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ORIGINAL PAPER

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Rate of Medical Errors in Affiliated Hospitals of Mazandaran University of Medical Sciences

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ABSTRACT

Introduction: Health care organizations are highly specialized and complex. Thus we may expect the adverse events will inevitably occur. Building a medical error reporting system to analyze the reported preventable adverse events and learn from their results can help to prevent the repeat of these events. The medical errors which were reported to the Clinical Governance's office of Mazandaran University of Medical Sciences (MazUMS) in years 2011-2012 were analyzed. **Methods and Materials:** This is a descriptive retrospective study in which 18 public hospitals were participated. The instrument of data collection was checklist that was designed by the Ministry of Health of Iran. Variables were type of hospital, unit of hospital, season, severity of event and type of error. The data were analyzed with SPSS software. **Results:** Of 317966 admissions 182 cases, about 0.06%, medical error reported of which most of the reports (%51.6) were from non-teaching hospitals. Among various units of hospital, the highest frequency of medical error was related to surgical unit (%42.3). The frequency of medical error according to the type of error was also evaluated of which the highest frequency was related to inappropriate and no care (totally 37%) and medication error 28%. We also analyzed the data with respect to the effect of the error on a patient of which the highest frequency was related to minor effect (44.5%). **Conclusion:** The results showed that a wide variety of errors. Encourage and revision of the reporting process will be result to know more data for prevention of them.

Key words: Hospitals, Medical Error, Adverse Event Reports, Patient Safety.

1. INTRODUCTION

Despite the efforts of health care practitioners, medical errors are inevitable (1). Documentation in the medical record simplifies diagnosis and treatment, communicates relevant information to the other caregivers to certify patient safety, condenses medical errors and helps an important medical-legal function in risk management (2,3). Disclosure of errors is patients' demand and right. Health care organizations are highly specialized and complex (4). As a result, we may expect the adverse events will inevitably occur, but it is important that we can learn from errors and use the appropriate procedures for prevention of recurrence of them in future (5-7)). The adverse events can be categorized into two categories: the adverse events due to care that is non-preventable and the adverse events due to medical error which is preventable. The latter is important in view of patient safety (8).

The healthcare organizations are risky systems and they need preventive procedures. One of the solutions for this problem is building a medical error reporting system to analyze the reported errors and learn from their results. For an appropriate analyzing we need have a reporting system that can provide detailed information from nature of injury, predisposing factors and also obtain the accurate estimation of error types (9).

Several studies were conducted in the context of causal factors of medical error. One study from 2228 reported adverse events showed that there exists at least one common contributing factor in 80% of cases. Patient factors, system factors (including equipment malfunction or difficulty of use), the problems of communication or coordination among care providers, inaccessibility to care providers, and difficult tasks occurred in 32%, 32%, 31%, 24% and 20% of cases respectively. Forty sex

percent of causal factors were attributed to the care provider factors which among them, slips (52%), exceptional violations (22%), lapses (15%) and applying incorrect rules (13%) were taken account most common (10).

The ministry of health in Iran suggested error reporting system as a part of Clinical Governance program. This ministry prepared relatively appropriate medical error reporting forms and made them available for hospitals in the line of clinical governance program. Hospital's clinical governance program officer is responsible for completing the forms and sending it to the management unit.

Healthcare system in Iran requires a clinical governance program which has a patient-oriented approach in philosophy, operation, and effectiveness in order to meet the challenges ahead (11). Most hospital managers are in favor of a system for reporting and analyzing the medical errors. It seems that establishing a systematic and non-individual reporting and assessing the errors is a crucial step forward (12). Due to the complexity of the hospital environment, its structure faces with multiple hazards. The risks whether by providing the care and whether by hospital environment endanger patients, relatives and care providers. Therefore, a more accurate reporting and analysis of the report by focusing on access to preventative methods is essential (13).

Appropriate reporting and analysis of errors can lead to preventive and proactive approaches against the errors. Regarding to this issue the authors decided to conduct the study in order to analyses of incidence of medical errors in the twenty hospitals of northern Iran.

2. METHODS

This is a retrospective study that was conducted in affiliated hospitals of MazUMS) in 2011-2012. MazUMS is one of two medical universities of Mazandaran province that most of the hospitals in this province are affiliated to this university. This province is one of the several provinces in northern Iran that has 4000000 populations.

The instrument of the collection of data was a checklist of national ministry of health that included hospital type (teaching or no teaching), units of hospitals, the season of event, the impact of error on patient (categorized into four categories including no impact, minor impact without any intervention, more hospital stays with surgery intervention, more hospital stay with non-surgery intervention and death) and type of error (categorized into Inappropriate care, no care, medication error, falling, equipment, unknown and others). These checklists were available in all hospital wards and asked from providers, if an adverse event occurred in ward they should fulfill the checklist and report to clinical governance office. The clinical governance officers were responsible for data collection adverse events and report of them to central office of clinical governance of MazUMS. In this study defined as error or mistake that occurred unintentional and can be lead to harm to patients. All data analyzed by SPSS. Relevant codes assigned to the data and entered into the software. Frequencies and related percent were presented by table and figure.

3. RESULTS

Of 317966 admissions to hospital 202 events reported which among them 182 cases were considered medical error. Eighty

Figure 1. The frequency of reported medical error from MazUMS

Figure 2. Frequency of the frequency of no effect, minor effect

Type of error		
Inappropriate care or no care	delay, incomplete	37(20%)
	No care	31(17%)
Medication error	Prescribing error	16(8.7%)
	Omission error	2(1%)
	Improper dose error	13(7.1%)
	Wrong administration technique error	4(2.2%)
	Dispensing Error	16(8.8%)
	Falling	21 (11.5%)
Equipment	no equipment	2(1.1%)
	equipment malfunction	2(1.1%)
	difficulty of use	1(5%)
Unknown		4(2.2%)
Others		33(18.2%)

Table 1. Prevalence of error by the type of error in hospitals of MazUMS

eight (48.4%) events belonged to teaching hospital and 94 events (51.6%) belonged to non-teaching hospital. With regards to the unit, Fifty eight (31.9%), 77 (42.3%), 11 (6.2%), 1 (0.5%), 5 (2.7%), 25 (13.7%) and 2.7% belonged to internal medicine, general surgery, ICU, radiology, pharmacy room, emergency and untitled respectively (figure 1). Summer and spring with 58 events (31.9%) and 44 (24.2%) have the highest frequency of adverse events respectively. The frequency of events in the fall and winter were 37 (20.3%) and 7 (3.8%) respectively. We

analyzed the data with respect to the impact of the error on a patient. The effect on patient was categorized into four categories including no impact, minor impact without any intervention, more hospital stays with surgery intervention, more hospital stay with non-surgery intervention and death. The frequency of no effect, minor effect without any need to intervention, more hospital stays with need to surgery intervention, more hospital stay with need to non-surgery intervention and death were 35 (19.2%), 81 (44.5%), 33(18.1%), 23(12.6%) and 10 (5.5%) respectively (Figure 2).

Table 1 shows the frequency of medical error according to the type of error of which the most frequency was related to inappropriate and no care (totally 37%) and medication error 28%.

4. DISCUSSION

Our study showed a few medical errors were reported at MazUMS affiliated hospitals. The results also revealed that the frequency of medical error in non-teaching hospitals was more than teaching hospitals. We showed the surgical units are most prone to error among various hospital units. The present study revealed that the adverse events occur more in summer. The results of present study showed a considerable of reported medical errors were related to the errors that had effect on patient. We also showed inappropriate care or lack of care is the most predisposing factors to occur the error.

Our study showed that among 317966 admissions 182 cases, about 0.06%, medical error reported. However one study in Canada estimated that 37%-51 of the adverse event were avoidable (14). An overall estimation of adverse event based on literature is equal to 10%, which 50% of them are preventable (15-19). This shows a very greater part of iceberg is hidden based on our data in our hospitals that is concerning. This low reporting of medical error can be attributed to lack of a reliable reporting system, lack of a positive culture of medical error reporting among staff and managers, lack of non-punitive response to error and lack of a manager commitment to patient safety in our hospitals. Studies showed that the many causes of low adverse event reporting can be caused by fear, shame in the perpetrator and punitive policy in organizations (20). The patient safety issues were recently considered in our country hospitals in the framework of clinical governance and they are still in infancy period. To establish a program that is related to organization culture change, it is required to common understanding of new values, visions, missions and goals by staff and managers. To achieve a cultural change openness and receptiveness to new ideas, values are essential (21).

Although a higher report, do not necessarily indicate a higher incidence of error, there are several reasons for a lower report of Medical error in non-teaching hospitals at least for an apparent part of iceberg. First this can be attributed to the examination of patient by both teachers and students in teaching hospitals. Second the teaching hospitals obtain more educational programs related to medical error and patient safety issues for staff. So considering the medical error courses in the curriculum of medical education, both for students and staff, the positive changes are expected in patient safety nature. Staff particularly physicians usually concerned about the medical error issues so that one study revealed that 88.5% of physicians who have been questioning required the need of medical error prevention course (22).

Our study showed that the frequency of error was most common in the surgical unit among various hospital units. This result is in line with other studies which reported the 40% to 50% of hospital errors occur in operating rooms (23-26). This issue can be attributed to more complexity and emergency of surgical unit than the other units of hospital. Multidisciplinary team and competing tasks, problems in communication and workload in surgery units have a negative impact on performance and as a result predispose these units to error (27). On the other hand, the non-disclosure of medical error in surgical unit is not possible due to immediate and serious effects. Finally the WHO checklist of surgery can be useful to decrease the errors in some areas of surgery (28).

As mentioned above the analysis of reported adverse events by season revealed that the more adverse events reported in summer. Higher elective surgeries, more road accidents because the higher travels, the higher prevalence of gastroenteritis and more population of travelers in northern Iran, as a tourist region, can lead to overcrowding of the hospital wards, staff workloads, higher procedures for patients and finally higher medical error.

Among several predisposing factors that evaluated in the present study, the greatest prevalence was belonged to inappropriate care or lack of care. One study revealed that the Lack of timely care and failing to address the nursing care was most frequent error (46.3%) among inappropriate care. Lack of care for patients is equivalent to the absence of a patient at the hospital except that the patient must endure the complications and costs of hospital stay. Sometimes lack of care can be attributed to lack of documentation. One study showed that the nurses and physicians did not completely record the history and physical exam 98% and 86% of cases respectively. It is obvious the inappropriate and lack of care are taken into account the preventable errors. The third predisposing factor with high frequency was falling based on our data. Falls and associated harms are considered as an indicator of nursing quality care (29, 30). The environmental conditions and medications are the major causes of falls in inpatient settings (31). With regard to the use of the retrospective data based on previously designed national forms, we could not investigate the influential factors. To identify detailed risk factors of falling it is required to prospective and specific study that would be focused on falling.

The report of important adverse events had the greatest prevalence because first, the staff may ignore the mild adverse events that had not any effect on patient. Second as mentioned previous the concealing of significant adverse event is not easy in spite of these types of errors usually occurred less. Adverse events can be potentially associated with permanent harm or death, as a result, it is expected the healthcare providers report all types of errors so that by the implementation of appropriate tools of adverse event analysis, such as cause analysis, the causes of problems properly analyses and recognized.

5. CONCLUSION

Our study displayed a negligible part of the medical error is reported by hospitals. Reliable error reporting system and establishing of the patient safety culture is required in our hospitals. The surgery units are prone to error and required to special attention.

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CONFLICT OF INTEREST: NONE DECLARED.

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