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A Study to Assess the Existing Practice and Factors Related To Medication Administration among Staff Nurses in Different Medical- Surgical Units of a Selected Hospital, West Bengal

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ABSTRACT

Medication administration is an important clinical procedure and the chief responsibility of the staff nurses. A descriptive survey was conducted to assess the existing practice and to find out the factors related to medication administration among the staff nurses of a selected hospital, West Bengal. Convenient sampling technique was used to select 120 nursing staffs from the selected hospital. A structured interview schedule was developed to collect the socio demographic data and observation checklist was developed to assess the existing practice of medication administration. Structured interview schedule was also developed to identify the factors related to medication administration. The findings of the study revealed that the scientific principles are followed by 45% staff nurses in case of oral medication, 33.33% staff nurses in case of IV medication, 85.45% staff nurses in case of IM medication, 88% staff nurses in case of eye drop instillation respectively. The findings also revealed that the staff nurses practice is very poor in unit preparation & patient preparation area. The findings showed that there is a significant association with age, work setting and existing practice of oral medication administration at 0.05 levels of significance. There is also significant association between age, job training and IV medication administration at 0.05 levels of significance. The study result also showed a significant association between age and existing practice of IM medication administration too. The study concluded that as the staffs nurses are poorly adhere to the medication administration procedure, development of different policy and procedure with ongoing education and monitoring of the safe medication practice is recommended.

Keywords: Medication administration, Practice, Staff nurses, Factors.

INTRODUCTION

Medication administration is an important clinical procedure. Nursing Interventions Classification [1] (NIC) has defined the medication administration process as preparing, giving and evaluating the effectiveness of prescription and non-prescription drugs. There are different routes of medication administration. These are oral, sublingual, rectal, topical, and parenteral – Intravenous, intramuscular, subcutaneous, instillation, inhalation and intranasal etc.

The American Society of Hospital pharmacists have defined the medication error as the dose of the medicine deviates from the physician's order or from the hospital standard or policy. [2] Medication error is preventable. Humans are error prone. [2] Doing error is part of the human nature, but it is necessary to find out the ways to face and limit the medication errors. [3] An observational study was conducted by Barker et al [4] in 36 heath care facilities (accredited, non-accredited and skilled nursing health care facilities) which suggests a 19% error rate during the

medication administration phase, and among that 7% of the errors have the potential to cause harm. The nurses who are administering drug to the patient need knowledge regarding medicine preparation, adverse effect of the medication and also the physiological factors that may affect the medicine actions. [4] The communication among the clinicians about medication administration details are important components of the medication administration procedure. [5,6] Also, nurses' clinical experience is considered to play an important role for a successful medication administration. A study revealed that the main cause of the medication administration errors were lack of knowledge regarding drug dose calculation, lack of competency, poor knowledge regarding hospital protocol, distractions. [7] A study conducted by Leap et al. [8] in the year of 1995 on the common types of medication errors occurring in hospitals revealed that 39%, 38%, 12% and 11% of medication errors occur at the prescription, administration, transcription and verification, and dispensing phases respectively and identified dosing error as the most common error.

Increased workload was observed in a series of studies, conducted in pediatric and other hospital settings. [6,9,10] Nurses are expected to fulfill many responsibilities and duties during their working shift, thus the possibility of the medication errors' occurrence is increasing particularly when the nursing staff shortage is dominant. In that case they are unable to maintain the 10 rights of medication administration process. Working conditions (workload and lack of work experience) influence the occurrence of medical near-miss errors related to intravenous medication in a study which was conducted at a hospital in Japan. [11]

Nurse ensures for the best nursing care delivery to every patient and tries to avoid any type of harm. Undoubtedly, the medication errors put patients' health in unnecessary risk. This literature review indicates that there are plenty of factors or situations, which "permit" medication errors to happen, derived from the hospital staff or the health system. In the end, the goal of medication errors elimination is difficult to be achieved; instead of the reduction of their rate can be accomplished by giving the required attention to the risk factors of medication administration errors and applying the suitable preventive measures.

The administration of a medication to a patient is one of the most valued nursing practices. Performing it safely is the most crucial professional responsibilities of the nurses. [12] Medication treatment is a fundamental element in the treatment of illnesses. [13] It is a multi-disciplined practice which requires synchronized efforts and participation of healthcare professionals to carefully distribute medicine to patients without causing any injury. [14] Studies have reported that medication treatment is encompasses 40% of nurse's daily duties. [15]

According to a WHO report [16] medication errors only may cost around a third of the expenditure of the developing world. There are too many malpractices regarding medication administration. These malpractices occurred due to different reasons like negligence too much work load, staff crisis, lack of knowledge, lack of experience etc. This may lead to medication administration error. The identification of these errors is important, because in addition to being costly, they have negative well known consequences for the safety of patients.

In the hospital nurses are primarily responsible for providing the medicine to the patient. Administering medication to the patient is a high risk activity. From the above mentioned studies we can say there are various malpractices regarding medication administration among the staff nurses. Safe administration of medicine to the patient is very important role of the nurses. Medication administration to the patient according to the defined procedure and policy assures the patient safety. Also the malpractice regarding medication administration among the staff nurses is

preventable. So, as a health care team member the investigator finds the need to assess the existing practice and factors related to malpractice during medication administration.

METHODOLOGY

Non experimental descriptive survey research design was adopted to collect data from the staff nurses regarding medication administration practice and factors related to medication administration**.** Following institutional ethics committee approval, total 120 registered staff nurses were recruited from different medical surgical units of the selected government hospital, through convenient sampling technique. Study procedures were explained & consent was taken from the subjects before data collection. Anonymity and confidentiality was maintained. Permission was taken from the hospital authority. To assess the existing medication administration practice observation check list were prepared for oral medication, IV, IM & eye drop instillation. The observation checklist have broad areas like assessment of the patient, patient preparation, medicine preparation etc. This tool consists of 4 parts and each part is to assess the different medication administration process. One mark was planned to be given for Yes and Zero for no. To identify factors related to medication administration structured interview schedule was prepared. Questionnaire was prepared under the 4 broad headings like personal factors, professional factors, management factors, work related factors related to medication administration. It consists of 25 questions for identification of different factors. The data of the nursing personnel regarding the factors ranged from 1 to 5,that is 5 for strongly agree,4 for agree,3 for undecided,2 for disagree,1 for strongly disagree. The responses were analyzed and presented in terms of frequency & percentage. Tool was validated by 5 experts from Medical-Surgical Nursing speciality field, 1 expert was doctor and 1 expert was statistician. It was pretested before application. For observation checklist inter rater reliability was 1-0.954 and for interview schedule of factors related to medication administration Cronbach's alpha was 0.85. These are considered to be within acceptable limit. Pilot study was conducted before conducting the main study and no problem was found and study was found to be feasible. Data was collected in February 2019 and it was planned to include both descriptive and inferential statistics. Master data sheet was prepared according to the response and the performance of the participants. Demographic characteristics computed in frequency and percentage. Area wise mean percentage was calculated for different medication practice score of nursing personnel. Factors related to existing medication administration practice calculated in percentage. The chi square values were computed to find out the association between existing practice and socio demographic variables.

RESULTS

Table -1: **Demographic characteristics.** **N=120**

Sl. No.	Characteristics	Frequency	Percentage
1	**Age**		
	<30 years	16	13.33%
	30-40 years	76	63.33%
	>40 years	28	23.33%
2	**Professional qualification**		
	G.N.M. Nursing	98	81.67%
	B.Sc. Nursing	3	2.50%
	Post Basic B.Sc. Nursing	19	15.83%
3	**Work experience**		
	<5Years	22	18.33%
	5-10 years	37	30.83%
	>10 Years	61	50.83%
4	**Work setting**		
	Surgery ward	40	33.33%
	Medical ward	80	66.67%
5	**Job training**		
	yes	82	68.33%
	No	38	31.67%

The data presented in table 1 shows that more than half (63.33%) of staff nurses are in the age group of 30-40 years, majority (82.67%) of staff nurses are with G.N.M. qualification. About half (50.83%) of staff nurses have more than ten years work experience &66.67% of the staff nurses are working in the medical ward and remaining (33.33%) are working in the surgical unit.

68.33% of the staff nurses have job training regarding medication administration procedure.

Table 2: Frequency and percentage distribution of staff nurses related to different medication administration N=120

Medication Administration	Frequency	Percentage
Oral medication (n_1)	78	65%
IV medication (n_2)	77	64.17%
IM medication (n_3)	59	49.17%
Eye drop instillation (n_4)	32	26.67%

Note: It is a multi-response table so "n" is not mutually exclusive in nature.

Table-2 depicts that out of 120 staff nurses, oral medication administration practice are observed from 78 staffs, IV medication administration observed from 77 staffs, IM medication administration observed from 59 staffs & eye drop instillation procedure is observed from 32 staffs.

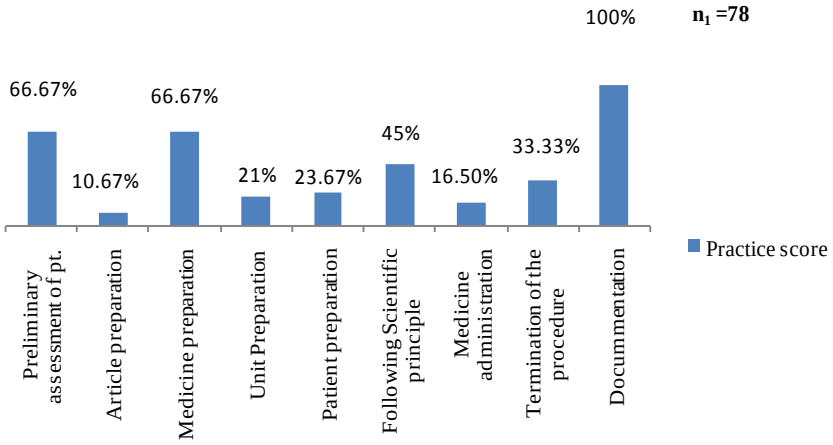

Figure-1: Bar diagram showing the area wise mean percentage distribution of oral medication practice score of nursing personnel.

The figure-1 depicted that the highest score (100%) noticed in the documentation area. Very poor practice score is observed in the article preparation area (10.67%), medication preparation (16.50%), unit preparation (21%) and patient preparation areas (23.67%) respectively. Scientific principle is only followed by 45% of staff nurses during oral medication administration practice.

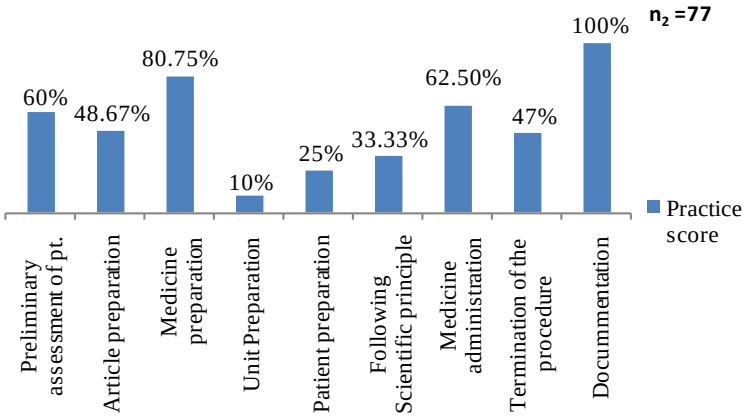

Figure-2: Bar diagram showing the area wise mean percentage distribution of IV medication practice score of nursing personnel.

In figure-2 bar diagram shows that highest score (100%) noticed in the documentation area and the lowest score (10%) noticed in the unit preparation area among the nursing personnel. Patient preparation practice score is not satisfactory (25%) & only 33.33% of nursing personnel followed scientific principles during IV medication administration.

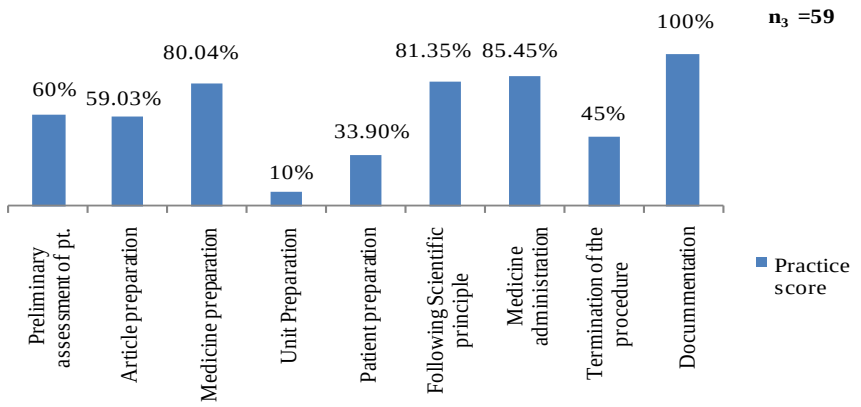

Figure-3: Bar diagram showing the area wise mean percentage distribution of IM medication practice score of nursing personnel.

In figure-3 bar diagram shows the highest score (100.00%) noticed in the documentation area and lowest score (10%) noticed in the unit preparation area. Patient preparation for IM injection is not satisfactory i.e. only 33.90%.

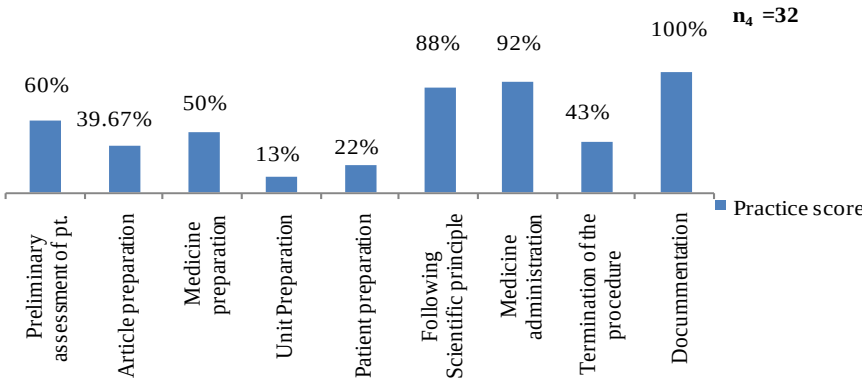

Figure-4: Bar diagram showing the area wise mean percentage distribution of eye drop instillation practice score of nursing personnel.

In figure-4 bar diagram shows the highest score (100%) noticed in the documentation area and lowest score (13.00%) in the unit preparation area. Practice score in the unit preparation area and patient preparation area is also not satisfactory.

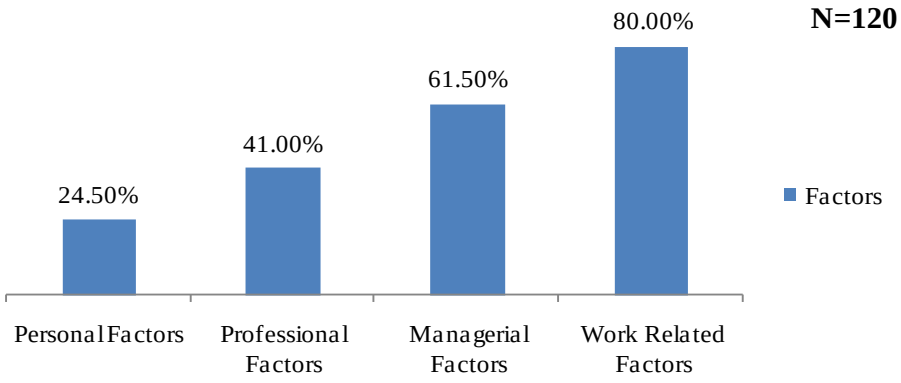

Figure-5: Bar diagram showing the area wise mean percentage of the factors related to medication administration practice according to response by nursing personnel.

In figure-5 bar diagram shows that according to response by nursing personnel the factors related to medication administration are highest(80%) in the work related area and lowest (24.50%) in personal factors.

Table-3: The percentage distribution of responses of nurses regarding factors related to existing medication administration practice. N=120

Sl. No.	Statement	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
1	**Personal Factors**					
a	Personal conflicts	66.66	33.33	0	0	0
b	Stress and pressure	90	10	0	0	0
c	Anxiety	79.17	20.83	0	0	0
d	Lack of sleep	75.83	24.17	0	0	0
e	Physical discomfort	60	21.67	0	18.33	0
f	Meal skipping	62.5	25	0	12.5	0
2	**Professional factors**					
a	Lack of knowledge	0	65	0	35	0
b	Drug dose calculation	0	60	0	40	0
c	Poor interpretation of term	100	0	0	0	0
d	Lack of knowledge in operating device	0	55	0	45	0
e	Lack of training	0	100	0	0	0
f	Confusion between two medicines	80	20	0	0	0
g	Lack of hospital experience	50	50	0	0	0
h	Documentation skill	100	0	0	0	0
i	Lack of Positive attitude	60	40	0	0	0
j	Lack of Confidence	40	50	0	10	0
3	**Managerial factors**					
a	Low Nurse patient ratio	0	0	0	0	100
b	Lack of nursing personnel	0	0	0	0	100
c	Lack of communication	0	82.5	0	17.5	0
d	Lack of training regarding medication safety	68.33	23.33	0	0	0
e	Heavy Workload	0	0	0	16.67	83.33
4	**Work related factors**					
a	Poorly lighted medication area	0	33.33	0	66.67	0
b	Crowded and noisy environment	0	0	0	66.67	33.33
c	Unavailability of equipment	0	0	0	83.33	16.67
d	Poor handwriting of physicians	0	0	0	87.5	12.5
Overall percentage		**37.29**	**28.56**	**0**	**19.56**	**13.83**

Data presented in table-3 suggests that all staff nurses (100%) responded on all statements. All the nursing personnel (100%) are strongly agreed with the statement related to managerial factors e.g. nurse patient ratio and the lack of nursing personnel. Majority (83.33%) are strongly agreed with workload.

Table-4: Association between sample characteristics and existing practice score of oral medication administration. n_1= 78

Sl. No.	Variables	Below Median	At and above median	Chi- square	P value	Inference
1	**Age(Years)**					
	<30yrs	2	10	6.629	**0.036**	**Significant**
	30-40yrs	23	20			
	>40 yrs	14	9			
2	**Educational Qualification**					
	GNM	32	33	0.749	0.687	Not significant
	B.SC.	1	2			
	P.B.B.SC	6	4			
3	**Work experience (years)**					
	<5yrs	4	10	3.138	0.208	Not significant
	5-10yrs	13	11			
	>10yrs	22	18			
4	**Work setting**					
	Medical	30	21	4.588	**0.032**	**Significant**
	Surgical	9	18			
5	**Job training regarding medication administration**					
	Yes	27	28	0.061	0.804	Not significant
	No	12	11			

Data presented in the table-4 illustrates that there is a significant association between the age and work setting with practice score of oral medication administration.

Table-5: Association between sample characteristics and existing practice score of IV medication administration. n_2 =77

Sl. No.	Variables	Below Median	At and above median	Chi- square	P value	Inference
1	**Age(Years)**					
	<30yrs	1	5	0.226	0.893	Not Significant
	30-40yrs	14	41			
	>40 yrs.	4	12			
2	**Educational Qualification**					
	GNM	15	45	0.869	0.647	Not Significant
	B.SC.	1	1			
	P.B.B.SC	3	12			
3	**Work experience** (years)					
	<5yrs	1	8	1.659	0.436	Not Significant
	5-10yrs	6	22			
	>10yrs	12	28			
4	**Work setting**					
	Medical	15	41	0.492	0.483	Not Significant
	Surgical	4	17			
5	**Job training regarding medication administration**					
	Yes	9	44	5.416	0.019	**Significant**
	No	10	14			

Data presented in the table-5 illustrates that there is a significant association between the job training and the existing practice score of oral medication administration at 0.05 levels.

Table-6: Association between sample characteristics and existing practice score of IM medication administration. n_3=59

Sl. No.	Variables	Below Median	At and above median	Chi- square	P value	Inference
1	**Age(Years)**					
	<30yrs	1	7	6.963	**0.031**	**Significant**
	30-40yrs	9	34			
	>40 yrs	5	3			
2	**Educational Qualification**					
	GNM	10	31	1.001	0.605	Not Significant
	B.SC.	1	1			
	P.B.B.SC	4	9			
3	**Work experience (years)**					
	<5yrs	2	9	0.977	0.613	Not Significant
	5-10yrs	4	15			
	>10yrs	9	20			
4	**Work setting**					
	Medical	10	27	0.134	0.714	Not Significant
	Surgical	5	17			
5	**Job training regarding medication administration**					
	Yes	8	35	3.89	**0.048**	**Significant**
	No	7	9			

Data presented in the table-6 illustrates that there is a significant association between the age & job training and the existing practice score of IM medication administration at 0.05 levels.

Table-7: Association between sample characteristics and existing practice score of eye drop instillation. n_4=32

Sl. No.	Variables	Below Median	At and above median	Chi -square	P value	Inference
1	**Age(Years)**					
	<30yrs	1	4	1.951	0.377	Not Significant
	30-40yrs	2	16			
	>40 yrs	3	6			
2	**Educational Qualification**					
	GNM	4	23	1.975	0.372	Not Significant
	B.SC.	1	1			
	P.B.B.SC	1	2			
3	**Work experience (years)**					
	<5yrs	2	6	0.3103	0.856	Not Significant
	5-10yrs	1	6			
	>10yrs	3	14			
4	**Work setting**					
	Medical	5	16	1.026	0.3109	Not Significant
	Surgical	1	10			
5	**Job training regarding medication administration**					
	Yes	3	16	0.269	0.604	Not Significant
	No	3	10			

Data presented in the table-7 illustrate that there is no significant association between the age, educational qualification, work experience, work setting, job training & drop instillation practice score at 0.05 levels.

DISCUSSION

It was observed from the findings of the present study that 100% nurses identified the patient, 100% nurses checked medicine once, no nurse explained the purpose of giving the medicine to the patient, 100% nurses checked the expiry date of medicine and no nursing staff stayed with patient till swallowing of the drug. This is supported by the study which is conducted by L Rajbanshi [17] that only 5.76% nurses asked patients about the history of allergy, 86.53% asked patients their identification, 55.76% compared the label of drug while withdrawing from the stock, 38.46% while pouring and 40.38% before replacing the drug on stock, 13.46% nurses explained the purpose of the medication, 94.23% checked the expiry date of the drug.

The present study revealed that no nursing staff stayed with patient till the swallowing of the drug. L Rajbanshi [17] study showed little better result that 46.15% staff nurses stayed with the patient until swallowing the medication. The present study revealed that no nurses have taken the history of allergy before administering the medication. This may be explained that medication administration procedures which were observed for this study was as a regular dose not for 1st dose of medicine.

It was observed from the findings of the present study that 100 % nurses checked the medication instructions before administration,100% always checked the expiry date before administration less number of nurses practiced sterility during administering intra muscular and intravenous medicine. This study is supported by the study of Meenakshi Mahish [18] et al which showed that among the nurses 97% always checked the patients file for medication detail before administration,78.4% always checked the expiry date before administering the drug, 83.9% always practiced sterile condition for administering intramuscular and intravenous injections.

The present study shows that 100% staff nurses were agreed with lack of nursing personnel in the ward, majority (83.33%) staff nurses were agreed with workload, 33.33% staff nurses were agreed with the noisy environment, 12.5% were agreed with the poor handwriting of the doctors. This study is supported by the study of Mohammad Al-Shara, [19] which showed heavy workload (41.4%) affect medication administration.

Present study also showed that there is a significant association between the existing practice score and age & job training regarding IV & IM medication administration. There is no significant association between existing practice of medication administration and other socio demographic variables. This finding is supported by the study Veronika K. Kimeu [20] which showed there is a significant association with the existing practice of medication administration and age & job training regarding medication administration and there was no significant association between medication administration practice and other socio demographic characteristics. It can be mentioned here that IV and IM injection required some special technique and age & job training increases the injections skill and thus overall practice score increases.

Nursing implications

The nursing education should consist of knowledge regarding proper medication administration. The students learning experience should emphasize on prevention of medication administration error. Nursing student should be taught about different medication administration process for the quality care. Ongoing in service education program for nursing personnel regarding medication administration should be arranged. Nursing administration has a

responsibility to continue in-service education programs for staff nurses for improving knowledge regarding medication administration process and different hazards of medication administration error.

The administrator should encourage the staff nurses to carry out research to find out the knowledge regarding medication administration and existing practice so the necessary action can be taken to improve the patient care. More research could be conducted to develop better methods and techniques in teaching medication administration and better practice of nursing care.

This study covered an important nursing care aspect. It also included potential factors of medication administration so that ways to improve the medication administration practice is possible through the study findings**.** This study has limitation too those are: Firstly small sample size, secondly observation of procedure was done for onetime only and lastly no effort was put to solve the problem after identifying it.

On the basis of findings, the following recommendations are offered for the future research:

A comparative study can be conducted to find out the difference between the medication administration practice between private and government setting.

An experimental study can be done to assess the effectiveness of planned teaching programme.

CONCLUSION

This study concludes that nurses are poorly adhering to procedural protocol of the medication administration, which may increase the risk of medication administration error by the nurse and compromise the patient safety. The nurses suggested that too much workload and lack of staff nurse are the reasons for the poor existing practice. Thus for the prevention of the occurrence of medication administration error organization need to develop medication administration protocol along with continuous supervision to the nursing staffs and by conducting different in–service education programme for the staff nurses and also increasing the staff strength.

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