONS

The study duration was too much short, and other word this study was related to assess the nurses' knowledge and practices regarding emergency trolley selected one public health tertiary hospital too short study, which is not representative, for whole population.

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