Novelty Journals

ISSN 2394-7330

International Journal of Novel Research in Healthcare and Nursing
Vol. 5, Issue 3, pp: (572-582), Month: September - December 2018, Available at: www.noveltyjournals.com

Assessment of Staff Nurses' Performance when Dealing with High Alert Medication

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Abstract: **Medications are part of the patient treatment plan, appropriate management about it is critical to ensure patient safety. High Alert Medication (HAM) consists of medications which can be associated with adverse outcomes and always carry some degree of risk. Nurses' with insufficient knowledge is considered to be one of the most significant factors contributing to medication administration errors. Aim: Assessing performance of the staff nurses when dealing with HAM. Subjects and methods: The study was conducted in the International Medical Center (IMC) which affiliated to ministry of defence. The subjects of this study consisted of 180 nurses who are working in IMC full time with experience at least one year. 89 nurses were working in critical care units while 91 nurses were working in medical- surgical units. Data were collected by using observational checklist. Results: Nurses had inadequacy performance regarding different dimensions of dealing with HAM as, identification (13.3%), sharing in prescription (24.0 %), ordering of HAM (26.8 %) and in patient involvement (12.5 %) Recommendations: Establish an educational program for nurses about deal with HAM is a must. Conclusion: Nurses had inadequacy performance regarding different dimensions of dealing with HAM.**

Keywords: **Staff nurses' performance. High Alert Medication.**

1. INTRODUCTION

Medications are part of the patient treatment plan, appropriate management about it is critical to ensure patient safety. A frequently cited medication safety issue is the unintentional administration of concentrated electrolytes. This error can occur when a staff member has not properly oriented to the patient care unit or during emergencies. ***(Joint Commission International Accreditation (JCI), 2012).*** Nurses' with insufficient knowledge and inadequate performance is considered to be one of the most significant factors contributing to medication administration errors. (***Tang et al., 2007).***

The nurse's role is the ability to change patient safety and quality improvement within health care systems is a relatively new field of research, but consideration must be given to more than 60 years of nursing research that has implications for both safety and quality processes and nursing, patient, and organization outcomes ***(Hughes, 2008)***.

Compliance is an observable behavior that can be directly measured and is a description of submission to predetermined goals ***(Ragab, 2008).*** Performance Management is essential in any management process. Without standards, performance cannot be measured and therefore development needs supported by disciplinary measures, where appropriate, cannot be objectively set. Consequently every manager needs to have a framework of knowledge and skills with which to set targets, monitor performance and develop employee skills. Equally it is vitally important to be able to identify underperformance and be able to deal objectively and lawfully with disciplinary issues. ***(Marsha, 2009)***

Rational of the study:

Nurses have performance deficit and unsatisfactory level of knowledge relating some aspects of dealing with HAM ***(Attia, 2012)***. The present study Assess performance of the staff nurses when dealing with HAM.

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2. SUBJECTS & METHODS

Research design:

A cross-sectional descriptive design was used in carrying out this study.

Setting:

The study was conducted in the International Medical Center (IMC) in Egypt, The total numbers of study units are fourteen units, they are divided into two sections:- 1- Critical care units that included: intensive care units (ICU), paediatrics unit, operating rooms (OR), anaesthesia department, emergency room(ER), hemo-dialysis unit, and cath. lab. 2- Medical surgical units that included: five Inpatient units, radiology and outpatient department.

Subjects:

The subjects of this study consisted of 180 nurses who are working in IMC full time with experience at least one year. 89 nurses were working in critical care units while 91 nurses were working in medical- surgical units.

Tools of data collection:

This tool was used to assess the performance of nurses when dealing with HAM. This tool was developed by researcher based on ***JCI (2012), ISMP (2011), Ibrahim (2010), Hanratty (2008)***, ***JCI (2008),*** and ***IOM (2004)***. This tool was consisted of (129) items divided into 3 main dimensions as following:-

Table (1): Items of observational checklist:-

1- Pre administration of HAM		
Dimension	**No. of items**	**Example**
Identification	**8**	Labeling all HAM with a visible warning label that states "High Alert Medication"
Sharing of physician prescriptions: A. Regarding following hospital policies	**10**	Checking the writing of the medication dose
Sharing of physician prescriptions: B. Regarding illegible hand writing and using abbreviations	**9**	Checking use of leading zero for doses less than one eg 0.2 mg
Sharing of physician prescriptions: C. Regarding verbal order	**6**	Refusing verbal order or telephone order for LASA
Ordering	**5**	Confirming the drug name with data entry
Receiving	**11**	Checking the record against the medication sent
2- During administration of HAM		
Dimension	**No. of items**	**Example**
Preparing A. Before preparation	**9**	Reading physician order before medication preparation
Preparing B. During preparation	**12**	Double check is done during preparation of LASA
Preparing C. After preparation	**5**	Labeling all prepared medication with pre printed labels or using markers
Administrating	**16**	Double check is done before administration for HAM
Patient involvement	**7**	Telling the patient the potential side effect if possible
3- Post administration of HAM		
Dimension	**No. of items**	**Example**
Documentation and reporting	**8**	Signing in records immediately after medication administration
Handling the waste	**8**	Sharpes disposed carefully in sharp box
Storage	**15**	Separating dangerous drugs with similar names

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Each item was checked as done or not done

Scoring system:

One grade was given when done and zero was given when the activity was not done for each nurse. The total score was calculated summing up the grades of the checklist and divided by the number of the items, giving a mean score. These scores were converted into percent score. Mean and standard deviation were computed, then the level of performance was determined as the following:-

- Adequate in equal or more 77.5 (>60 mean %)
- Inadequate in less than 77.5 (< 60 mean %)

Pilot study:

Upon developing the data collection tool, a pilot study was conducted at the beginning of February 2013 and performed on 10% of total subjects. Eighteen nurses were included in the pilot study to estimate the feasibility, language clarity, applicability, and assessing time needed for observing the nurses performance using observational check list and the time consumed to complete this tool was 40- 50 min.

Based on the analysis of the pilot study, necessary modifications by addition and/or omission were done to develop the final form. Subjects who shared in pilot study were excluded from the main study.

Fieldwork:

The data obtained from March 2013 for three weeks. The researcher observed nurses' actual performance during morning and afternoon shift. The observation of each nurse took an average 40-50min. in the time of giving medication, but there are some department are varied in this time as ER, OR and Cardiac catheterization. The observation time started from 8 am to 6 pm. and the time of medication administration was considered. Each checklist was marked by code number, department and date of observation. The researcher was observing actual performance of 7- 9 nurses/ day using the observational checklist. The researcher observed the study subjects according to predetermined schedule.

Ethical consideration:

Prior to the pilot study approval was obtained from the scientific ethical committee from faculty of nursing, Ain Shams University also the approval of each nurse who included in the study in a written consent form.

Statistical analysis:

Data entry and statistical analysis were done using statistical software package (SPSS version 16.0). Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and means and standard deviations for quantitative variables.

3. RESULT

Frequency distribution of participants according to their demographic data as evident in table (1) that represents more than half of the studied nurses (53.9%) had age less than 25 years old, more than half of them were married. Less than three quarter of them (72.2%) were graduated from nursing school, more than half of them having work experience 5 years or more (61.1%). Half of them work in medical/surgical units (50.06%). About one fifth were attending training course related dealing with HAM.

Table (2) noticed that no adequacy of nurses' performance regarding identification of HAM. Table (3a) demonstrate adequacy of nurses performance regarding checking the accuracy of the patient name (71.6). Table (3b) shows that the highest performance was related to Asking doctor when there are unclear abbreviations (91.6). Table (3c) shows the highest performance was related to Writing physician name and time of order in patient chart (49.4).

Table (4) shows that the highest performance was related to requesting unit dose drug (54.4). Table (5) shows the highest performance was related checking the record against the medication sent (87.2). Table (6a) shows the highest performance was related maintaining a suitable lighting in medication preparation area (97.2). Table (6b) shows the highest performance was related keeping all used equipment sterile (97.2). Table (6c) shows the highest performance was related to discarding saline bottle used in medication dilution every 24 hours (50.5).

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Table (7) shows the highest performance was related to wearing gloves before administration (93.8). Table (8) shows the highest performance was related to telling the patient the drug name (38.3). Table (9) shows the highest performance was related to reporting to physician in case of medication error (85.0). Table (10) shows the highest performance was related to sharps disposed carefully in sharp box (91.1).

Table (11) shows the highest performance was related to narcotics storage under supervision and security and Keeping adequate ventilation in store room (98.3). Table (12) shows that the highest performance was in items related to handling the medical waste (48.8) and the lowest performance was in items related to patient involvement (12.5) .

Table (1): Distribution of Studied Nurses Regarding Personal Characteristics (n=180)

Age	**No**	**%**
< 25 Y	97	53.9
25-30Y	64	35.6
> 30Y	19	10.6
Marital Status	**No**	**%**
Single	74	42.2
Married	106	57.8
Education	**No**	**%**
Technical Nursing Diploma	50	27.8
School Nursing Diploma	130	72.2
Years of Experience	**No**	**%**
< 5 Years	70	38.9
≥ 5 Years	110	61.1
Work area	**No**	**%**
Critical care units	89	49.4
Medical Surgical units	91	50.6
Attending Training program	**No**	**%**
Yes	41	22.8
No	139	77.2

Table (2): Adequacy of Nurses' Performance as regard Identification of High Alert Medication: (n=180)

Nurses Performance as regard Identification of High Alert Medication	**Mean % ± Sd**
1- Recognizing location of HAM	49.4 ± 50.1
2- Labeling all HAM with a visible warning label that states "High Alert Medication"	0.55 ± 7.4
3- Identifying Look Alike Sound Alike (LASA) medication used in the department	11.6 ± 32.1
4- Identifying LASA medication pairs	0.55 ± 7.4
5- Using labels that differentiate critical parts of drug name (eg. DOBUTamine & DOPAmine)	0.0 ± 0.00
6- Using techniques such as boldface and color differences with LASA	0.0 ± 0.00
7- Recognizing concentrated electrolytes used in department	44.4 ± 49.8
8- Labeling all concentrated electrolytes with a visible warning label that states "MUST BE DILUTED"	0.0 ± 0.00
Total Mean Score	**13.3 ± 12.0**

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Table (3) a: Adequacy of Nurses' Performance as regard sharing of HAM physician prescriptions (regarding following hospital policies: (n=180)

Nurses Performance as regard Sharing of HAM physician prescriptions	Mean % ± Sd
1- Checking the accuracy of the medication name	49.4 ± 50.1
2- Checking the accuracy of the patient name	71.6 ± 45.1
3- Checking the writing of the medication dose	11.1 ± 31.5
4- Checking the accuracy of the medication form	9.4 ± 29.3
5- Checking the accuracy of the medication route	7.2 ± 25.9
6- Checking the writing of the medication time	23.3 ± 42.4
7- Checking use of complete generic drug name not only trade name	0.0 ± 0.0
8- Checking physician order that include the rate of infusion in concentrated electrolytes prescription	8.3 ± 27.7
9- Checking the purpose of LASA medication on the prescription	0.55 ± 7.4
10- Reviewing patient's allergy list	0.55 ± 7.4

Table (3) b: Adequacy of Nurses' Performance as regard sharing of HAM physician prescriptions (regarding illegible hand writing and use of abbreviations): (n=180)

Nurses Performance as regard Sharing of HAM physician prescriptions	Mean % ± Sd
11- Checking use of word "units" instead of "U" in prescription	0.0 ± 0.0
12- Checking prevent of using slash marks (/) to separate words	0.0 ± 0.0
13- Checking use of leading zero for doses less than one eg 0.2 mg	0.0 ± 0.0
14- Checking prevent of using trailing zero for doses that are whole number eg 2.0 mg	0.0 ± 0.0
15- Checking of using ward "daily" instead of q.d or o.d	1.66 ± 12.8
16- Matching common medical abbreviations with their meaning	89.4 ± 30.8
17- Checking prevent of using potentially confusing abbreviation in HAM prescription	18.8 ± 39.2
18- Asking doctor when there are unclear abbreviations	91.6 ± 27.7
19- Notifying the doctors when there is unclear or illegible hand writing	87.7 ± 32.8

Table (3) c: Adequacy of Nurses' Performance as regard sharing of HAM physician prescriptions (regarding verbal orders): (n=180)

Nurses Performance as regard Sharing of HAM physician prescriptions	Mean % ± Sd
20- Writing down verbal or telephone order in patient chart immediately	32.7 ± 47.0
21- Repeating verbal order back after physician (spelling medication name)	0.0 ± 0.0
22- Repeating medication dose back after physician	2.7 ± 16.4
23- Writing physician name and time of order in patient chart	49.4 ± 50.1
24- Asking physician to write the order before the end of the shift	43.8 ± 49.7
25- Refusing verbal order or telephone order for LASA	0.0 ± 0.0
Total Mean Score	**24.0 ± 8.84**

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Table (4): Adequacy of Nurses' Performance as regard ordering of HAM: (n=180)

Nurses Performance as regard Ordering of HAM	Mean % ± Sd
1-Confirming the drug name with data entry	27.7 ± 44.9
2-Confirming the patient name with data entry	27.7 ± 44.9
3-Confirming the drug dose with data entry	14.4 ± 35.2
4-Confirming the drug form with data entry	10.0 ± 30.0
5-Requesting unit dose drug	54.4 ± 49.9
Total Mean Score	**26.8 ± 28.5**

Table (5): Adequacy of Nurses' Performance as regard receiving of HAM: (n=180)

Nurses Performance as regard receiving of HAM	Mean % ± Sd
1- Checking the record against the medication sent	87.2 ± 33.4
2- Checking patient name	68.3 ± 46.6
3- Checking patient location	5.0 ± 21.8
4- Checking medication form	33.8 ± 47.4
5- Checking medication dose	62.7 ± 48.4
6- Receiving unit dose only	82.7 ± 37.8
7- Reading the label each time a medication is accessed	2.22 ± 14.7
8- Checking expiration date of dispensing medication	7.2 ± 25.9
9- Double check when dispensing HAM	0.0 ± 0.0
10- Checking the accuracy of medication's label on the box or bottle	3.3 ± 18.0
11- Notifying pharmacy immediately for any unsafe condition (expired medication or inaccurate label) of dispensing medication	6.1 ± 24.0
Total mean score	**32.6 ± 8.9**

Table (6) a: Adequacy of Nurses' Performance as regard Preparing HAM (before preparation): (n=180)

Nurses Performance as regard Preparing HAM	Mean % ± Sd
1- Locking medication preparation room	0.0 ± 0.0
2- Reading physician order before medication preparation	85.0 ± 35.8
3- Reviewing patient name	60.5 ± 49.0
4- Checking medication time	66.1 ± 47.4
5- Reviewing medication name required and matching with available one	27.7 ± 44.9
6- Preparing medication before administration time (half an hour before)	43.3 ± 49.6
7- Checking medication dose required	22.2 ± 41.6
8- Checking medication dose available	61.1 ± 48.8
9- Maintaining a suitable lighting in medication preparation area	97.2 ± 16.4

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Table (6) b: Adequacy of Nurses' Performance as regard Preparing HAM (during preparation): (n=180)

Nurses Performance as regard Preparing HAM	Mean %± Sd
10- Washing hand before medication preparation	8.3 ± 27.7
11- Wearing gloves before medication preparation	58.3 ± 49.4
12- Keeping all used equipment sterile	97.2 ± 16.4
13- Labeling IV bags and pumps with medication name	76.1 ± 42.7
14- Labeling IV bags and pumps with medication dose	29.4 ± 45.7
15- Labeling IV bags and pumps with infusion rate	5.0 ± 21.8
16- Labeling IV bags and pumps with nurse signature	45.5 ± 49.9
17- Writing date and time of preparation above any containers or syringes have prepared medication	9.4 ± 29.3
18- Dating multi dose medication vials when first opened	24.4 ± 43.0
19- Double check during preparation of HAM	0.55 ± 7.4
20- Double check is done during preparation of LASA	0.0 ± 0.0
21- Remaining vials of mixed medication available for 30 min. after administration	0.0 ± 0.0

Table (6) c: Adequacy of Nurses' Performance as regard Preparing HAM (after preparation): (n=180)

Nurses Performance as regard Preparing HAM	Mean % ± Sd
22- Discarding saline bottle used in medication dilution every 24 hours	50.5 ± 50.1
23- Double check for infusion pump rate setting	0.0 ± 0.0
24- Labeling all prepared medication (writing its name) with pre printed labels or using markers	7.2 ± 25.9
25- Labeling prepared solution with a" HIGH RISK WARNING" label prior to administration	0.55 ± 7.4
26- Remaining vials of mixed medication available for 30 min. after administration	0.0 ± 0.0
Total Mean Score	**36.6 ± 7.1**

Table (7): Adequacy of Nurses' Performance as regard administration of HAM: (n=180)

Nurses Performance as regard administration of HAM	Mean % ± Sd
1- Giving medication on time	74.4 ± 43.7
2- Checking the patient identification band before administration	18.3 ± 38.8
3- Asking patient about his name if possible	3.8 ± 19.3
4- Checking route of administration	49.4 ± 50.1
5- Using appropriate site for injection	90.0 ± 30.0
6- Double check is done before administration for HAM	0.55 ± 7.4
7- Using multiple dose vials for only one patient	38.8 ± 48.8
8- Washing hand before administration	7.7 ± 26.8
9- Wearing gloves before administration	93.8 ± 24.0
10- Labeling the distal ends of intravenous lines to differentiate them	2.7 ± 16.4
11- Using an infusion pump to administer concentrated solutions	80.0 ± 40.1
12- Double check for infusion pump rate	1.11 ± 10.5
13- All hanging IV solutions are discarded after 24 hours	48.8 ± 50.1
14- Keeping antidote for HAM available on hand	10.0 ± 30.0
15- Monitoring the patient for any adverse effects	26.6 ± 44.3
16- Returning unused drugs to the pharmacy	45.0 ± 49.8
Total Mean Score	**36.9 ± 9.8**

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Table (8): Adequacy of Nurses' Performance as regard Patient Involvement: (n=180)

Nurses Performance as regard Patient Involvement	Mean % ± Sd
1- Telling the patient the drug name if possible	38.3 ± 48.7
2- Telling the patient the drug dose if possible	1.11 ± 10.5
3- Telling the patient the drug purpose if possible	0.55 ± 7.45
4- Telling the patient the potential side effect if possible	12.7 ± 33.4
5- encouraging patient to ask questions about HAM	20.0 ± 40.1
6- Instructing patients to inform caregivers whenever a medicine appears to vary in any way from what is usually administered.	1.11 ± 10.5
7- Instructing patients to inform caregivers whenever any side effects appeared	13.8 ± 34.6
Total Mean Score	**12.5 ± 13.0**

Table (9): Adequacy of Nurses' Performance as regard Documentation and reporting: (n=180)

Nurses Performance as regard Documentation and reporting	Mean % ± Sd
1- Documenting all medication given to patient on his/her drug sheet	65.0 ± 47.8
2- Signing in records immediately after medication administration	16.6 ± 37.3
3- Writing fluids used with medication in fluid chart	50.0 ± 50.1
4- Writing infusion pump rates	28.8 ± 45.4
5- Writing incidence report when medication error occur	15.5 ± 36.3
6- Reporting to physician in case of medication error	85.0 ± 35.8
7- Writing incidence report when patient refused medication	6.66 ± 25.0
8- Reporting to physician when patient refuse medication	66.1 ± 47.4
Total Mean Score	**41.7 ± 17.3**

Table (10): Adequacy of Nurses' Performance as regard handling the waste: (n=180)

Nurses Performance as regard handling the waste	Mean % ± Sd
1- Sharps disposed carefully in sharp box	91.1 ± 28.5
2- Needles and syringes discarded into a sharp box	88.8 ± 31.5
3- Glass drug ampoules discarded into a sharp box	56.1 ± 49.7
4- Multi dose medication vials are discarded as policies	45.5 ± 49.9
5- All used medical supplies contaminated with patient secretion discarded in red bag	43.3 ± 49.6
6- All used medical supplies uncontaminated with patient secretion discarded in black bag	47.7 ± 50.0
7- Checking that waste bags were sealed	9.44 ± 29.3
8- Checking that waste bags Identifying with department name	8.88 ± 28.5
Total Mean Score	**48.8 ± 17.9**

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Table (11): Adequacy of Nurses' Performance as regard Storage of HAM (n=180):

Nurses Performance as regard Storage of HAM	Mean % ± Sd
1- Putting HAM out of patient care area	45.5 ± 49.9
2- Providing clear Labels of all HAM	0.0 ± 0.0
3- Removing concentrated electrolytes from patient care units	36.1 ± 48.1
4- Storing HAM separately from other medication	0.0 ± 0.0
5- Narcotics storage under supervision and security	98.8 ± 10.5
6- Keeping medications that needs low temperature in refrigerator	83.8 ± 36.8
7- Stocking a single hypertonic solution concentration	5.0 ± 21.8
8- Storing in a locked area with limited access	27.2 ± 44.6
9- Providing special hazard labeling	0.0 ± 0.0
10- Storing medications with different concentration without its external packaged (insulin)	0.0 ± 0.0
11- Separating dangerous drugs with similar names	0.0 ± 0.0
12- Separating dangerous drugs with similar packaging	0.0 ± 0.0
13- Checking expiration date as policies	36.6 ± 48.3
14- Keeping light adequate in store room	98.3 ± 12.8
15- Keeping adequate ventilation in store room	98.3 ± 12.8
Total mean score	**35.3 ± 8.03**

Table (12): Total Mean score and standard deviation of adequacy of nurses performance regarding Dimensions reflecting dealing with High Alert Medication (n=180)

DIMENSIONS	MEAN %± SD
1- IDENTIFICATION OF HAM	13.3 ± 12.0
2- SHARING OF HAM PHYSICIAN PRESCRIPTIONS	24.0 ± 8.84
3- ORDERING OF HAM	26.8 ± 28.5
4- RECEIVING OF HAM	32.6 ± 8.9
5- IN PREPARING HAM	36.6 ± 7.1
6- IN ADMINISTRATING HAM	36.9 ± 9.88
7- PATIENT INVOLVEMENT	12.5 ± 13.0
8- DOCUMENTATION AND REPORTING	41.7 ± 17.3
9- HANDLING THE MEDICAL WASTE	48.8 ± 17.9
10- STORAGE OF HAM	35.3 ± 8.03
GRAND TOTAL MEAN SCORE	**31.6 ± 6.94**

4. DISCUSSION

Dealing with HAM poses significant risks to patients who treated with it so that requires special and diligence knowledge and performance. Organization's system safeguards play an important role in preventing medication errors, but system cannot alone protect patients from harm; nurses who use system safeguards 24 hours per day and who apply practical strategies protect patients from harm ***(Robin, 2011)***. The present study reveals that less than quarter of staff nurses care about providing extra label for medication that must be diluted. In the same direction ***(Marsha, 2009)*** has stated that there have been numerous cases of health care provider using a potassium chloride (KCL) injection to flush an IV line instead

of normal saline because the vial sizes and labeling of the two products were similar. ***(Ibrahim, 2010)*** has claimed that less than quarter of nurses under study are oriented of all medication that need dilution and less than fifth of them are concerned about putting sign for medication that need dilution. From point of view of researcher these results of the study may be due to lack of training among all staff nurses dealing with HAM and also lack of supervision from clinical pharmacists and head nurses.

Finding of the present study revealed that nurses' performance as regard sharing physician of HAM prescriptions were generally very low. In Saudi Arabia, two recent studies estimated that the prevalence of prescribing errors in hospital inpatient ranges between 13 and 56 per 100 medication orders ***(Al-Dhawailie & Al-Jeraisy, 2011)***. In the same direction ***(Perini et al, 2009)*** found that of a total of 7148 HAM prescribed, 3177 errors were found and the most frequent one was missing information (86.5%). The results of the present study revealed that less than quarter of nursing staff checking prevent of using potentially confusing abbreviation and illegible hand writing in HAM prescription due to harry up of physician and tightness of time during morning shift otherwise noise over the nurse station and found of more than one doctor in same time.

The finding is however incongruent with ***(Russell, Jenkins & Allen 2007)*** who have found that in 1979 study estimated that one-third of physicians' handwriting was illegible. Presumably little has changed over the years. To ensure that your orders and prescriptions are legible, try printing rather than using cursive, sit rather than stand when writing and work in what safety experts describe as a "sterile cockpit" (a quiet area for writing). Additionally ***(Rinke et al., 2010)*** have emphasized that the abbreviation of medical terms and drug names can lead to medication errors. From point of view of researcher these result of the study may be due to lack of supervision for doctors who used to write medication prescription with illegible hand writing and using of informal and potentially confusing abbreviations.

The present study showed that almost all nursing staff did not have the culture of involving the patient in plan of care which is consider very important in preventing medication errors may happened. In this regards ***(Grocott &Weir & Bridgelal, 2007)*** reported that patients can act as 'safety buffers' during their care but the responsibility for their safety must remain with the health care professionals. Effective interventions may improve the involvement of patients in their own safety in the clinical setting. This may be attributed to many factors as lack of concern of patient education and patient rights in all training programs that resulted in neglection of staff nurses to patient engagement, absent of role models from head nurses and default of hospital policies which explain and indicate patient involvement.

5. CONCLUSION

Based on the present study findings, it can be concluded that staff nurses had performance deficit regarding different dimensions of dealing with HAM as, identification, sharing in prescription, ordering of HAM and in patient involvement

6. RECOMMENDATIONS

Based upon the results of the current study the following recommendations are suggested:- Establish an educational program for all nurses to inform them how to deal with HAM, Enhancing concept of teamwork among all healthcare professionals, Establishing a clinical pharmacy service in each department and Validate hospital protocol/ guidelines concerning all aspects related dealing with HAM.

REFERENCES

[1] **Al- Dhawailie & Al- Jeraisy (2011):** Safe health practices in different types of hospitals in Cairo. Doctorate Thesis, Faculty of Medicine, Cairo University.

[2] **Attia, S.A (2012):** Nurses' Performance Regarding Intraven. Infusion of High Alert Medication. Unpublished Master Thesis, Ain Shams University PP. 11- 48

[3] **Grocott P., Weir H., Bridgela M. (2007):** Institute for Healthcare Studies, Feinberg School of Medicine, North Western University. Improving Clinical communication and patient safety: Clinician-recommended solutions. Available at: http://www.jointcommissionreport.org/performanceresults/sentinel.aspx. Accessed July 23, 2008.

[4] **Hanratty, C.M. (2008):** High Alert Medication Practice Competency Validation Registered Nurse; 2nd Verifier; kaiser permanent ® Ohio Region; PP. 1-2.

[5] **Ibrahim, N.A. (2010):** Assessment of Staff Nurses Compliance to the International Patient Safety Goals at Intensive Care Unit in a Military Hospital. Military Medical Academy.

[6] **Institute for Safe Medication Practices (ISMP), (2011):** Frequently asked question: ISMP's ten key elements of medication safety. Available at: http://www.ismp.org/Newsletters/nursing/default.asp.

[7] **Institute of Medicine (IOM), (2004):** Keeping patients safe. transforming the work environment of nurses. Washington, DC: National Academy.

[8] **Joint Commission International (JCI), (2008):** International patient safety goals. Improve the safety of high- alert medication. Available at: http://www.jointcommission international.com

[9] **Joint Commission International (JCI), (2012):** International patient safety goals. Improve the safety of high- alert medication. Available at: http://www.jointcommission international.com

[10] Marsha, D. (2009): Patient safety improvement. Safety of medication administration. Journal of Nursing; 1, 4. Available at: http://www.patient-safety.com/

[11] **Perini, M., Rob, S., John, G., & Geoff, B., (2009):** Medication errors: prospective cohort study of hand written and computerized medication physician order entry in the intensive care unit.

[12] **Ragab.G, (2008):** Measuring compliance of nurses working in fever hospitals with isolation precautions, Master thesis, Faculty of Nursing, Assuit University. P 11-13.

[13] **Rinke, M.L., Bundy, D.G., Shore, A.D., Colantuoni, E., Morlock, L.L., Miller, M.R., (2010):** Pediatric antidepressant medication errors in a national error reporting database. Journal of Developmental and Behavioral Paediatrics 31 (2), 129–136.

[14] **Robin, D. L. (2011):** Using failure mode and effects analysis for safe administration of chemotherapy to hospitalized cancer patient. Jt Comm J Qual Patient Saf ; 32: 161e 66.

[15] **Russell, H. Jenkins, M., and Allen J. (2007):** Patient safety and quality: Clinician-recommended solutions. Available at: http://www.jointcommissionreport.org/performanceresults/sentinel.aspx. Accessed July 23, 2007.

[16] **Tang, F.I., Sheu, S.J., Yu, S., Wei, I.L., Chen, C.H., (2007):** Nurses relate the contributing factors involved in medication errors. Journal of Clinical Nursing 16, 447–457.