Research Article

Investigate the Causes of Medication Errors from Perspective of Employed Nurses in Ayatollah Rouhani Hospital at Babol

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ABSTRACT

Background and Objectives: Medication errors often are unavoidable and is considered as serious threat to the health and safety of patients. The present study aimed determines the factors affecting the incidence of medication errors from perspective of employed nursesat different sections of Ayatollah Rouhanihospital of Babol.

Materials and Methods: In this cross - sectional study, 376 nurses working in the hospital Ayatollah Rouhani selected in 2015 as a simple and their view on the role of these factors in medication errors were assessed using a questionnaire. Data was analyzed using t-test, ANOVA Pearson correlation coefficient and SPSS version 21.

Conclusion: Nurses working conditions including the workload and number of patients, retraining classes in the field of medicine, electronic medical records, efficient management of pharmaceutical companies in the packaging of medicines and boarding for access to pharmacy agents could be effective in reducing the incidence of medication errors.

Keywords: Medication Errors, Nurses, Cause

INTRODUCTION:

Drugs are materials which improve patients ifapplied in accurate and correct procedure. (1) By law, physician is responsible to prescribe medicine and pharmacists is allowed to prepare and provide drug, then nurse give medication to the patient, (2) and medication is one of the nursing basic need to techniques and skills, (3) and almost involved 40 percent of work time of the nursing. (4) In a study in America it was shown that 30% of nurses have committed at least one medication errors. (5)Medical errors and patient safety are important issue in the world, because these errors may prolong hospital stay and increase costs for patients. (6) Many medication errors can be fatal, so its development should be reduced as much as possible. (7) High incidence of medication errors and potential risks to patients used as an indicator to determine the level of patient safety in hospitals. (8) Medication errors lead to a reduction in the quality of care. (9)Distraction, heavy workload and poor communication between partners lead to errors at this stage. (10) Bijaniet al noted the most important causes of medication errors including work-related fatigue, lack of personnel and working long hours of nurses. (11) While the results Leapeet al showed

that 15% of errors are due to lack of pharmacological information. (12) Allen & Barker (1990) suggest that the study of medication errors should be done to increase standards in the fields of medical and safety of drug distribution and evaluation in different ways to prevent errors. They noted the most important causes of medication errors including lack of knowledge, poor working conditions, medicines with name similar, rare miscalculations and intentional errors. (13) Indiscretion in Iran is the most common cause of medical error. (14)On this basis, and given that medication errors as an indicator to determine the level of patient safety in hospitals is used, we decided to study the causes and factors affecting medication errors from the perspective of nurses in order to offer suitable solutions to reduce medication errors and increase patient safety and precise control.

MATERIALS AND METHODS

Present research is descriptive - analytic. Causes and underlying factors of errors were measured by questionnaire. Sampling was done randomly. Statistical population includes the nurses in all sectors of Ayatollah Rouhani hospital.180 people were selected as ample volume given error level

of 5% and accuracy of 0.05, but researcher's access to more 376 samples were collected. In this study, the questions of questionnaire was designed through reading books and articles, protocols and standards. Validity of the questionnaire was done using content validity and face validity and was examined by a group of specialists and nurse faculty members, managers, supervisors and specialists in various medical disciplines in terms of clarity, simplicity and relevance and content of the questions and after the conclusion of the questionnaire was applied.The reliability of questionnaire was measured thorough internal consistency with Cronbach's alpha. This means that 30 nurses were given a questionnaire and Cronbach's alpha coefficient was calculated to be 0.715. Data analysis was done using t-test, Pearson correlation coefficient, ANOVA, and 21spss software.In this study, two demographics and "causes of medication error" questionnaires is used. The first questionnaire contained questions about demographic characteristics of subjects and includes information on age, marital status, education, work experience, type of employment and shift work.The second questionnaire containing questions about the causes of medical errors means of communication (6 questions), factors relating to the pharmaceutical packaging (6 questions), transcription factors (two questions), factors related to working conditions (14 questions) and factors related to pharmacy (4 items) was filled by unit. In this section, subjects showed their opinions with any of the items using Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree.

FINDINGS:

In examining the factors affecting the incidence of medication errors in nursing perspective (of communication) use of acronyms used by physicians in medication orders of the utmost importance (53.2%) and incomplete medication orders doctors have the lowest priority (42.9%). Safety factors relating to the packaging, non-Persian language other than English or packing of medicines (55.1%), distorting the most important and packaging (45.2%) were the least important.In the context transcription factors, not the correct medication orders the case to the illegible (50%) are less important medicinal mistakes illegible (52.9%) were more important. In the context factors relating to working conditions, inadequate number of nurses (59.9%) and lack of awareness of the utmost importance nurse known allergic reaction (46.5%) were the least important.In the context factors relating to pharmacies, not correct labels on drugs by pharmacies (38.6%) has the lowest importance and availability of 24-hour care and pharmaceutical experts (48.7%) were of the utmost importance.In this study, the correlation coefficient between factors affecting the incidence of medication errors and age and work experience did not show a statistically significant relationship.Also, there was a significant correlation between gender and factors related to medication errors, as women compared with men transcription factors ($p < 0.001$), working conditions ($p < 0.001$) and pharmacies ($p < 0.001$) were more important. Education and marital status were not significant factors related to medication error. There was significant correlation between shift factors of medication errors, compared with the morning shift nurses as fixed factors related to the working conditions described above. ($P < 0.001$). There was significant difference between employment status and relationship factors, as compared to the non-official official communication factors were considered more important. ($p = 0.002$). There was significant correlation between training classes and medication errors, so that those who did not teach the important relationship factors, ($p < 0.001$) and those who passed the training class Packaging factors ($p = 0.03$) were more important.There is significant correlation between situation and comunicationfactors ($p = 0.03$) and transcription factors ($p = 0.03$), supervisors emphasize on communication factors and nurses emphasizes on transcription factors. Finally, between areas of medication errors (communication, packaging, transcription, working conditions and Pharmacy) and the type of communication, there is a significant correlation ($p < 0.001$) as part of Hematology relational, packing and working conditions were more important, in If the heart, coats lab, angiography and CCU were considered more important transcription factors and pharmacies.

Research findings are listed in Table 1 with p in terms of the areas of influence of medication errors is given.

Table 1-research findings with the p in terms of the areas of influence of medication errors

Employment situation		Situation			Training class		Marital status		Education		Gender		Age			Frequency and percent of frequency	Area
Contract	Formal	Head of nurses	Nurse	Supervisor	No	Yes	Married	Singles	MA	BA	Women	Men	40-50	30-40	20-30		
3.15±1.40	2.92±1.44	3.85±1.13	2.97±1.43	3.30±1.25	3.467±1.35	2.67±1.38	3.05±1.45	2.90±1.42	3.23±1.29	2.97±1.45	1.48±2.98	1.31±3.11	3.18±1.37	2.94±1.42	3.10±1.55	164 43.6	1. Orders Medicine is not legible.
P=0.12		P=0.02			P=0.00		P=0.40		P=0.15		P=0.41		P=0.36				
2.90±1.25	2.99±1.36	3.40±.94	2.89±1.33	4.00±.00	3.06±1.28	2.86±1.34	2.98±1.36	3.02±1.21	2.93±1.18	2.96±1.35	1.39±2.98	1.15±2.90	2.90±1.20	2.91±1.32	3.22±1.48	161 42.9	2. Commands Medicine is incomplete.
P=0.55		0.01=p			P=0.14		P=0.79		P=0.87		p=0.58		P=0.31				
3.29±1.21	2.93±1.34	2.50±1.39	3.12±1.29	3.10±1.19	2.95±1.26	3.20±1.32	3.27±1.23	2.66±1.38	2.93±1.26	3.13±1.30	1.31±3.17	1.25±2.92	3.33±1.27	3.03±1.25	2.90±1.51	166 44.1	3. The physician medication orders change frequently.
P=0.00		P=0.11			P=0.07		P=0.00		P=0.23		P=0.08		P=0.08				
3.42±1.39	3.32±1.27	3.50±1.43	3.34±1.33	3.70±.94	3.71±1.35	3.08±1.23	3.37±1.32	3.36±1.41	3.53±1.21	3.32±1.35	1.26±3.45	1.42±3.17	3.58±1.27	3.27±1.31	3.38±1.44	200 53.2	4. Doctors instead of writing commands entirely of acronyms they use.
P=0.44		P=0.64			P=0.00		P=0.92		P=0.20		P=0.05		P=0.15				
3.39±1.29	3.19±1.38	3.40±1.35	3.25±1.35	3.90±1.10	3.22±1.38	3.32±1.31	3.25±1.38	3.32±1.26	3.28±1.36	3.27±1.34	1.35±3.21	1.33±3.41	3.30±1.40	3.30±1.34	3.10±1.24	190 50.5	5. generic medications instead of name brand it can also be used.
P=0.16		P=0.30			P=0.48		P=0.70		P=0.94		P=0.18		P=0.60				
3.48±1.28	3.02±1.32	3.50±1.27	3.19±1.33	3.80±1.03	3.33±1.31	3.14±1.32	3.21±1.35	3.25±1.18	3.36±1.44	3.19±1.29	1.26±3.23	1.45±3.20	3.20±1.33	3.26±1.32	3.08±1.32	184 48.9	6. Physicians instead of writing written instructions for use of verbal commands.
P=0.00		P=0.23			P=0.17		P=0.84		P=.30		P=0.82		P=0.64				
3.48±1.28	3.02±1.32	3.50±1.27	3.19±1.33	3.80±1.03	3.33±1.31	3.14±1.32	3.21±1.35	3.25±1.18	3.36±1.44	3.19±1.29	1.26±3.23	1.45±3.20	3.20±1.33	3.26±1.32	3.08±1.32	203 54	7. The names of many medications are similar.
P=0.68		P=0.18			P=0.14		P=0.33		P=.67		P=0.18		P=0.43				
3.05±1.38	3.37±1.37	3.10±1.33	3.22±1.39	3.80±1.03	3.00±1.39	3.42±1.35	3.22±1.42	3.32±1.30	3.15±1.39	3.25±1.38	1.36±3.27	1.42±3.14	3.11±1.46	3.26±1.36	3.34±1.34	191 50.8	8. Different drugs have a similar appearance.
P=0.02		P=0.39			P=0.00		P=0.59		P=0.59		P=0.36		P=0.58				
3.28±1.39	3.06±1.35	3.20±1.23	3.15±1.38	3.00±1.41	2.92±1.44	3.34±1.29	3.22±1.37	2.68±1.36	3.07±1.44	3.17±1.36	1.37±3.10	1.37±3.27	2.80±1.40	3.36±1.33	2.86±1.37	182 48.4	9. The packaging looks similar to many drugs.
P=0.12		P=0.92			P=0.00		P=0.00		P=0.58		P=0.26		P=0.00				
3.20±1.31	3.12±1.38	3.25±1.44	3.15±1.35	3.40±1.26	3.13±1.30	3.18±1.39	3.17±1.38	3.10±1.27	3.21±1.33	3.15±1.36	1.34±3.01	1.34±3.47	2.88±1.36	3.27±1.31	3.18±1.46	173 46	10. Entries packaging is very fine.
P=0.57		P=0.81			P=0.73		P=0.67		P=0.72		P=0.002		P=0.06				
3.31±1.37	3.35±1.35	3.15±1.59	3.32±1.35	4.40±.51	3.30±1.38	3.36±1.35	3.43±1.31	3.00±1.44	3.34±1.37	3.34±1.36	1.38±3.27	1.32±3.48	3.64±1.18	3.28±1.40	3.00±1.41	207 55.1	11. Packaging of pharmaceuticals non-Farsi-speaking or non-English.
P=0.77		P=0.03			P=0.67		P=0.01		P=0.99		P=0.15		P=0.01				
2.83±1.42	2.96±1.38	2.45±1.19	2.92±1.41	3.30±1.33	2.84±1.33	2.95±1.45	2.96±1.39	2.66±1.42	3.48±1.20	2.76±1.41	1.45 ±3.03	1.26±2.63	2.93±1.26	2.93±1.41	2.74±1.60	155 41.2	12. Packaging may be

Area column groupings: rows 1–6 = "Communication factor"; rows 7–12 = "Factors related to packing".

P=0.38		P=0.23			P=0.44		P=0.09		P=0.00		P=0.01		P=0.66				distorted.	
3.05±1.44	3.29±1.31	3.25±1.29	3.20±1.38	2.60±1.26	3.08±1.44	3.28±1.32	3.21±1.39	3.30±1.40	3.02±1.45	3.23±1.36	1.38±3.35	1.31±2.85	3.11±1.42	3.13±1.35	3.58±1.38	188 50	13. Pharmaceutical medication orders are not entered correctly.	Factors related to subscription
P=0.09		P=0.38			P=0.16		P=0.61		P=0.24		P=0.001		P=0.10					
3.29±1.41	3.21±1.47	2.70±1.45	3.30±1.42	2.50±1.77	3.18±1.44	3.30±1.44	3.13±1.44	3.60±1.40	3.22±1.48	3.26±1.43	1.45±3.25	1.43±3.25	3.08±1.51	3.29±1.40	3.38±1.52	199 52.9	14. Errors are in medical record.	
P=0.58		P=0.04			P=0.44		P=0.01		P=0.84		P=0.97		P=0.38					
3.08±1.31	3.27±1.38	3.40±1.0630	3.15±1.37	4.20±.91894	3.21±1.38	3.17±1.33	3.23±1.40	3.18±1.28	2.93±1.34	3.26±1.35	1.43±3.17	1.18±3.23	2.88±1.35	3.30±1.33	3.28±1.40	179 47.6	15. There is a weak relationship between nurses and doctors.	Factors related to working situation
P=0.17		P=0.04			P=0.80		P=0.79		P=0.06		P=0.71		P=0.03					
3.22±1.36	3.41±1.26	3.20±1.28	3.30±1.30	4.80±.42	3.43±1.37	3.25±1.24	3.30±1.29	3.45±1.36	3.52±1.17	3.28±1.33	1.28±3.36	1.35±3.28	3.61±1.19	3.19±1.35	3.46±1.21	197 52.4	16. Many patients receive medications such as or similar.	
P=0.15		P=0.00			P=0.19		P=0.38		P=0.15		P=0.58		P=0.02					
3.20±1.39	3.30±1.36	2.80±1.60	3.13±1.38	3.70±1.25	3.27±1.42	3.24±1.34	3.15±1.43	3.51±1.24	3.38±1.32	3.22±1.39	1.35±3.40	1.39±2.95	3.23±1.40	3.27±1.36	3.22±1.44	192 51.1	17. Adequate staff training on new drugs do not.	
P=0.48		P=0.24			P=0.79		P=0.04		P=0.38		P=0.003		P=0.95					
3.21±1.40	3.06±1.37	3.75±1.06	3.21±1.39	3.80±1.31	3.11±1.39	3.14±1.38	3.09±1.34	3.25±1.55	3.01±1.28	3.15±1.41	1.41±3.24	1.31±2.87	3.11±1.32	3.20±1.40	2.82±1.40	177 47	18. In this hospital, there is little or no access to drug information	
P=0.29		P=0.10			P=0.84		P=0.38		P=0.42		P=0.01		P=0.21					
3.22±1.41	3.14±1.37	3.30±1.30	3.17±1.40	3.00±1.15	3.03±1.42	3.29±1.36	3.10±1.41	3.51±1.35	3.14±1.34	3.19±1.40	1.37±3.38	1.33±2.75	3.08±1.36	3.15±1.37	3.50±1.51	185 49.2	19. Nurses at the hospital have limited knowledge about drugs.	
P=0.58		P=0.85			P=0.06		P=0.02		P=0.80		P=0.00		P=0.20					
3.30±1.36	3.30±1.42	2.25±1.20	3.36±1.38	3.30±1.41	3.13±1.41	3.44±1.37	3.42±1.34	3.05±1.47	3.50±1.33	3.25±1.41	1.39±3.40	1.36±3.08	3.35±1.32	3.31±1.42	3.16±1.40	195 51.9	20. Nurses concerned about leaving his section and continue working in other sectors.	
P=0.98		P=0.00			P=0.03		P=0.03		P=0.16		P=0.03		P=0.71					
3.37±1.32	3.23±1.40	3.30±1.12	3.26±1.38	4.20±1.03	3.36±1.28	3.23±1.43	3.22±1.37	3.43±1.39	3.60±1.20	3.21±1.40	1.43±3.22	1.22±3.42	3.56±1.25	3.15±1.41	3.42±1.31	197 52.4	21. When the drug program delayed, the nurse to give the next dose of medication does not adhere enough time.	
P=0.32		P=0.10			P=0.34		P=0.22		P=0.02		P=0.18		P=0.03					
3.26±1.36	3.42±1.40	3.60±1.27	3.31±1.40	4.40±.51	3.40±1.35	3.31±1.41	3.46±1.37	3.06±1.38	3.40±1.36	3.34±1.39	3.49±1.38	3.06±1.36	3.58±1.29	3.26±1.40	3.32±1.47	205 54.6	22. Nurses at the hospital of new scientific knowledge on how the administration cannot find.	
P=0.28		P=0.03			P=0.56		P=0.02		P=0.71		P=0.005		P=0.17					
3.00±1.35	3.11±1.47	3.60±1.23	3.04±1.43	2.80±1.31	3.07±1.32	3.06±1.50	3.06±1.40	3.16±1.53	3.00±1.36	3.08±1.44	3.05±1.46	3.09±1.34	2.92±1.37	3.20±1.38	2.74±1.62	176	23. Nurses to	

																n / %	Item	Category
P=0.44		P=0.20			P=0.98		P=0.60		P=0.63		P=0.83		P=0.06			46.8	do other work cut medication.	
3.56±1.43	3.63±1.41	3.60±1.42	3.56±1.42	5.00±.00	3.73±1.37	3.49±1.45	3.67±1.35	3.38±1.57	2.93±1.50	3.77±1.34	1.39±3.66	1.47±3.47	3.23±1.44	3.78±1.35	3.48±1.54	225 / 59.9	24. The number of staff is not enough.	
P=0.66		P=0.00			P=0.09		P=0.10		P=0.00		P=0.21		P=0.00					
2.98±1.49	3.29±1.38	3.70±1.26	3.10±1.44	4.10±1.19	3.15±1.45	3.15±1.42	3.12±1.43	3.46±1.39	2.86±1.30	3.23±1.46	1.44±3.21	1.41±3.04	2.97±1.44	3.25±1.40	3.06±1.54	187 / 49.8	25. In the group of patients all drugs cannot be given within the timeframe specified.	
P=0.03		P=0.02			P=0.99		P=0.06		P=0.04		P=0.27		P=0.24					
3.48±1.30	3.24±1.49	3.35±1.42	3.32±1.42	4.40±.51	3.42±1.31	3.29±1.49	3.35±1.43	3.41±1.38	2.98±1.42	3.44±1.40	1.45±3.42	1.33±3.19	3.14±1.45	3.37±1.41	3.62±1.35	207 / 55.1	26. There is equipment failure or performance are not well adjusted equipment.	
P=0.10		P=0.06			P=0.39		P=0.74		P=0.01		P=0.15		P=0.14					
3.25±1.34	3.08±1.35	3.25±1.40	3.13±1.33	3.90±1.59	3.25±1.36	3.07±1.34	3.08±1.35	3.45±1.33	2.75±1.35	3.26±1.33	1.33±3.19	1.39±3.07	3.05±1.37	3.19±1.35	3.20±1.32	175 / 46.5	27. The nurse is not aware of allergic reaction known.	
P=0.24		P=0.19			P=0.20		P=0.03		P=0.00		P=0.41		P=0.67					
3.35±1.37	3.27±1.47	3.25±1.20	3.34±1.43	2.30±1.25	3.15±1.43	3.43±1.41	3.30±1.44	3.42±1.40	2.88±1.49	3.42±1.39	1.44±3.43	1.36±3.05	3.14±1.50	3.27±1.41	3.80±1.29	206 / 54.8	28. Patients for diagnostic and therapeutic measures to be taken outside the sector.	
P=0.56		P=0.07			P=0.06		P=0.52		P=0.00		P=0.01		P=0.02					
2.73±1.28	3.01±1.51	3.35±1.59	2.82±1.39	4.30±.94	3.10±1.39	2.72±1.42	2.86±1.44	2.90±1.41	2.84±1.39	2.91±1.42	1.40±3.02	1.41±2.61	2.59±1.37	3.08±1.43	2.62±1.32	149 / 39.6	29. Incorrect doses of medication deliver by the pharmacy.	
P=0.05		P=0.00			P=0.01		P=0.84		P=0.71		P=0.009		P=0.00					
3.23±1.36	3.14±1.33	3.90±.78	3.11±1.35	4.20±.78	3.19±1.48	3.17±1.21	3.11±1.36	3.43±1.24	3.01±1.39	3.22±1.32	1.29±3.29	1.41±2.95	3.10±1.38	3.25±1.31	3.02±1.39	178 / 47.3	30. Pharmacy does not prepare drugs correctly.	Factors related to pharmacy
P=0.49		P=0.00			P=0.87		P=0.06		P=0.21		P=0.02		P=0.43					
2.83±1.39	2.85±1.43	2.45±1.66	2.85±1.39	3.20±1.54	2.75±1.36	2.92±1.45	2.78±1.37	2.87±1.47	2.71±1.51	2.88±1.38	1.40±2.92	1.41±2.66	2.61±1.45	2.91±1.39	2.96±1.38	145 / 38.6	31. The pharmacy does not use correct label drugs.	
P=0.90		P=0.33			P=0.24		P=0.61		P=0.35		P=0.09		P=0.17					
3.40±1.32	3.07±1.48	3.10±1.33	3.20±1.42	4.10±1.28	3.09±1.43	3.32±1.41	3.21±1.40	3.20±1.53	2.94±1.41	3.29±1.42	1.41±3.26	1.45±3.13	2.96±1.39	3.32±1.41	3.22±1.47	183 / 48.7	32. Medical experts are available 24 hours a day.	
P=0.02		P=0.13			P=0.12		P=0.93		P=0.06		P=0.40		P=0.11					

DISCUSSION AND CONCLUSION:

The results of this study showed that the most important factors affecting the incidence of medication errors in 5 domains (link factors, factors related to packaging, transcription factors, factors related to working conditions and factors related to pharmacy) Include: Work-related fatigue, careless nurse, illegible medical orders, lack of knowledge of nurses from drugs, lack of opportunity, working in high density, shortage of nurses to patients, poor communication between physicians and nurses, the similarity of different drugs, non-English or non-Persian languages packaging drugs, defaced or illegible packing of medicines.In order to study the results of a study by Bijaniet al. on medication errors showed that the most important causes of medication errors are work-related fatigue, lack of personnel, long working hours and high density nurses (11) In a study of 100 nurses were done byGhasemi and ValiZadeh, fatigue in work is one of the most important factors affecting medication errors from the perspective of nurses who corresponded with the results, (15)This study showed no relationship between type section and medication errors, while the results of the study showed Austin and Boots on 72 nurses that the majority of nurses believed that factors such as careless nurse and an increase in workload are the most important factors in medication errors and the occurrence of these errors in ICU and the hospital is more internal than in other sectors. (16)In the present study between work history and medication errors was not found a statistically significant relationship. Chris et al, study found that the more years of service can reduce medication errors (17) From the perspective of the researcher, because careers are not effective in this study, the incidence of medication errors that most nurses participating in the study were in the younger age groups, Ayatollah Rouhani Hospital of Babol because the new hospital is that most young nurses engaged in work.In the present study between shifts and medication errors cause significant correlation was observed that these findings are not consistent with the results of Seki in Japan. (18)According to researchers because nurses work shift was cited as the cause of medication error than nurses did not meet the desired standards and at least part of every nurse responsible for 13 patients that sometimes these 13 patients, two patients were really ill observed and given that apart from the morning shift and especially night shift nurses feel fatigue, therefore, the risk of error in the other shift is due to a lot more workload.

In this study, illegible order was a major cause of errors in nursing. Hadavand and et al medication errors caused by illegible orders as 39%. (19) Harris and George with a two-year review process prescribed in the Civil Hospital on 360 patients concluded that illegible ordersfactors affecting medication errors are the most common. (20)

Results of present study showed that the symbols is very effective in the doctor's orders medication errors. (53.2 percent) In several studies it has been found that due to bad medical hand writing and their use of abbreviations, so using computer systems for prescription and not using abbreviations can be reduced medication errors. (22 and 23)

Other findings of the study of the heavy workload of nurses in patient care and nursing shortages, (59.9%) An important factor was estimated that medication errors in line with the findings of other researchers acknowledged that the high workload of nurses and nurse to patient ratio imbalance, job Opportunities chaotic and lack of staff could be a reason for the errors. (24, 25, 26)

Similarly, in a study TaheriHabibabadi and colleagues found that a small number of staff, heavy workload and physical fatigue nurses are the most essential factors in the incidence of medication errors (27) Given the above, it is expected that nurses managers efficiency design standards and according to the ratio of nurses to patients to decrease the probability of error to a minimum.

The other finding of this study is the lack of knowledge of medication (56.5%) are among the factors affecting medication errors. In this regard, Pazokian and et al studied samples flaws in drug information, precision and skill shortages and lack of knowledge of pharmacology of the drug in the correct way in the experience of medication errors (28) Other

study also found that nurses' knowledge and low drug information and the majority of the samples are required to participate in training classes. (29)Similarly, Anousheh and colleagues confirmed findings of this research stated that lack of knowledge and awareness of underlying errors in clinical practice and with the updated Health Sciences and reduce the half-life data obtained their information also needs to be updated. (30) Meanwhile continuing education classes can be very helpful (21) .Merlin and Jolly Based on the results of their study suggest that, continuing education classes and pharmacological information to keep one of the essential principles is to avoid medication errors (31)Brady and et al also suggest that math to calculate the correct amount of the drug as a necessity for nurses to be considered, (32) it seems that with the strengthening of pharmacology courses in undergraduate programs, continuing education classes and weekly medical conference in each section according to certain drugs that can be used in any part of the nurses' knowledge of topics related to increased machinery and equipment.

In this study, careless of nurses listed among the factors in the incidence of medication errors (45.8%). Many researchers believe that one of the major causes of medication errors are careless. Results of a study showed that carelessness and negligence was the cause of 32 percent of medication errors in nursing. (33) In a study it was found that more than half of the samples were due to lack of drug interactions in concurrent administration of drugs (34)

Ferner in this regard notes that while medication errors due to carelessness and sometimes human error is inevitable, but the precise principles medication (given to the right patient, right drug, right time, right dose and right route of administration) can reduce a lot of mistakes. (35) Taylor and et al in addition to the five principles, adhere to two principles are required at the time of the drug which contains the right drug for the right record in the case. (36)

Lack of coordination and poor communication between health team of nurses and doctors is another in errors from the perspective of nurses. In line with the findings Mahmoud and et al in their study showed that lack of teamwork could be errors. (37) Therefore, educational authorities in the Schools and hospitals should be to foster cooperation between professionals in the health measures needed to apply.

In areas related to the packaging of drugs in this study it was shown that the non-Farsi-speaking or non-English drug packaging is a very important factor cause of medication errors. (55.1%) (45.2%) In this study, medication errors are caused by corrupted or missing label on the packaging of medicines and drugs.

In this regard, this study Mahmoud and et al found that non-readable or loss label of the drug can cause errors. (37) Factors related to the similarity of packaging of various drugs, including other factors of medication error were effective. (41%) It seems that with the efforts of pharmaceutical companies and pharmacies the drugs can be so packed together that are different in terms of appearance and drugs with labels legible and clear guide available to hospitals and health systems and serve.

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