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Effect of a clinical instructional intervention on nurses' perception and practice toward medication errors

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Abstract: *Drug errors occur in different steps of the drug process but many errors occur during the administration of the drug, the nurses play a pillar of the tent in risk reduction of medication errors because they are in excellent position than any other health team providers to detect and report medication errors.*
Aim *was to examine the effect of clinical instruction intervention on nurses' perception and practice toward medication errors.*
Research design*: a quasi -experimental design was used.*
Setting*: was conducted in different wards (General surgical wards, medical wards, chest& heart ward and CCU) at Ain Shams University Hospitals Cairo, Egypt.*
Sample*: A convenient sample consist of (38) nurses providing direct patient's medication administration.*
Tools*: three tools used to collect data are the following: 1) characteristics of the studied sample, 2) the Modified Gladstone's Scale of Medication Errors, (3) Medication Administration Rights Observation Checklist.*
Results: *revealed that there was statistical significant improvement of nurses' perception and practice toward medication errors.*
Conclusion*: Implemented of clinical instruction intervention of medication errors was effective in improves level of nurses' perception and practice toward medication errors.*
Recommendations*: the study recommended that, designed and established an integrated educational unit on medication errors in the curricula of nursing student and clarify a proper mechanism and administrative system in the way to deal with the medication errors resulting from the health team.*
Keywords: *medication errors- medication administration - nurses' perception.*

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I. Introduction

Medication errors are one of the most common types of medical error is followed by a potential or actual risk hazard for patient. A medication error is defined as disorder in the treatment process (prescription, transcription, dispensing and administration) followed by a potential or actual risk of hazard for patient. And, it is one of main factors that (endangering the patient safety) contribute to low safety at health care settings. **[1, 2]** Medication errors is it occurs when discrepancy between the drug receive by patient and the drug intended by the prescribed. In addition, it is possible to classify errors into wrong medication, dose, frequency, administration route or patient. This infers that, medication administration if not performed in accordance to standards of care may increase the unnecessary risks among patient. Medication administration errors have direct and indirect results, which could bring about serious consequences of breakdowns in a system of care. Direct results include serious patient harm as well as increased health care costs. Indirect results include harm to nurses in terms of professional and personal status, confidence and performance. **[3]** In the Egypt and developing countries it is difficult to obtain accurate statistics of due to lack of proper archiving and reporting system as well as the absence of a data registered **system [4].** Also**, [5]** mentioned that in her thesis affiliated in Saudi Arabia, is no accurate data about safety problem such as medication errors but it estimated that 10% of people are potentially affected**.** In Ethiopia evidence indicate that medication error is a common problem the incidence of medication administration error was 56.4%.according to recent published study **[6].** In a study done by **[7]** mentioned that, (In recent study from United Kingdom's National Patient Safety Agency revealed that of different types of medication errors, almost 50% account to administration error compared to 18% for dispensing and 16%for prescribing). A reported by the Institute of Medicine estimated that the medication errors cause between 44,000-98,000 death each year in USA hospitals and it costs between $6-29 billion to compensate for the adverse effects of each error. **[3]** A nurse is an integral part of the health care profession, medical administration process is considered as one core nursing action and daily component of nursing practice which spend about 40% of their time in the hospital to administer medicine. In addition, the nurses care

competency and following guidelines of medication administration is a warranty for patient safety and quality of nursing care**. [8&1]** Although medication errors can be caused by all members of a health care team, nurses are closely involved because they are responsible for delivery of medication and it is a daily component of nursing practice and is often seen as routine and basic nursing care. So, it is important to understand their perceptions toward causes of medication errors. There are several reasons why drug administration errors can be explained by a nurse, which is insufficiency training, lack of pharmacological knowledge, workload, miscommunications between health team, and lack of vision for nurses towards serious drug errors. **[9& 7]**Accurate errors reporting system rely on the ability the nurse to detect and report errors as a part of routine practice and prevent occurs in future. Most recent studies have confirmed that, the prevention and minimize the occurrence of drug errors through the incident reports improves quality of hospitals care. Analysis of medication errors can lead to reduced risk only if the errors are detected, reported, and used to improve quality of patient care. **[10,11]** Reporting system are dependent on the nurses' perception concerning (1) ability to recognize an error has occurred, (2) belief that the error warrants reporting, (3) belief that she has committed the error, and (4) willingness to overcome the embarrassment and fear of retaliation for having committed a medication administration errors. In Egypt, the previous studies have indicated that despite the myriad benefits and the moral basis for detection and reporting of errors, nurses hesitate in reporting their errors in order to protect themselves from possible administrative penalties and reactions of patients. **[12]**

1.1Significance of the study

Drug errors occurs in different steps of the drug process but many errors occur during the administration of the drug that the nurses play a vital role in it because of their responsibility for managing the medication in the hospital. In addition, nurses are more involved in drug management activities than other health care teams. However, in Egypt there is a lack of clinical educational programs aimed at improving the performance of nurses in this field, which negatively affects the quality of nursing performance in the management of safe medication. Therefore the main objective of this study was to examine the effect of clinical instruction intervention on nurses' perception and practice toward medication errors

1.1. Aim of the study: This study aims to examine the effect of clinical instruction intervention on nurses' perception and practice toward medication errors

1.2. Research Hypothese

The level of nurses' perception toward medication errors will significantly improve after implementing of clinical instruction intervention.The level of nurses' practice toward medication errors will significantly improve after implementing of clinical instruction intervention

II. Subjects And Methods

2.1 Research design: A quasi experimental design was utilized to achieve the aim of the current study.

Dependent variable was the level of nurses' perception and practice and Independent variable was clinical instruction intervention

2.2 Setting: This study was conducted in different wards (General surgical wards, medical wards, chest& heart ward and CCU) at Ain Shams University Hospitals Cairo, Egypt.

2.2 Sample: A convenient sample consist of (38) nurses providing direct patient's medication administration in the above mentioned areas, who are present at the time of data collection, and willing to participant in the study.

2.3 Tools of data collection: three tools were used for data collection.

2.4.1 Tool I: nurse' socio-demographic characteristics (age, gender, qualification, position, work area, years of experience and attending previous medication administration program before.

2.4.2 Tool II: The Modified Gladstone's Scale of Medication Errors **[13,14 &15]** was modified by the researchers *(pre/posttests)*, used to measure nurses' perception toward the following: (1) dimensions of medication errors (types and factors 10 items); (2) drug errors reported to nurse managers (1 item). (3) Barriers to the reporting of the medication error (6 items). (4) 5 different scenarios for Medication errors used in Gladstone survey were presented to the nurses to explore their opinion and assess their general perception toward medication errors (pre/ follow-up). It should be noted that this section was used in the current study with two objectives. First, as an initial assessment of the nurses' opinion through asked them to classify each scenario as a medication error and if they would or would not report the situation to a physician or complete a report. Second, evaluate the indicator success of the clinical guideline. It was written in Arabic language to be easily understood by all the nurses, using translation-retranslation approach to ensure its reliability

2.4.3 Tool III:

Medication Administration Rights Observation Checklist (pre/posttests):

It was adapted from **[16 & 17].**It aimed to assess level of nurses' practices toward medication administration rights; consist of 33items divided into two parts : first part rights before medication has been administered which contains 8 rights in 26 items (patient, medication, route, dose, time, education, refuse and assessment). Second part after medication has been administered which contains 2 rights in 7 items (evaluation and documentation)Scoring system: the one point for correctly and zero for not done or incorrect.

2.5 Field work: - data were collected from April to November 2016.

1. The studied nurses were divided into 4 groups (based on their work areas)
2. Each group was enrolled sub-groups sessions according to predetermined schedule with head nurse of each unit.
3. Nurses' perception and practice assessment were assessed pre, immediately post & two month after the intervention**.**

2.5.1Validity of the tool:

.It were ascertained by a group of experts (7) working in more diverse settings

(Different Academic Nursing specialty, pharmacy, Patient' safety and quality management)

Their opinions were elicited regarding the tools format layout, consistency and scoring system. The contents of the tools were tested regarding their accuracy, relevance and completeness. Reliability of Total tool II with Cronbach's alpha (0.701) &Total tool III confirmed by Cronbach's alpha (0.814)

2.5.2 Pilot study: A pilot study was conducted on 7 nurses (excluded from the sample) to test the clarity, and practicability of the tools in addition to estimate time needed to fill in the research tools.

2.5.3**Administrative and ethical considerations**: The agreement for participation of the subjects was taken after the researchers explained the aim of the study. They had the right to refuse to participate or withdrawal from the research at any stage. They were assured that the information would be confidential and used for the research purpose only.

2.5.4 Clinical Instruction intervention:

2.5.4.1 Assessment and preparation phase: Nurses' assessment started by practice assessment before perception assessment to ensure that the nurses' practice was not affected each observation; it took about 25minutes followed by asked all the nurses to fill the part of cases scenario. Then they begin to fill in other parts of questionnaire sheet to assess their perception toward medication errors; it took 15 - 20 minutes as a pre test

2.5.4.2 planning phase: t

he clinical instruction intervention was designed by the researchers according to relevant literatures and it wasdeveloped based on assessment needs of study sample also after reviewing recommendations of national and international studies. It was written in Arabic language to be easily understood by all the nurses. It included cognitive knowledge needed regarding:

1. Introduction
2. Patient safety
3. Definitions of medication errors
4. Drug administration safety
5. Types of medication error
6. Factors of medication errors
7. Managing medication errors
8. Reporting medication errors
9. Barriers to the reporting of the medication error
10. The ten right of medication errors (before and after medication administration)

2.5.4.3 Implementation phase: the clinical instruction intervention was presented in theoretical and practical sessions

Theoretical session: (50 -60 minutes) given to the nurses under study

*Practice session*_(45 minutes) was started immediately after the theoretical part. Demonstration of drug administration was done by the researchers, and then every group was divided into three subgroups and re-demonstration done by studied nurses.

2.5.4.4. Evaluation phase:

immediately after implementing the clinical instruction intervention (the posttest) and two month late(follow-up test) the nurses were evaluated using the same tools (one & two) in the same manner and sequence as the pre-test, except nurses answers on the case scenarios evaluate posttest..

2.5 Statistical design

Data were presented using statistical package for social science (SPSS) version (18). Frequency and percentage, means, standard deviations a qui-square test and pared t test. Probability (*P*-value) less than 0.05 was considered significant.

III. Results

Concerning the demographic characteristics of the studied nurses Table 1 demonstrate that 68.4% of the study sample their age from 30 to less than 50 years old with Mean ± SD (35.85±4.76), and 89.5% was females. Regarding to the qualification level (65.8%) had nursing diploma, and (84.2%) of them were staff nurse. In relation to work area the table discovered that, 23.7% of the study sample is working in different medical words, also (28.9%) of them are working in CCU, while 31.6% of them in surgical words. In addition, (42.1%) of the study sample had experience from 10 to less than 15 years with mean score (12.56±4.32), and (71.1%) of them didn't attend a medication administration program before.

Table (1) Distributed of perception level of studied nurses towards dimensions of medication errors pre, post & two month later the instruction intervention (N=38**)**

variables		Pre		Post		Follow-up		Test			
		No	%	No	%	No	%	X^1	p	X^2	p
1-Types of medication errors	-Low (less than (65%)	27	71.1	0	0	2	5.3	33.4	0.001	31.8	<0.05
	-Moderate (65 - 85)	9	23.6	17	44.7	16	42.1				
	-High (85 - <)		5.3	21	55.3	20	52.6				
2-Factors causes medication errors - Miscommunication	-Low (less than (65%)	24	63.1	0	0	1	2.6	21.9	0.001	22.2	<0.05
	-Moderate (65 - 85)	9	23.6	11	29.9	14	36.8				
	-High (85 - <)	5	13.1	27	71.1	23	60.5				
- Personal	-Low (less than (65%)	30	78.9	2	5.3	1	2.6	31.7	0.001	29.5	<0.01
	-Moderate (65 - 85)	6	15.8	10	26.3	12	31.5				
	-High (85 - <)	2	5.3	26	68.4	25	65.8				
- Environmental	-Low (less than (65%)	26	68.4	2	5.3	4	10.5	28.6	0.001	30.2	<0.05
	-Moderate (65 - 85)	8	21.1	6	15.8	9	23.7				
	-High (85 - <)	4	10.5	30	78.9	25	65.8				
- Systemic	-Low (less than (65%)	29	76.3	1	2.6	0	0	40.3	0.001	36.1	<0.01
	-Moderate (65 - 85)	7	18.4	13	34.2	16	42.1				
	-High (85 - <)	2	5.3	24	63.1	22	57.9				

***X*^{1} 1 (pre/Post)** ***X*^{1} 2 (post /follow-up)**

Tables [1] show that highly statistical significant improvement on nurses' perception regarding all variables of medication administration errors (P 0.001). Before intervention the most level of nurses concerning types of medication errors was low (71.1%), then immediate intervention it was (55.3%) high and (52.6%) moderate perception. As the same line, the all items of factors causes medication errors; before intervention most of the study sample had low perception (63.1%, 78.9%, 68.4%, & 76.3%) respectively, then immediate after intervention the level of study sample perception improved, most of them have high perception(71.1%, 68.4%, 78.9% & 63.1%), also it was noted this improved at last two month after intervention.

Table (2): Distributed the perception level of studied nurses concerning reported to nurse manager pre, post and two month later the instruction intervention (N=38)

If medication errors occurs		Pre		Post		Follow-up		*test*			
		No	**%**	**No**	**%**	**No**	**%**	*X*^{1}	p	*X*^{2}	p
- Complete incidence report	- always	2	5.3	21	55.3	18	47.4				
	- sometimes	11	28.9	10	26.3	14	36.8				
	- never	25	65.8	6	15.7	6	15.8	19.9	0.001	22.3	<0.05
- Report verbally	- always	9	23.7	26	68.4	22	57.9				
	- sometimes	16	42.1	10	26.3	14	36.8				
	- never	13	34.2	2	5.3	2	5.3	40.3	0.001	33.6	<0.05
- Don' do anything	- always	22	57.9	3	7.9	5	13.1				
	- sometimes	15	39.4	12	31.5	11	28.9				
	- never	1	2.6	23	60.5	22	57.9	31.7	0.001	25.2	<0.05

***X*^{1} 1 (pre/Post)** ***X*^{1} 2 (post /follow-up)**

Table [2] illustrated that highly statistical significant improvement concerning the level of nurses' perception regarding report to nurse manager if a medication error occurs at different phases of instructional intervention. (p 0.001). There was 65.8% of the studied sample, never complete incidence report pre intervention, while (55.3%) post intervention and (47.4%) in follow-up of the intervention were always complete incidence report. It also showed that 42.1%) sometimes report verbally pre intervention, while (68.4% & 57.9&) in post and follow-up of instructional intervention respectively were always report verbally of medication error. The same table discovered that (57.9%) from the study sample always don't do anything if medication errors occur before intervention, but in post intervention and follow-up (60.5% & 57.9%) were never don't do anything.

Table (3): perception level of studied nurses concerning barriers to the reporting of the medication error pre, post & two month later the instruction intervention (N=38)

Barriers	Pre		Post		Follow-up	
	Agree %	Disagree %	Agree %	Disagree	Agree %	Disagree %

1- Fear from disciplinary action or even lose their job	(100)	(0.0)	(42.1)	(57.9)	(44.7)	(55.2)
2- Believes that the error is not serious to warrant reporting	(92.1)	(7.9)	(5.2)	(94.7)	(10.5)	(89.4)
3- Fear from peers	(84.2)	(15.7)	(18.4)	(81.5)	(21.0)	(78.9)
4- Fear from manager	(89.4)	(10.5)	(23.7)	(76.3)	(36.4)	(63.1)
5- Don't sure when should report the medication error	(86.8)	(13.1)	(10.5)	(84.2)	(26.3)	(73.7)
6- Don't know the exact definition of medication error	(94.7)	(5.2)	(0.0)	(100)	(0.0)	(100)
Total Mean ± S.D	8.73± 1.86		65.76± 2.04		60.05±1.99	
test	t_1 = 1.262 p =<0.001		t_2= 2.550 P= <0.05			

Table [3] discovered that there was statistical significant improvement level of nurses' perception regarding Barrier to the reporting of the medication error occurs at different phases of instructional intervention, p value (<0.001). Before intervention, all study sample (100%) was agree concerning barrier fear from lose their job, while (57.9% & 55.2) in post and follow-up respectively were disagree. It also explained that, the majority of them were agreeing concerning the other barriers (92.1%, 84.2%, 89.4%, 86.8%, & 94.7%) respectively before instructional intervention. but after immediate intervention and follow-up (100%) of studied sample were disagree that they don't know the exact definition of medication error.

Table (4): Mean scores of competent level of studied nurses' practice concerning medication administration rights pre, post & two month later implementing the educational program (N=38)

medication administration rights	**pre**	**post**	**follow-up**	**t-test & (P- value)**			
	Mean ± SD	**Mean ± SD**	**Mean ± SD**	**t_1**	**P_1**	**t_2**	**P_2**
1-Before medication has been administered	8.84±2.682	18.06±2.987	15.19±1.99	23.5	p<0.001	19.6	p<0.05
2-After medication has been administered	6.34±4.08	17.04±3.81	14.03±2.47	31.4	p<0.001	18.8	p<0.05

$t_{1=}$ pre/ post- test **$t_{2=}$** post/follow up test

A table 4 show that there was statistical significant improvement regarding nursing practice occurs at different instructional intervention at all items before and after medication has been administered p value (< 0.001) and p value(<0.05) respectively.

Table (5): Percentage distributed of studied nurses answers on the case scenarios as regards success indicators pre & post the clinical instruction intervention (N=38**)**

cases scenarios	Pre				Post			
	Agree		Disagree		Agree		Disagree	
	No	%	No	%	No	%	No	%
1- A patient misses his midday dose of oral ampicillin because he was in X-ray for 3h.	6	15.9	32	84.2	34	89.5	4	10.5
- Do you consider it a medication error	5	13.2	33	86.8	29	76.3	9	23.7
- Do you notify a physician	2	5.3	36	94.7	35	92.1	3	7.9
- Do you complete an incidence report								
2- Four patient on a busy surgical unit receive their 6 PM dose of IV antibiotics 4h.late								
- Do you consider it a medication error	14	36.8	24	63.1	28	73.7	10	26.3
- Do you notify a physician	8	21.1	30	78.9	24	63.1	14	36.8
- Do you complete an incidence report	15	39.5	23	60.5	32	84.2	6	15.9
3- A patient receiving TPN feeding via an infusion pump is given 200ml/ h instead of the correct rate of 125mL/h for the first 3 h of the 24-h infusion. The pump was reset to the correct rate after the change of shift at 7 AM when the oncoming nurse realized that the pump was set at the incorrect rate.								

- Do you consider it a medication error	9	23.7	29	76.3	30	78.9	8	21.1
- Do you notify a physician	7	18.4	31	81.5	22	57.8	16	42.1
- Do you complete an incidence report	11	28.9	27	71.1	28	73.7	10	16.3
4- A physician orders oxycodone hydrochloride and acetaminophen (Percocet) 1-2 tabs for post-operation pain every 4h. At 4AM the patient complains of pain, requests 1 pill and is medicated. At 6:30 the patient requests a second pain pill. The nurse administers the pill.								
- Do you consider it a medication error	5	13.2	33	86.8	23	60.5	15	39.5
- Do you notify a physician	4	10.5	34	89.4	27	71.1	11	28.9
- Do you complete an incidence report	17	44.7	21	55.3	30	81.5	8	21.1

Table [5]: presented that, in the first scenario, (84.2%, 86.8%& 94.7%) of the study sample respectively answered don't agree consider it a medication error, notify a physician and write complete an incidence report before intervention, while (89.5%, 76.3% & 92.1%) respectively their answers were agree post intervention. In the second scenario before intervention, (63.1%, 60.5 &78.9%) of the studied sample said don't consider it a medication error, don't complete an incidence report, and disagree they will not notify a physician, then immediate intervention (73.7%), 63.1% & 84.2%) respectively were agreeing. In the third scenario before intervention, (76.3%&71.1 &76.3%&71.1) of them answered with disagree consider it a medication error, don't write complete an incidence report and notify a physician, then immediate intervention the percentage of rejection decreased to (21.1% , 42.1% & 16.3%) respectively. In the fourth scenario (86.8%, 89.4% & 55.3%) of them respectively were answers disagree regarding their consider it a medication error, notify a physician and write complete an incidence report pre intervention, then post intervention (60.5% 71.1% 81.5),of them answered by agreeing.

V. Discussion

In health care delivery system, the outcomes of any errors result in serious patient outcomes. Medication errors are among the most common health threatening mistakes that affect patient care, it is a global problem which increases morbidity &mortality rates, adverse drug events, length of hospital stay, and re-admissions to hospital. By virtue of their direct patient-care activities and administration of medication to patients, nurses play a pillar of the tent in risk reduction of medication errors, and perhaps they are in excellent position than any other health team providers to detect and report medication errors. Thus, they are the last line of defense to safeguard against errors as administration is the last part of the medication process. **[18& 19]** This infers that nurses' perception about the medication and the ability to comprehend and follow the guidelines for medication administration considered a cornerstone for medication administration safety. Nevertheless, most of the previous studies was done in this field have been limited to the assessment of nurse knowledge and there are insufficient studies in providing educational programs that increase their knowledge and improve practical performance. So the aim of this study was to evaluate the use of clinical instruction intervention to improve nurses' perception and practice toward medication errors.

Concerning to the level of nurses perception towards variables of medication errors at different time points of instructional intervention, the present study discovered that most of nurses had low level of perception regarding types of medication errors pre intervention especially in omission error. This result is consistent with the same study result done by **[18].** In addition, the current study discovered that also that most of nurses had low level of perception regarding factors cause's medication errors. However, it is noted that the factor of miscommunication causes medication error got the best response as more than one-third of the study sample was between high and moderate perception before intervention then, the majority of their perception improve to high and moderate after intervention and two month later. In the same context, the current findings revealed statistical significant improvement of nurses' perceptions in all variables of medication errors at different time points of instructional intervention. This improvement may be due to the positive effect of the clinical instructions in increase nurses' knowledge and change their belief that they have a real role in the safety of the patient and not only the tool of implemented physician's orders.This infers that the clinical instructions for medication errors contribute to improve nurses' perception about medication errors which leading to administration safety. This is confirmed by the results of recent study done by **[20 &18]** they implemented an educational guideline of medication errors to improve nurses' knowledge regarding patient safety Also **[11]** in his study stressed that the importance of training the newly graduated nurses towards the causes of medication errors. Also, the findings of the present study also agreed with the recommendations of many research that confirmed that improving pharmacological nurses' knowledge that contribute to the detect medication errors as in a studies done by **[20 & 1].**The current findings revealed that statistical significant improvement in the perception of nurses concerning reported ways to nurse manager if a medication error occurs at immediate and two month later of clinical instruction intervention. This is confirmed by before intervention more than two third

of the nurses never write complete incidence report and more than half of them always don't do anything, but post intervention noted that most of them always to write complete incidence report, report verbally and never don't do anything. This remarkable improvement may be due to the impact of clinical instruction intervention to improve the perception of nurses to identify the drug error and the responsibility of not reporting it. This is in line **with [2]** who stressed that increasing nurses' knowledge about dimensions of drug errors improving their quality of performance to administer the medication safely through accurate reporting of medication errors which linked to early detect and prevent and medication errors complications. In another hand, many studies have confirmed that the importance used evidence based nursing education in the clinical area to effectively and improve safely care for patient. **[21&22]**

Regarding the perception level of nurses concerning barriers to the reporting of the medication error, the present finding reveals that there was highly statistical significant improvement in the perception level of nurses immediately & two month later the program intervention. Also, the finding discovered that all study sample agrees that the fear from disciplinary action or even lose their job is barriers to the reporting of the medication error, Even after the intervention, there was slightly improvement, reflecting nurses lack of confidence that the incidence report is used as a document and a tool of punishment so they resort sometimes to a verbal report so they don't feel guilty. In Egypt, the absence of a clear administrative system in dealing with drug errors and identify the responsible for the error, which helps to increase the negative perception of nurses towards non-reporting. This analysis confirmed with **[23]** who recommended by in her study the hospitals should established a policy and system regarding the medication administration and ensure each nurse clearly acquainted with this system. Also this finding agree with result of study was done by **[24]** who revealed that 95% of the medication errors are not reported because staff fear punishment.

In relation to nurses don't know the exact definition of medication error; it comes in the second most effective barrier to the reporting of the medication error before intervention. This is probably due to the lack of educational programs that improve nurses' knowledge about drug errors. This possibility is supported by the 71.1% of the present sample did not receive educational programs in relation to medication errors. This finding matches with the same result of studies done by **[25& 7]**

In the same context, it was noted that a marked significant change in the level of nursing perception before and after clinical instruction intervention to barrier related to nurse believes that the error is not serious to warrant reporting. This is linked to the previous finding, as improved the nurses perception of drug error definition has contributed to the improve believes that the error should be reporting In this respect, several studies **[26,19 & 1]** like used a similar instrument to investigate nurses perceptions of not reporting medication errors and supported this finding but with different ranking.

Regarding effect of the clinical instruction intervention on the level of nurses' practice concerning medication administration rights indicate that was a highly statistical significant improvement at total mean scores of competent level of the current sample study pre and after clinical instruction at different phases of the intervention. This finding was in correspondence with similar recent study done in Egypt by **[27]** who examines (the impact of nursing intervention regarding medications errors on the level of Psychiatric nurses' practice) reported that there was a statistical significant differences pre and posttest at all tested items nurses practice. This finding may be is a reflection of the lack of information that is likely not to be studied at the pre-graduate level and also there is no training program dedicated to improving the practical performance of nurses towards drug errors, which emphasizes the importance of clinical programs or instructions in improving the practical performance of nurses, this confirmed with **[28 & 23]**. It is worth mentioning that there is a lack of studies that assess the safety practical of nurses during the medication administration. On the other hand, there are studies that have another view that the increase in the level of knowledge of nurses enough to improve their practical performance. **[18** As for indicators of success, the present study confirms that there is a positive statistical indicator which observed from the positive deviation in the study sample opinion toward medication error. When the nurses asked about omission error (first scenario), wrong time error (second scenario) and wrong rate (third scenario) majority opinions before the intervention said that it was not medication errors and accordingly they not notify the doctor or didn't write the incident report. After the clinical instruction intervention was the majority of their opinions unanimously that it medication errors and then said that they will notify the doctor and write an incident report. The finding was different for the fourth scenario (wrong dose) the improvement was not as expected as, whereas two thirds of the sample retained their opinion that it was not a medication errors. Perhaps this result in the fourth scenario because the Egyptian nature is dominated the psychological side more than the professional side especially in the field of health. In general the pre intervention finding in our study was similar to the results of a previous Master Thesis done by **[29]** used as the same tool.

This improving in the study sample opinions is an indicator of the success and positive effect of the clinical instructions, because this part assesses the critical thinking of nurses and evaluates their ability to integrate the information in the clinical instructions.In this context, many researchers interested in nursing education emphasized that evidence-based nursing education is the best way to provide a qualified and professional nurse because it improving their critical thinking and practical performance. [**21]**

IV. Conclusion

Implementation of clinical instruction intervention of medication errors was effective in improves levelof nurses' perception as well as practice toward medication errors

VI. Recommendations

1. Design and established an integrated educational unit on medication errors in the curriculum of nursing student
2. Clarify a proper mechanism and administrative system in the way to deal with the medication errors resulting from the health team
3. Clarify a proper mechanism and administrative system in the way to deal with the medication errors resulting from the health team

VII. Limitation

1. Not done correlation between the current results of the study and the certain characteristics of the sample, such as the work area, work position, etc., which may affect the level of studied nurses' perception toward medication errors.
2. 2-Nurses are busy most of the time which leads to taking a long time to gather data
3. 3-Some nurses fears that the research data will be taken as a tool for their assessment of their superiors in the work, although researchers confirmed the confidentiality of the information and promised to use it only for the purpose of research

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