ASSESSMENT OF MEDICATION ERRORS AT ZAGAZIG UNIVERSITY HOSPITALS.

Said Mahmoud Khalifa Shahira Ramsis Dimetry* Shereen Eassa* and Amira Elsayed Ade Elsalam*
Public Health & Preventive Medicine Department, Faculty of Medicine, Zagazig University

ABSTRACT

Background: Medication errors are defined as any preventable event that may lead to any inappropriate medication use and or patient harm**,** or any mistakes associated with the prescription, transcription, dispensing, and administration phases of drug preparation and distribution regardless this mistake led to adverse event or not.

Aim of the work: Assessment of medication errors at Zagazig University hospitals through the following objectives: 1- To identify rate and types of medication errors at Zagazig university hospitals. 2- To find out some factors that may be associated with occurrence of errors. 3- To assess the perception of health care providers involved in the medication use process about causes of medication errors. **Subjects and methods:** An observational descriptive study was carried out at random selected sample of Zagazig University hospital, sample was calculated under two main items. **A) Selection of records to assess medication errors:** The records were collected by using multistage technique. Zagazig university hospitals were divided into two main branches (internal medicine hospital and surgical hospitals). As there are 3 medical and 4 surgical hospitals, random section of one medical and two surgical hospitals was done (1st stage). The sample calculated by using error rate (11.4%) [1], at 95% CI, with the power of the test 80%, 10% dropout, and total records/ year 39468, the sample was 1774. With putting into consideration the proportional allocation of attendance of internal and surgical hospitals (1.7:1) so the sample was 1117 at internal medicine hospital and 657 at surgical hospital. At each hospital random selection of units was done (2nd stage).

B) Selection of health care workers to assess their perception toward medication errors: With perception rate (35%)[2]**,** total number of health care workers (nurses, doctors, and pharmacists) 3158, 95% confidence interval, 80% power of the test, and 10% drop out, the total sample size 547. According to proportional allocation between the stuff number, sample of nurses is 336, doctors 162, and pharmacists 49. Tools**: 1- Modified Medication use checklist: to assess medication errors**, it contains detailed steps of all the phases of the drug use (Prescription, dispensing, and administration).2- **Modified Gladstone questionnaire**: directed to doctors, nurses, and pharmacists to assess their perception for errors, risk factors, reporting process, and barriers against it.   **Ethical consideration:** informed verbal consent was obtained from all stuff enrolled in the study; an official permission was obtained from department of public health. A written permission from Zagazig hospitals manager was obtained to perform the study. **Results**: Rate of medication error at Zagazig university hospitals was **63.7%**. The error rate was nearly equal at both internal medicine and surgical hospitals **(63.1, 64.7%)** without significant difference **(p>0.05).** The most common type of errors was dispensing **(46%),** followed by administration **(41%),** then prescription errors **(13%)**(Most of prescription errors were of mild and moderate nature, while most of dispensing errors were of moderate type, however most of administration errors were of severe type. There was significant difference at prescription errors, and administration errors with higher frequency at internal medicine more than surgical hospitals (p<0.05). Low number of doctors, nurses, pharmacists, lack of experience of doctors, and pharmacists, in addition to night shift significantly affect error frequency. Stuff members has perceived unreadable hand writing, repeated change of orders, similar drugs (name, shape), change of nurses among units, excess work load, low number of nurses, and dealing with big number of drugs as the most important risk factors of errors**.** Frequency of reporting among nurses was (**44%),** compared to (**15%**) of doctors and (**3%**) of pharmacists. No clear definition for medication errors, writing a report take a long time, and Focusing on individual punishment more than system improvement were the most important barriers against error reporting as perceived by the staff.   .   **Conclusion and recommendation**: Rate of medication errors at Zagazig university hospitals was high, the most common type of errors was dispensing, followed by administration, then prescription errors (Most of prescription errors were of mild and moderate nature, while most of dispensing errors were of moderate type, however most of administration errors were of severe type). Low number of doctors, nurses, and pharmacists, lack of experience of doctors, and pharmacists, night shifts was significant risk factors for error frequency.   Based on the finding of the current study the following recommendations can be suggested: 1- Increasing awareness about medication errors, impact and cost. 2- Developing a systematic approach that helps in error monitoring, evaluation, and reporting. 3- Implement hospital policy and procedures for medication errors assessment. 4- Organize a team who is concerned with all items of patient safety including medication errors.5- Changing the format of prescription and introduction of new technology as computerized physician order entry.

Key wards: medication errors, risk factors, perception of errors, impact of errors.

INTRODUCTION

Ensuring the provision of safe, competent and ethical care to patients within the health care system is a responsibility shared by all health care professionals, health care organizations, governments, and requires the involvement of public [3]. Medication errors represent 90% of medical errors, and the most preventable cause, over three-quarters of a million people are injured or die in hospitals each year from adverse drug events caused by medication errors [4]. The error frequency differ markedly between studies in some studies it is as low as 0.02% [5,] in other it reaches 85% [6]. There are no accurate studies for

estimation of error frequency in Egypt [7]. Medication errors compromise the confidence of the patient in the provided services and increase its cost [8]. Error may occur at any stage of drug use process; either during prescription, dispensing, or administration phases [9].

Aim of the Work: Assessment of medication errors at Zagazig University hospitals through the following objectives: 1- To identify rate and types of medication errors at Zagazig university hospitals. 2- To find out some factors that may be associated with occurrence of errors. 3- To assess the perception of health care providers involved in the medication use process about causes of medication errors.

SUBJECTS AND METHODS

I-Technical design: Site: Zagazig University Hospitals. **Sample:** Multistage random sample. **Subjects:** doctors, nurses, pharmacists, and sample of patients. **Tools:** 1**- Modified Medication use checklist [10]: to assess medication errors**, it contains detailed steps of all the phases of the drug use (Prescription, dispensing, and administration).2- **Modified Gladstone questionnaire [11]:** directed to doctors, nurses, and pharmacists to assess their perception for errors, risk factors, reporting process, and barriers against it

II- Operational design: A descriptive observational study. The whole study was carried out from November 2009 to November 2011.

The study passed into 2 stages: Stage I: assessment of medication errors: this step starts from the stage of drug prescription (from first look of patient by physician to complete writing the record), passing through the dispensing process in the pharmacy (start from transmitting the file to pharmacy to dispensing drugs), and administration of the ordered drugs in the unit (cover transmission of drugs through nurses to patients). These items were checked using a **modified medication use checklist**. This checklist includes the standards and details of drug use starting from drug prescription, dispensing, to administration. Scoring system: Scoring: some items at every stage has two options (done=1, not done= 0) other items has 3 answers (done well=2, incomplete done = 1, not done=0), while some items has another 3 answers (done=2, not done=1, not applicable= 0), then total score was calculated, and according to case definition of error any zero is considered errors, every uncompleted stage was considered a defect. The error classified into stages according to (**Tang et al 2007**) [12].

- Mild if the score was more than 75%.   - Moderate if the score from 50-75%.
- Severe if the score less than 50%.

Stage II: assessment of stuff perception (doctors, nurses, and pharmacists) for error occurrence, risk factors of errors, reporting of error, and barriers against reporting .A structured questionnaire was used "Modified Gladstone questionnaire". The questionnaire contain: Personal data: age, sex, years of experience, and work hours. Frequent risk factors of medication errors, Frequency of reporting of medication errors, and Causes of error un-reporting.

Scoring system: **likert scale** score was used (5=strongly agree, 4=agree, 3=neither agree nor disagree, 2=disagree, 1=strongly disagree).the categories (strongly agree and agree) are collected together and considered as high perception, while the other three categories are collected as low perception [13].

Data management & Statistical analysis was performed with SPSS version 11 software program and Epi info. Chi square test and correlation were use as tests of significance.

RESULTS.

As regards frequency, types and severity of medication errors it was found that rate of medication error at Zagazig university hospitals was **63.7%**. The error rate was nearly equal at both internal medicine and surgical hospitals (**63.1, 64.7%**) without significant difference (**p>0.05**). The most common type of errors was dispensing (**46%**), followed by administration (**41%**), then prescription errors (**13%**). Most of prescription errors were of mild and moderate nature, while most of dispensing errors were of moderate type, however most of administration errors were of severe type. There was significant difference at prescription errors, and administration errors with higher frequency at internal medicine more than surgical hospitals (p<0.05).

As regards risk factors of errors: significant negative relation was found between error number and number of doctors, nurses, pharmacists, years of experience of doctors, and pharmacists. Night shift was associated with higher number of errors.

As regards perception of stuff (nurses, doctors, pharmacists) for risk factors of medication errors: more than 50% of stuff members highly perceived; unreadable hand writing, repeated change of Orders, similar drugs (name, shape), change of nurses among units, excess work load, low number of nurses, and dealing with big number of drugs as the most important risk factors of errors.

As regards error reporting and barriers against reporting: Frequency of reporting among nurses was (**44%**), compared to (**15%**) of doctors and (**3%**) of pharmacists. More than 50% of stuff highly perceived these barriers against reporting

process: No clear definition for medication errors, writing a report take a long time, and Focusing on individual punishment more than system improvement were the most important barriers against error reporting as perceived by the staff.

Table (1): frequency of medication errors at Zagazig university hospitals.

| errors	Frequency	%
Present	1130	63.7
absent	644	36.3
Total	1774	100.0
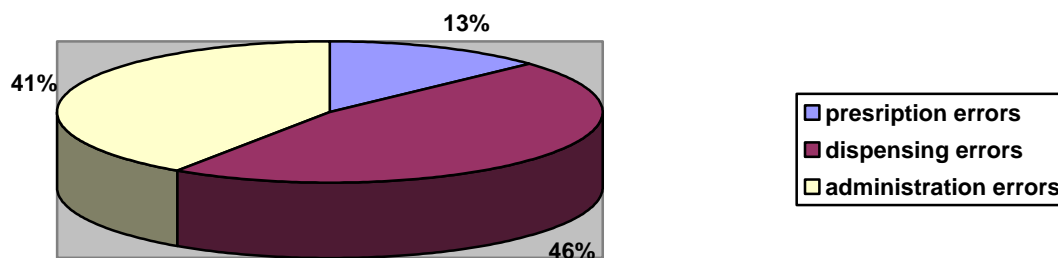
Figure (A): Distribution of types of medication errors at Zagazig university hospitals.

Table (2): medication errors frequency at internal medicine and surgical hospitals.

Errors	Internal medicine		Surgical hospitals		X^2	p
	No	%	No	%		
Present	705	63.1	425	64.7		
absent	412	36.9	232	35.3	0.44	0.5
Total	1117	100.0	657	100.0		

Table (3): Distribution of type of errors at internal medicine and surgical hospitals.

Errors	Internal medicine hospital (705)		Surgical hospitals (425)		X^2	p
	No	%	No	%		
One type of errors:						
Prescription only	98	13.9	40	9.4	4.9	0.02*
Dispensing only	220	31.2	110	25.8	3.6	0.05
Administration only	154	21.8	120	28.3	5.9	0.01*
More than one error	233	33.1	155	36.5	1.3	0.2
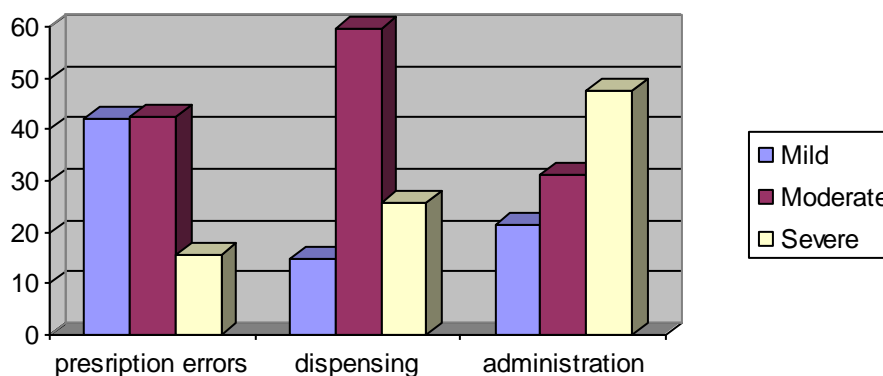
Figure (B): Distribution of error type according to severity at Zagazig university hospitals.

Table (4): correlation between some risk factors and number of medication errors at Zagazig university hospitals.

Errors number　　　Risk factors	r	p
- Number of doctors	-0.3	0.000*
- Number of nurses	-0.1	0.000*
- Number of pharmacists	-0.13	0.000*
- Experience of doctors	-0.08	0.001*
- Experience nurses	-0.02	0.2
- Experience of pharmacists	-0.08	0.001*
- Work hours of doctors	0.04	0.06
- Work hours of nurses	-0.03	0.1
- Work hours of pharmacists.	0.04	0.09

Table (5): Relation between shift time and administration errors.

administration shift	Present		Absent		Total	X^2	P
	No	%	No	%			
Day time	124	45.3	923	61.5	1047		
Night	150	54.7	577	38.5	727	25.4	0.000*
Total	274	100	1500	100	1774		

Table (6): Perception of stuff (nurses, doctors, and pharmacists) for risk factors of medication errors.

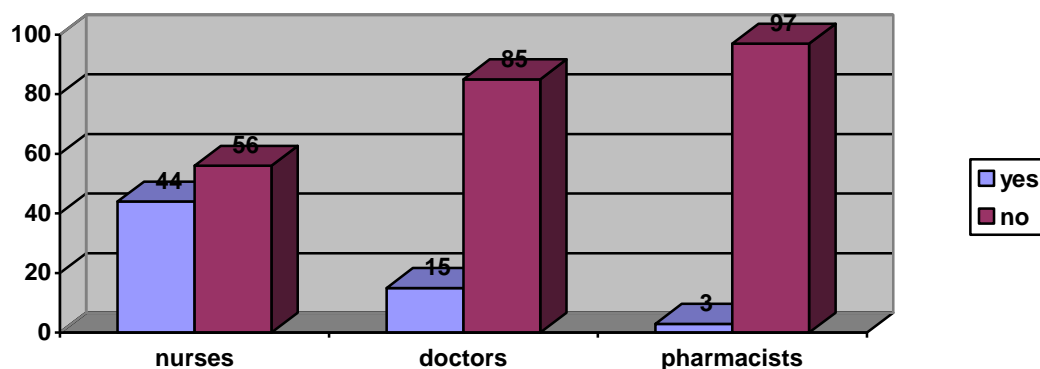| Risk factors	Nurses (n=336)		Doctors (n=162)		Pharmacists (n=49)	
	No	%	No	%	No	%
- Unreadable hand writing. High perception: Low perception:	146 190	43.5 56.5	62 100	38.3 61.7	28 21	57 43
- repeated change of Orders High Low	203 133	60.4 39.6	92 70	56.8 43.2	13 36	26.5 73.5
- Similar drugs (name, shape). High Low	189 147	56.3 43.7	85 77	52.5 47.8	25 24	51 49
- change of nurses among units High Low	217 119	64.6 35.4	81 81	50 50	13 36	26.5 73.5
- excess work load High Low	223 113	66.4 33.6	115 47	71 29	26 23	53 47
- Low number of nurses. High Low	230 106	68.5 31.5	115 47	71 29	24 25	49 51
- dealing with big number of drugs High Low	199 137	59.2 40.8	117 45	72 28	27 22	55 45

Figure (C):   Frequency of error reporting owing to staff opinion.

Table (7): Barriers against reporting of errors as perceived stuff (nurses, doctors, and pharmacists.

Barriers	Nurses (n=336)		Doctors (n=162)		Pharmacists (n=49)	
	No	%	No	%	No	%
-Don't perceive error presence.						
High perception:						
Low perception	233	69.3	13	8	24	49
	103	30.7	149	92	25	51
- No clear definition for medication errors.						
High						
Low	220	65.5	98	60.5	24	49
	116	34.5	64	39.5	25	51
- Writing a report about medication error may take a long time.						
High						
Low						
- Fear of punishment.	223	66.4	87	53.7	23	47
High	113	33.6	75	46.3	26	53
Low						
- No rewarding if errors didn't occur.	103	30.7	133	82	31	63.3
High	233	69.3	29	18	18	36.7
Low						
- Focusing on individual punishment more than system improvement.	245	72.9	133	82	27	55
High	91	27.1	29	18	22	45
Low						
- Medication errors are an indicator of nursing quality.						
High	245	72.9	111	68.5	27	55
Low	91	27.1	51	31.5	22	45
- Punishment is much more than the error itself.						
High						
Low	238	70.8	103	63.6	22	45
	98	29.2	59	36.4	27	55
	233	69.3	140	86.4	29	59
	103	30.7	22	13.6	20	41

DISCUSSION

Safe, effective and ethical medication practice is an important component in client care and reducing the incidence of drug-related iatrogenic disease is a public health concern [14]. Medical errors take a high priority as a cause of death exceeding deaths caused by motor accidents, cancer breast and AIDS, medication errors representing the largest single cause of errors in hospital settings accounting more than 7000 deaths annually exceeding those of work place injuries [15]. Although the importance and the impact of medication errors, regarding their cost and deaths, the number of studies done on that topic especially in Egypt are so limited.

Regarding frequency of medication errors, the error rate at Zagazig university hospitals was 63.7% (table 1), error rate was 63.1% and 64.7% at internal medicine and surgical hospitals respectively, but this difference was not statistically significant (p=0.5)(table 2). The estimation of errors rate differ markedly between different studies. Some studies detected a rate reached 9.32 % [16]; other studies detected higher rate reached 43% [17] and 54%· Figure (A) shows error types at Zagazig university hospitals, The most common type of errors was dispensing (46%), followed by administration (41%), then prescription errors(13%). Higher rate of dispensing errors may be explained by that each pharmacy may serve two or more departments, in addition to low number of pharmacists in relation to number of dispensed drugs. Most of pharmacists are newly graduated with low experience. **Nahed 2002** [18] detected 14% dispensing errors and 87.9% administration errors. The rate of administration errors was 86.6% as detected by **Carmen et al 2011** [19]. As regarding prescription errors in a study conducted at Elmansoura University by **Neamat and Hala 2010** [20] they ranged the rate from 2.3% to 65%.Table 3 shows distribution of types of errors at internal medicine and surgical hospitals, There was significant difference at prescription errors, and administration errors with higher frequency at internal medicine more than surgical hospitals (p<0.02). Higher rates of errors at internal hospitals may be explained by higher utilization rates. Errors were classified according to severity in figure (B); it was noticed most of prescription errors were of mild and moderate nature, while most of dispensing errors were of moderate type, however most of administration errors were of severe type.   This was in line with **Flynn et al 2003** [21], who ranked errors according to severity as follow 0.08% severe, 4.5% moderate, 93.1%

mild, and 2.2% very mild. In contrast to **Karen et al 2011** [22] who determined 4% severe errors.

As regarding risk factors of medication errors in table 4, significant negative relation between number of errors and number of doctors, nurses, and pharmacists, experience of doctors, and pharmacists (p<0.001). From the table we can conclude that error occurrence is multi-factorial in nature, and looks like an ice berg. As stuff number increase the work load is distributed between them making chance of errors low, moreover big number of stuff making the work environment un stressful, **Williams et al 2007** [23] concluded that stressed, burned out, and dissatisfied physicians do report a greater likelihood of making errors and more frequent instance of suboptimal patient care. **Pronovost et al 2002** [24] mentioned that the standard ratio of nurse/ patient is 1 to 1, and doctor/patient is 1 to 3 or 4. The same risk factors were entered in regression model by **Park and Lake 2005** [25], only years of experience was significantly associated with medication errors. Institute Of Medicine (**IOM 2000**) [26], found a significant link between experience of stuff and frequency of medication errors, they put a recommendation for junior stuff who should be trained in how to ascertain the correct dose of a drug and its frequency of administration, and how to identify when it might need adjustment. The relation between shift time and frequency of errors was shown in table 5 which clarified significant higher frequencies of errors at night more than day time shifts. The same result was reached by **Biron et al 2009** [27] who noticed association between night shifts and error occurrence and they explained that by night work lead to disturbance of circadian rhythm, sleep after night work tends to be shorter than sleep after day work, leading to greater cumulative sleep deprivation, in addition to poorer quality of sleep among night workers.

Perception of stuff included in medication use process (nurses, doctors, pharmacists) was assessed in table 6. These risk factors were as follow Unreadable hand writing (43.5% of nurses, 38.3% of doctors and 57% of pharmacists). Repeated change of orders (60.4, 56.8, and 26.5%). Similar drugs (name, shape) (56.3, 52.5, 51%). Change of nurses among units (64.6, 50, and 26.5%). Excess work load (66.4, 71, 53%). Low number of nurses (68.5, 71, 49%). And dealing with big number of drugs (59.2, 72, and 55%). **Beyea et al 2003**[28] assessed the nurse perception for causes of errors and they noticed that excess work load, inexperienced stuff, lack of communication between nurses and doctors, lack of supervision, and similar names of drugs are the

most common. **Wise 2007** [29] grouped the perception for cause of medication errors it terms of physician hand writing is unclear, physician are not available for drug clarification, physician are not available in most of the night shift, less trust for experience of the physicians, and more than one physician write drug to the same patient. . In a study done by **Woodward 2004**[30] doctors saw that absence of guidelines for drug administration, low number of trained nursing stuff, plenty of patients in the unit, care for large number of critical cases, in addition to system approved for more medication to be given at the same time are the real causes for medication errors. A study performed by **Kelly 2008**[31] who concluded that poor communication, insufficient stuff, big number of drugs, unsuitable environment is the most common.

As regarding reporting process from the point of view of the staff, **figure (C)** showed frequency of reported errors 44% of nurses reported error, compared to 15% of doctors and 3 % of pharmacists. High error reporting among nurses may be explained by that they usually consider the patient as responsibility of physician so any noticed error usually reported to the doctor to make their side free. **Howard et al 2007** [32] calculated the rate of error reporting between 1.6-3%. **Evan et al 2006**[33] concluded that both doctors and nurses believe they should report most incidents, but nurses do so more frequently than doctors, as nurses were more likely than doctors to know how to access a report.

In table 7 barriers against error reporting as regarding stuff were mentioned, it was noticed that the following factors were the most important barriers: Absence of perceiving error presence, no clear definition for medication errors, writing a report about medication error may take a long time , no rewarding if errors didn't occur, focusing on individual punishment more than system improvement, medication errors are an indicator of nursing quality, punishment is much more than the error itself, all above factors were highly perceived for more than 65% of nurses and doctors except for fear of punishment which was a barrier for 30.7% of nurses. for pharmacists all factors were highly perceived by more than 50% of them except for the first, second and seventh causes that represented less than 50% in accordance with these results **Force et al 2006**[34] said that staff did not report errors because of inherent fear of retribution, punitive actions, and professional humiliation. Another study mentioned only 3 causes for un reporting: (1) lack of a readily available medication error reporting system or forms, (2) lack of information on how to report a medication error, and (3) lack of feedback to the reporter or rest of the facility on medication errors that have been reported [35]. However **Lucian 2002** [36] saw that only the reporting process (time it take, length of the report) was the most important. A regression analysis done by **Hui and Ginette 2006** [37] showed that power hierarchy, face-saving concern, and work environment factors (e.g., quality management and peer relations) accounted for 54.6% variance in the barriers.

Conclusion

Rate of medication errors at Zagazig university hospitals was high, the most common type of errors was dispensing, followed by administration, then prescription errors. Most of prescription errors were of mild and moderate nature, while most of dispensing errors were of moderate type, however most of administration errors were of severe type. Number of doctors, nurses, pharmacists, experience of doctors, and experience of pharmacists, night shifts were significant risk factors for error frequency. The reporting process of errors was very low, No clear definition for medication errors, writing a report take a long time, and Focusing on individual punishment more than system improvement were the most important barriers against error reporting as perceived by the staff.

Recommendations Based on the finding of the current study the following recommendations can be suggested: 1 - Increasing awareness about medication errors, impact and cost. 2- Developing a systematic approach that helps in error monitoring, evaluation, and reporting. 3- Put hospital policy and procedures for medication errors assessment. 4- Organize a team who is concerned with all items of patient safety including medication errors.5-Changing the format of prescription and introduction of new technology as computerized physician order entry.

REFERENCES

1. Taylor, N. (2010): Benchmarking in-patient medication errors in specialist palliative care. Palliat Med 24: 350-351.
2. Robert J. B.; Catherine, M. ; Mollyann B.; John M. B.; Allison B. R.; Eric S .; Drew E. A.; Kinga Z.; Melissa J. H.; and Annie E. S. (2002): Views of Practicing Physicians and the Public on Medical Errors. N Engl J Med. 347:1933-1940
3. Baker, G.R.; Norton, P.G.; Flintoft, V.; Blais, R.; Brown, A.; and Cox, J. (2004): The Canadian adverse events study: The incidence of adverse events among hospital patients in Canada. CMAJ, 170(11): 1678- 1686.
4. Honigman, B.; Lee, J.; and Rothschild, J. (2001): A computerized method for identifying incidents of

adverse drug events in outpatients. Int Med J Inf, 61(1):21-32.

5. Baghcheghi, N.; and Koohestani, N. (2008): Nursing students' errors in preparation and administration of intravenous drugs. Strides in Development of Medical Education, 5(1):43-49.

6. Chevalier, B.A.M.; Parker, D.S.; MacKinnon, N.J.; and Sketris, I. (2006): Nurses perception of medication safety and reconciliation practices. Canadian Journal of Nursing Leadership. 19(3):61-72.

7. Ellis, J.; Priest, A.; MacPhee, M.; Sanchez McCutcheon, A.; on behalf of CHSRF and partners. (2006): Staffing for safety: A synthesis of the evidence on nurse staffing and patient safety. Ottawa: Canadian Health Services Foundation.

8. Santell, J.P.; and Cousins, D.D. (2005): Medication errors involving wrong administration technique. Jt Comm. J Qual and Patient Safe. 31: 528-32.

9. Maralyn, B.A.; and Karen, M.H. (2006): Medication administration errors: understanding the issues. Australian Journal of Advanced Nursing 23 (3).

10. Calfornia Health Care Foundation (2001): Adressing medication errors in hospitals: a framework for developing a plan. Available from www.chcf.org.

11. Wakefield, B.; Blegen, M.; and Uden Holman, T. (2001): Oragnizational culture, quality improvement, and medication administration error reporting. Am J Med Qual. 16(4):128-34.

12. Jamieson, S. (2004): "Likert Scales: How to (Ab) use them," Medical Education. 38(12): 1,217-1,218.

13. Xavier B, Laurent S, Eric P, Hélène M, Leslie L, and Christian P (2009): Frequency, Types, and Potential Clinical Significance of Medication-Dispensing Errors. Clinics (Sao Paulo). 64(1): 11–16

14. Brown. D. (2001): A new prescription for medication errors. Washington post. www. Washington post.com.

15. Jiménez Muñioz AB, Muiño Miguez A, Rodriguez Pérez MP, Escribano MD, Durán Garcia ME, Sanjurjo Saez M (2010): Medication error prevalence. Int J Health Care Qual Assur; 23(3):328-38.

16. Marianne L., Lars P. N., and Jan M. (2004): Errors in the medication process: frequency, type, and potential clinical consequences. Int. J for Quality in Health Care. 17(1):15-22.

17. Zhan, C., Smith, S. R., Keyes, M. A., Hicks, R. W., Cousins, D. D., & Clancy, C. M. (2008). How useful are voluntary medication error reports? The case of warfarin-related medication errors. Joint Commission Journal on Quality and Patient Safety, 34(1), 36-45.

18. Nahed, S. (2002): Relationship Between Work Setting &The Occurrence Of Medication Errors Among Nurses Of Assiut University Hospital. Thesis study M.D degree.

19. Carmen G.R.; Ana H-A.;Maria L.M.; Barbero1, E.D.; Maria I.D.; and Limarquez,P.H. (2012): Prevalence of medication administration errors in two medical units with automated prescription and dispensing. Am Med Inform Assoc.19:72-78.

20. Neamat M and Hala G. (2010): Quality improvement techniques to improve medication errors in surgical intensive care units at emergency hospitals. J of Medicine and Biomedical sciences. ISSN 2078-0273.

21. Flynn, E. A., Barker, K. N., & Carnahan, B. J. (2003): National observational study of prescription dispensing accuracy and safety in 50 pharmacies. Journal of the American Pharmacists Association, 43(2), 191-200.

22. Karen C Nanji, Jeffrey M Rothschild, Claudia Salzberg, Carol A Keohane, Katherine Zigmont, Jim Devita, Tejal K Gandhi, Anuj K Dalal, David W Bates, Eric G Poon (2011): Errors associated with outpatient computerized prescribing systems.JAMIA

23. Williams, E. S.; Manwell, Linda B; Konrad, T. R.; and Linzer, M. (2007): The relationship of organizational culture, stress, satisfaction, and burnout with physician-reported error and suboptimal patient care: Results from the MEMO study. Health Care Management Review: 32 (3): 203-212

24. Pronovost, P.; Dorman, T.; and Morlock, L. (2002): Building safety in ICU care. J Crit Care. 17:78- 8570.

25. Park S, Lake ET (2005): Multilevel modeling of a clustered continuous outcome. Nurs Res. 54(6):406–413. CrossRef.

26. Institute of Medicine (IOM) (2006): Preventing Medication Errors. Washington: National Academy Press. Available from www.IOM.org.

27. Biron A.D., Loiselle C.G., and Lavoie-T. M (2009): Review Work interruptions and their contribution to medication administration errors: an evidence review. Worldviews Evid Based Nurs. 6(2):70-86.

28. Beyea, S.C.; Hicks, R.W.; and Becker, S.C. (2003): Medical errors in the OR- a secondary analysis of medmarks. AORN journal. 77 (122): 125-129.

29. Wise, Y. (2007): Leading and managing in nursing, 4th edition, Mosby Compy Texas. Pp 389-399.

30. Woodward, S. (2004): Achieving a safer health services, part 2: reporting requirements, professional nurses. 19(6): 328-332.

31. Kelly, P. (2008): Nursing leadership and management, 2nd edition. Thomson, United States. Pp 437-447.

32. Howard, R.; Avery, A.; and Bissell, P. (2007): Causes of preventable drug-related hospital admissions: a qualitative study. Qual Saf Health Care .17:109-116.

33. Evans, S.M.; Berry, J.G.; Smith, B.J.; Esterman, A.; Selim, P.; O'Shaughnessy, J.O.; and DeWit, M. (2006): Attitudes and barriers to incident reporting: a collaborative hospital study. Qual Saf Health Care 15:39-43.

34. Force, M. V.; Deering, L; Hubbe, J; Andersen, M. H.; Cooper-H. M.; and William M.S. (2006):

Effective Strategies to Increase Reporting of Medication Errors in Hospitals. Journal of Nursing Administration. 36 (1): 34-41.

35. Steven, M.H.; Subashan, P.; and Ellen, F.B. (2007): Identifying Modifiable Barriers to Medication Error Reporting in the Nursing Home Setting. JAMDA. 8(9):
    568-574.

36. Lucian, L.L. (2002): Reporting of Adverse Events. N Engl J Med .347:1633-1638.

37. Hui, Y.C.; and Ginette, A.P. (2006): Barriers to Nurses' Reporting of Medication Administration Errors in Taiwan. Journal of Nursing Scholarship. 38(4): 392–399.

تقييم الأخطاء الدوائية بمستشفيات جامعة الزقازيق

أ.د. سعيد محمود على خليفة،أ.د شهيرة رمسيس ديمترى،، أ.د. شيرين عيسى محمد، أميرة السيد عبد السلام عبد المطلب

المقدمة:ان ضمان تقديم الرعاية الصحية الآمنة والكفء والأخلاقية للمرضى هو مسؤولية مشتركة من قبل جميع العاملين في مجال الرعاية الصحية، ومؤسسات الرعاية الصحية، والحكومات، هذا و تمثل الأخطاء الدوائية 90٪ من الأخطاء الطبية، والسبب الأكثر التي يمكن الوقاية منها،حيث أن هناك أكثر من ثلاثة أرباع مليون شخص يصاب أو يموت في المستشفيات كل سنة من نتيجة الأخطاء الدوائية. كذلك فإن هذه الأخطاء تنال من ثقة المريض في الخدمات المقدمة وتزيد من تكلفتها. قد يحدث خطأ في أي مرحلة من عملية تعاطي المخدرات، إما خلال وصفة الدواء،صرفه من الصيدلية، أو خلال اعطائه للمريض. الهدف من هذا البحث هو دراسة الأخطاء الدوائية بمستشفيات جامعة الزقازيق ، وذلك عن طريق معرفة معل حدوثها، الفرق بين مستشفيات الباطنة و الجراحة. التعرف على عوامل الخطورة المؤدية لحدوثها. معرفة هل يتم التبليغ عند حدوث خطأ. كذلك التعرف على اتجاه الفريق الطبي عن أسباب حدوث هذه الأخطاء و أسباب عدم التبليغ عنها.

طرق البحث:أجريت هذه الدراسة الترصدية على عينة عشوائية من مستشفيات جامعة الزقازيق . تم استخدام قائمة المراقبة لملاحظة الستخدام الدواء بداية من وصفه و حتى وصوله للمريض. كذلك استخدم استبيان لمعرفة رأي الفريق الطبي فى أسباب الأخطاء الدوائية، وأسباب عدم التبليغ عن هذه الأخطاء.كما تم تقييم مدى ملائمة بيئة الوحدات و الصيدليات لعملية استخدام الدواء و تأثيرها عليها.وقد تم الحصول لى الأذونات الرسمية من أدارة مستشفيلت جامعة الزقازيق، كما تم الحصول على الموافقة الشفهية من مقدمي الخدمة الصحية قبل البدء.

النتائج: و صلت نسبة الأخطاء الدوائية بمستشفيات جامعة الزقازيق 63.7٪. وكانت نسبة الخطأ على قدم المساواة تقريبا في كل منمستشقيلت الباطنة والمستشفى الجراحية (63.1، 64.7٪) وكان النوع الأكثر شيوعا من الأخطاءفى مرحلة الصرف(46٪)، تليها مرحلة اعطاء الدواء (41٪)، ثم الأخطاءفى مرحلة الوصف (13٪). معظم الأخطاء فى مرحلة الوصف كانت من طبيعة خفيفة ومتوسطة، في حين أن معظم الأخطاءخلال عملية الصرف كانت من النوع المعتدل، ولكن معظم الأخطاءفى مرحلة اعطاء الدواء كانت من النوع الحاد. هذا و قد تمثلت أهم عوامل الخطورة فى عدد مقدمى الخدمة سنوات الخبرة و المناوبة الليلية. هذا وقد كان التبليغ عن حدوث الأخطاء قليل جدا و كانت نسبة التبليغ بين طاقم التمريض هو الأعلى. و قد رأى العاملون فى تقديم الخدمة أن الخوف من العقاب، وكتابة تقرير عن الأخطاء العلاجية بالاضافة الى التركيز على الشخص و ليس تحسين النظام هى من أهم معوقات التبليغ عن تلك الأخطاء.

الخلاصة: الأخطاء الطبية في مستشفيات جامعة الزقازيق عالية، والنوع الاكثر شيوعا من الأخطاءكان فى مرحلة صرف الدواء، تليهامرحلة الأعطاء، والأخطاء ثم الوصف. لم يكن هناك فرق ذات دلالة إحصائية في نسبة الخطأ بين المستشفيات الباطنة والجراحية. معظم الأخطاء فى مرحلة الوصف كانت من طبيعة خفيفة ومتوسطة، في حين أن معظم الأخطاءخلال عملية الصرف كانت من النوع المعتدل، ولكن معظم الأخطاءخلال اعطاء الدواء كانت من النوع الحاد. عدد الأطباء والممرضات والصيادلة و خبرة مقدمى الخدمة، العمل الليلى مثلت عوامل خطر كبيرة لتكرار الخطأ..

التوصيات:زيادة الوعى عن الأخطاء الدوائية، أهميتها ،تأثيرها، والتكلفة. وضعه موضع التركيز من ادارة المستشفى.-وضع سياسة وإجراءات بالمستشفى لتقييم الأخطاء الدوائية.- تغيير ثقافة الاعتراف بحدوث خطأ. –وضع نهج معروف لاكتشاف الخطأ ، تقييمه، الابلاغ عنه.- ادراج تقييم الأخطاء الدوائية فى منظومة توكيد الجودة. انشاء فريق متخصص لسلامة المرضى.- تدريب مقدمى الخدمة على كيفية اكتشاف و التبليغ عن هذه الأخطاء.تغيير شكل وصف الدواء و ادخال التكنولوجيا الحديثه. تجهيز بيئة ملائمة لاستخدام الدواء.