Nurses Performance Regarding Safety Infusion of Look-Alike Sound-Alike Medication in intensive care units

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Abstract

Background: medication safety is a priority for health care organizations worldwide. Nurses need to identify the challenges they face when administering medications to their patients. **Aim:** To assess nurses' performance regarding safety infusion of look-alike sound-alike medication. **Subjects & sitting:** Convenient samples of all available nurses (40) were working in intensive care units at Ain Shams University Hospitals. **Design:** A descriptive research design **Tools:** 1. Medication Safety Assessment Questionnaire. 2. Intravenous infusion of look-alike sound-alike medications observational checklist. **Results**: By testing the relation between total knowledge regarding look-alike sound-alike medications and total practice, there was highly statistically significance difference between total knowledge and total practice **Conclusion**: The study subjects had performance deficit regarding safety infusion of look-alike sound-alike medications, which were affected by the following; the total nurses' knowledge regarding administration of look-alike sound-alike medications was unsatisfactory. This can be explained by the highly statistically significance relation between total practice and total knowledge. **Recommendations:** Continuous intravenous infusions of look-alike sound-alike medication educational programs until nurses reach the purpose of competency.

Keywords: Look-alike, Sound-alike, Medication Safety, Nurses performance

Introduction

Intravenous medications are the most common type of therapy in Intensive Care Units (ICUs) and are also connected with the most frequent type of ICUs adverse events. Critically ill patients are at high risk for adverse drug actions for many causes, including the struggle of their disease that creates challenges in drug dosing, their susceptibility to rapid changes in pharmacotherapy, the intensive care environment providing sufficient distractions and opportunity for error, the administration of complex drug regimens, the numerous look-alike sound-alike medications that they receive, and the mode of drug administration. The clinical outcomes of adverse drug events can result in end-organ damage and even death **(Mohanna, Kusljic & Jarden, 2021).**

Medication errors occur frequently and have major clinical and financial consequences, which might be avoidable. Unsafe medication administration practices and errors have been found to be amongst the leading cause of injury and avoidable harm worldwide. The World Health Organization (WHO) has suggested application of basic solutions to improve medication safety **(Márquez-Hernández, et al., 2019).**

The existence of confusing drug names is one among the foremost common causes of medication error and is of concern worldwide. With tens of thousands of drugs presently on the market, the possible for error due to confusing drug names is significant. This includes nonproprietary names and proprietary (brand or trademarked) names. Many drug names look or sound like additional drug names **(Lawal, Alhaji, Maiha & Mohammed, 2020).**

Along with Institute of Safe Medication Practice (ISMP), the institute of Healthcare

Improvement (IHI) and also the Joint Commission recognizing the life-threatening risks associated with LASA medications and high priority to safeguarding their use is given its hospital accreditation standards. The Joint Commission requires hospitals to "develop processes for managing LASA drugs." After first identifying medications that pose the greatest risk, a hospital should then develop safe processes for procuring, storing, ordering, transcribing, preparing, dispensing, administering, and monitoring them and multi professional patient care team to promote patient safety in the ICU **(Tanzi, 2020).**

In the clinical setting, nurses are responsible for setting up and administering most medicines directly to patients. Although providing medication is a multidisciplinary procedure, nurses take on almost all the accountability for administering and controlling the medication used. It is estimated that 78% of nurses have committed a medication error at some point. And it was recognized that 40% of their clinical time is dedicated to managing medication. This illuminates that approximately 16 hours of a nurse's working week being dedicated to handling medicines **(Márquez-Hernández, et al., 2019).**

The nurses' performance deficit and inadequate knowledge play a prominent role in drug errors. In ICUs, performance level failures accounted for 53% of the errors. Nurses' insufficient knowledge is taken into account to be one among the foremost significant factors contributing to medication administration errors. Nurses' self-reported administration errors showed that unfamiliarity with medications was the third most significant causal factor among eight categories. Nurses' calculation skills (e.g. decimal points, or unit and rate expressions) and nomenclature factors such as incorrect drug name, dosage form or abbreviation **(Woo, & Avery, 2021).**

Aim of the study

The current study aimed to assessed the nurses' performance regarding safety infusion of look-alike sound-alike medication in intensive care units through:

- Assessing of nurse's knowledge regarding safety infusion of look-alike sound-alike medication.

- Assessing of nurse's practices regarding safety infusion of look-alike sound-alike medication.

Research hypothesis

It was hypothesized that; the nurses' have a satisfactory level performance regarding safety infusion of look-alike sound-alike medication.

Operational Definition

In this study the nurses' performance means assessment of knowledge and nurses' practice. nurses'

Subjects & Method

Design: The present study, research design was descriptive.

Sitting: The current study was conducted in sell two intensive care units (Neurosurgery ICU and Emergency ICU) at El Demerdash Hospital, which affiliated to Ain Shams University Hospitals, Cairo, Egypt.

Subjects: The sample size included (40) who working in intensive care units (22 nurse at Neurosurgery ICU and 18 nurse at Emergency ICU).

Tools of data collection: pre /post intervention: The collection of data was achieved through: -

Medication Safety Assessment Questionnaire: This tool was adapted from NQF, from the Institute for Safe Medication Practices (ISMP, 2004; 2007; 2011). It was used to assess the nurses' knowledge regarding intravenous infusion of LASA. It included two parts:

Part 1: It had been concerned about personal data and characteristics of the nurses (age, qualification, job categories, nursing

experience in intensive care units (years), intensive care training courses and training courses for LASA medications

Part 2: It had been used to assess the nurse's knowledge regarding intravenous infusion of LASA, which deals with: Policies and procedures, storage, medications ordering and transcription, illegible handwriting, medication preparation, administration, monitoring, high-risk medications, reconciliation, role of the pharmacist and education

The scoring system:

The questionnaire divided into 11 items, a number of questions were assigned for each item assessment, and the total numbers of questions were 108 MCQ questions. According to the Likert scale; the questions were scored as the following:

▪ < 75% is considered unsatisfactory (< 243 grades).

▪ ≥ 75% is considered satisfactory (≥ 243 grades).

▪ Intravenous infusion of LASA medication observational checklist:

This tool was adapted from **(Hanarty, 2008).** It was used to assess the actual nurses' practices regarding safety infusion of LASA medication at intensive care units.

The scoring system:

The questionnaire consists of 10 major items questions discussing ten medication rights, and every main item has some observational steps (29 step) to achieve them.

The evaluation of the score of nurse's practice was calculated according to;

● < 80% is considered incompetent (< 24 grades).

● ≥ 80% is considered competent (≥ 24 grades).

Data collection procedure:

The actual field work was carried out over a period of 9 months from the beginning of January 2020 up to the beginning of October 2020. The purpose of the study and its expectations were explained by the researcher to the studied nurses before starting data gathering in their work units . The questionnaire was filled in by nurses through Google forms link https://docs.google.com/forms/d/1R0cRpqec9bg LKeHp_BgudpYXzZ3dedE5zYvg4byfAKE/edi t?usp=s haring as apart from infection control measures to prevent of Covid_19 spreading. The study tools were filled within average of 35 to 45 minutes. The observational checklist was filled by researcher within average of 10 to 15 minutes for every nursing personnel.

Statistical analysis: Data entry and analysis were organized, categorized, analyzed through a personal computer using the Statistical Package for Social Sciences (SPSS version 22). Data were presented using descriptive statistics in the form of frequencies and percentages, description of qualitative variables as mean, SD, and range were also used. The observed statistical significance was considered as the following: Not significant P > 0.05, Significant P < 0.05*, Highly significant P < 0.05**.

Quantitative data were presented as mean and standard deviation (SD) to present normally distributed continuous variables. A chi-square test x^2 was used to compare categorical data to determine the differences before and after implementation of lifestyle modification module. The significance of the observed difference was obtained at P value ≤ 0.05.

Results

1- Nurses' characteristics: table (1) The mean age was 26.37 ± 0.576. Female represented a higher percentage 62.5% of the studied subject. 35% of them were having Institute of nursing degree. Regarding positions 55% of them were charge nurses followed by 40% were practitioner nurse. Concerning the

years of experience 40% of the study subjects were between 3 to 5 years. In relation to intensive care units training courses 55% of the study subjects were having courses. While, 52.5% of the study subjects said that they didn't have any training courses for infusion of look-alike sound-alike medications.

2. Nurses' knowledge: table (2) revealed that, the highest satisfactory level of the studied subjects were about total knowledge of LASA medications policies and procedures, which was (60%).While, the lowest satisfactory level of the studied subjects were about total knowledge about LASA education, Which was 22.5%. **As noticed in figure (1),** the study subjects' satisfactory level was 27.5%.

3. **Nurses level of practices:** table (3) shows that, the highest percentage (68%) of satisfactory level were demonstration of total right patients' name, followed by (62.5%) for total right rout and documentation. While, the lowest percentage (52.5%) of satisfactory level were demonstration of total right dose verification and right assessment steps. Regarding the total practices Intravenous infusion of LASA medications, as noticed in **figure (2)** the satisfactory level of total practices regarding Intravenous infusion of LASA medications was 42.5%.

4. Correlation between total knowledge and total practice: table (4) there was highly statistically significance relation (0.490**) between total knowledge and practice regarding infusion of LASA Medication.

Table (1): Number and percentage distribution of the studied subjects according to their demographic characteristics (n=40)

Items	N	%
Age (years)		
< 25 years	12	30.0
25 to < 30 years	25	62.5
30 to 35 years	3	7.5
Mean ± SD	26.37 ± 0.576	
Gender		
Male	15	37.5
Female	25	62.5
Level of Education		
Diploma	11	27.5
Institute of nursing	14	35.0
Bachelor	12	30.0
Master	3	7.5
Position		
Head Nurse	2	5.0
Charge Nurse	22	55.0
Practitioner Nurse	16	40.0
Years of experience in intensive care unit (ICU)		
< 3	10	25.0
3 – 5	16	40.0
5 - 10	12	30.0
> 10	2	5.0
Mean ± SD		
Intensive Care Units training courses		
Yes	22	55.0
No	18	45.0
Training courses for infusion of look-alike sound-alike medications		
Yes	19	47.5
No	21	52.5

Table (2): Number and percentage of nurses with satisfactory level of total knowledge items regarding LASA medication administration (n = 40)

Knowledge Items	Satisfactory level			
	Satisfactory		Un Satisfactory	
	N	%	N	%
Policy and procedures	24	60.0	16	40.0
Storage	24	60.0	16	40.0
High Alert Ordering	16	40.0	24	60.0
Illegible Hand Writing	20	50.0	20	50.0
Medication Preparation	16	40.0	24	60.0
Medication Administration	20	50.0	20	50.0
Medication Monitoring	20	50.0	20	50.0
High Risk Medications	20	50.0	20	50.0
Medication Safety Strategies	12	30.0	28	70.0
Medication Reconciliation	16	40.0	24	60.0
Role of The Pharmacist	12	30.0	28	70.0
Education	9	22.5	31	77.5
Total Knowledge	11	27.5	29	72.5

Table (3): Number and percentage of nurses with satisfactory level of total practice items regarding LASA medication administration (n = 40)

Practice Items	Satisfactory level			
	Satisfactory		Un Satisfactory	
	N	%	N	%
Right Patient Name	27	67.5	13	32.5
Right Drug Name	24	60.0	16	40.0
Right Dose	21	52.5	19	47.5
Right Time	22	55.0	18	45.0
Right Route	25	62.5	15	37.5
Right Education	22	55.0	18	45.0
Right To Refuse	23	57.5	17	42.5
Right Assessment	21	52.5	19	47.5
Right Evaluation	24	60.0	16	40.0
Right Documentation	25	62.5	15	37.5
Total practice	17	42.5	23	57.5

Table (4): Correlation between total LASA Medications Practice skills and total knowledge (n = 40)

Items	Total Practice	
	R	P-value
Total Knowledge	0.001	0.490**

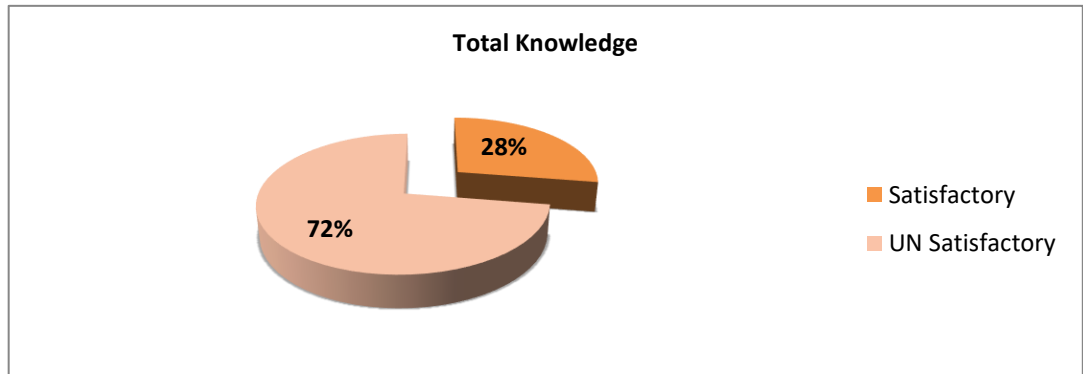**Figure 1: percentage distribution of total study subjects' satisfactory level of total knowledge regarding LASA medication administration (n =40)**
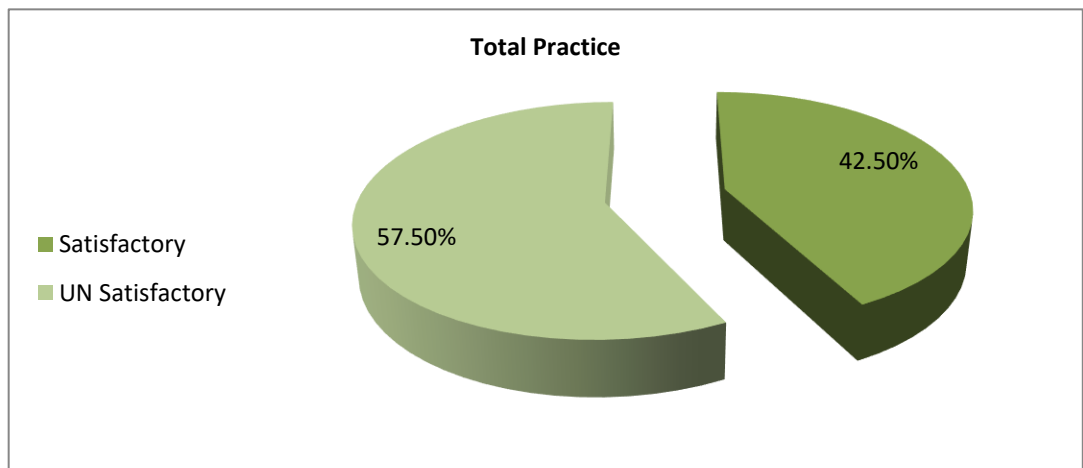

Figure 2: percentage distribution of total study subjects satisfactory level of total practices regarding LASA medication administration (n =40)

Discussion

Regarding the nurses' personal characteristics, the present study result revealed that more than half of the study subject was aged from 25 to 30 years and the mean age was 26.37 ± 0,576., more than two thirds of the study subjects were females. These results are consistent with **Fathi et al (2017)**, whose study were titled with "Medication errors among nurses in teaching hospitals in the west of Iran:

what we need to know about prevalence, types, and barriers to reporting" mentioned in relation to demographic characteristics that more than half of nurses were aged from 25 to 30 years, as regard to their gender about two third were female**.**

These results are consistent with **Fahmy (2018)**, who mentioned in study titled with" Nursing Performance Regarding Intravenous Infusion of Look Alike Sound

Alike Medications At Intensive Care Unit" that about near half of nurses aged between 25-30 years old, three quarters of nurses were females and half of them had from 5 to10 years of experience**.**

Regarding the satisfactory level of total knowledge, The results of the current study revealed that about one quarter of the study subjects have a satisfactory level of total knowledge about intravenous infusion of LASA medications. This study results are disagreeing with, **Fahmy (2018)**, who mentioned that the majority of nurses had satisfactory of knowledge regarding sound alike medications and about three quarters of nurses had satisfactory of knowledge regarding look alike medications.

The current study finding is consistent with **Milton, Washington & Brahm (2015)** who conducted a study at Washington titled with "Hypoglycemia from a look-alike, sound-alike medication error" stated that the majority of nurses had unsatisfactory level of knowledge regarding look alike sound alike medications**.**

The current study finding revealed that, the satisfactory level of right patient name was two thirds of the study subject's. Whereas, about half of the study subjects asked the patient to state their name and birth date.This finding in the same line with the study titled "Registered Nurses' medication administration skills: a systematic review" conducted by **Luokkamäki, et al., (2020)** who revealed that, Nurses need to pay attention to properly checking patients' identity, as it been found that patient identity was only checked in less than half of cases when medication was administered to patients and only about two fifth of nurses checked always patient's armband before medication administration**.**

Regarding to the satisfactory level of right drug name was one third of the study subject's. This finding was in the same line with the study by **Samad, Rahim, Khalid,Tang and Nordin, (2021)** done in Malaysia titled with "Knowledge, Attitude and Practice (KAP) on Importance of Medication Checking Among Staff Nurses at In-Patient Setting in Hospital

Slim River (HSR), Perak" This study showed that 100% of respondents possessed good practice regarding right drug name**.**

The results of the current study showed that the relationships between nurses' knowledge and practice were highly statistically significant. The current finding was supported by **Fahmy (2018)** the study was conducted At Beni Suif University Hospital mention that, there was a statistical significant relation between nurses level of knowledge and level of practice**.**

Conclusion

Based on findings of the current study, it can be concluded that, The study subjects had performance deficit regarding safety infusion of look- alike sound- alike medications, which were affected by the total nurses' knowledge regarding administration of LASA medications which was unsatisfactory.

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