



## Assessment of safety management in different wards of AL Zahra hospital in Isfahan city in 2013

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### ABSTRACT

**Introduction:** Since hospitals give their services to a huge number of people most of whom are sick and disabled and also because they have many expensive and modern equipment and facilities, any negligence regarding the standards of safety management leads to severe damages including financial ones. This may even result in irrecoverable consequences such as their clients' Death. So, this investigation was conducted to assess the condition of safety management in Isfahan's AL Zahra hospital.

**Method:** This cross-sectional and descriptive-analytical project was conducted in different wards of AL Zahra hospital. In this study, the hospital's units under the investigation were determined and no sampling method was used. The data collection was done by a checklist and questionnaire. They had content validity which was confirmed by the viewpoints of psychiatric and behavioral sciences specialists. The data were analyzed through SPSS (version 16) using Kruskal Wallis statistical tests. In this study, the level of significance was 0.05.

**Results:** After assessing safety management in Safety and Accidents Committee and calculating the score average of the studied factors, safety management organization and also hospital's organizational constructs sectors were  $74.43 \pm 13.47$  and  $65.48 \pm 12.25$ , respectively. Their safety management condition was assessed appropriate. Surgery ward was also assessed appropriate regarding the principles of safety management with a mean score of  $77.36 \pm 13.84$ . No significant difference was found among the studied standards in these units according to Kruskal Wallis statistical test ( $P$  value  $> 0.05$ ).

**Conclusion:** The results showed that the condition of safety management in this hospital was acceptable, in general. However, it is necessary to do the following interventions to improve safety condition; training managers and staff, setting and observing the rules and disciplines of safety, regular monitoring of safety issues and considering safety principles implementation as an important factor in evaluating and ranking of hospitals.

**Keywords:** Safety management, Accidents and safety committee, Hospital

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### Introduction

Contemporary medicine has led to the use of new treatment methods and medical care increasingly. Nevertheless, it can be dangerous for patients and may hurt them in some cases (1). However, these threats and dangers can be controlled or removed by using qualified interventions. Safety management (SM), as one of the main determinants of providing health services, has a vital role in enabling hospitals to decrease the potential risks through promoting the safety of patients, staff, policies and processes (2). On the other hand, the level of risks in organizations is fluctuating in different times due

to specific organizational duties and measurements (3). In fact, the organizations can diminish the severity and prevalence of accidents by involving safety measures in patient's routine cares (4).

Therefore, the safety of hospitals is one of the fundamentals of modern management in medical departments and is very significant from economic, moral and human aspects. In other words, regarding the safety principles in hospitals leads to an increase in the effectiveness and efficiency of activities and, consequently, develops productivity (5, 6). Indeed, if the standards of SM are not regarded in hospitals, some events such as fire, shock by electricity and exposure to hazardous agents are unavoidable. This,

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mainly, is due to the presence of many people, mostly patients or disabled, existing modern and complicated devices, chemical and infectious materials, and also flammable things (7).

The investigations conducted in the U.S.A showed that 48000 to 98000 deaths happened and over 5 million dollars were paid by educational hospitals annually due to accidents caused by the cares which were not safe enough(8). The statistical figures demonstrated that one out of 10 patients undergo many kinds of hurt or damage during hospital services in developed countries(9). 6.16 to 9.2 percent of patients are hurt because of disqualified and unsafe medical cares (10). However, Prestagostini et al believe that the safety in hospital can be improved by focusing on the approaches based on SM and future-based risk (11).

The results found in Khaluei et al.'s (2013) project showed that the qualification of SM condition was rather weak in clinical, paraclinical and supportive units (12). The safety condition was reported weak in 25 percent of the hospitals being studied in Norouzi et al.'s (2012) investigation (13). Habibi et al.'s(2007) research which was done in radiology units of the hospitals affiliated to Isfahan University of Medical Sciences showed that the general safety condition in 45 and 55 percent of the studied hospitals was at moderate and weak levels, respectively(14).

Although the prevalence of accidents is rare, their consequences are mostly severe and massive. In addition, they impose a great deal of expenses on hospitals. The improvement of patient's safety is one of the government's priorities especially regarding the importance of their care (15). So, the hospitals should take the standards of SM into consideration to make the necessary preparations (16). The managers of health and medical departments should recognize potential dangers, increase their capabilities and standards and also reduce the threats made by accidents (17). The aim of this study was to assess the condition of safety management in Isfahan's AL Zahra hospital.

## Methods

This is a cross-sectional and descriptive-analytical study which was done in 2013. All AL Zahra hospital's units affiliated to Isfahan University of Medical Sciences were investigated in this project. The criterion for choosing this center consisted of being a general hospital, having an active Safety and Accidents Committee, availability of various kinds of clinical wards and also the type of their services. In this study, the hospital's units under investigation were determined and no sampling methods were used.

The studied units included clinical and paraclinical wards, Accidents and Safety Committee and General Operation Room. They were monitored by census method. The selection of hospital's units was according to the study's goals and their importance in hospital function. In other words, they were selected because they were the main units providing medical services and had an important role in controlling the accidents and improving the safety in the hospital. Moreover, these units had a high level of workload, expensive and complicated devices and were in

contact with a lot of people and clients.

The data collection instruments included a checklist and questionnaire. The title of this checklist was the standards of safety management assessment in clinical and paraclinical units and included the standards which were selected according to Australian Society Standards (3). The title of the questionnaire was the assessment of SM in the operation room and Safety and Accident Committee. Since the condition of safety management in clinical and paraclinical units could be monitored by the researcher and also for increasing the precision of the study, the data were collected through direct observation and interviewing with the managers of the units. But the questionnaire was used to gather the data of operation rooms and Safety and Accident Committee because the documents of safety management were available to safety officials who assisted to conduct the present study.

The checklist applied had ten safety standards comprising 79 questions (Q). This checklist assessed, in turn, management, leadership and organizing (10 Q), human resources affairs (5 Q), policies and processes (3 Q), staff training and improvement (5 Q), facilities and equipment (5 Q), the program of quality reassurance (3 Q), safety affairs against firing (19 Q), safety plans (14 Q), technical facilities and construction services (7 Q) and also incidental and crisis plans (8 Q). All these questions were made for evaluating clinical and para-clinical units.

This study's questionnaire consisted of two parts. The first one included five standards of safety management evaluation in operation rooms. The second part consisted of 12 standards of safety management evaluation in Safety and Accident Committee. The number of questions was 34 and 75 in the first and second sections, respectively. This questionnaire was designed according to Likert 5-option criteria containing very appropriate, appropriate, moderate, weak and very weak options, respectively. The scores zero to one hundred were considered for every standard. The spectrum of score for these five options were noted as follows: 80 to 100(very appropriate), 60 to 80 (appropriate), 40 to 60(moderate), 20 to 40(weak), and zero to 20(very weak) (3).

The validity of the questionnaire was investigated through content validity and by using the viewpoints of psychiatric and behavioral sciences scholars. The reliability of this instrument was assessed by Cronbach's alpha which proved to be 0.77 for the questionnaire, respectively. Cronbach's alpha measure confirmed their reliability.

SPSS (Version 16) was used to analyze the data. Descriptive data were also measured by frequency, frequency percentage, average and standard deviation. The data were analyzed using Kruskal Wallis statistical tests. In this study, the level of significance was 0.05. Since the observation of the units was not enough, non-parametrical Kruskal Wallis test was used in this analysis.

## Results

As shown in Table 1, paraclinical units, including radiology and laboratory, achieved 33.33 percent of the mean score related to the standard of assuring program of quality. This is the lowest rate of SM standards. In

contrast, the standards of staff promotion, education, the facilities and instruments in radiology and the standards of stafforganizing, management, human resources affairs and also their guiding in laboratory represented the highest level of SM standards (80%).

As shown in Table 2, the total mean score of SM in safety and Accidents Committee was 69.95±13.08 in proper conditions. Permanent education and orientation dimension with 83.32±16.8 score and human, physical, financial dimensions and preparation in urgent situations

**Table 1.** The assessment of safety management in different units of hospital

Hospital Units Safety Management Standards	Radiology			Cardiology		Surgery for men		ICU		CCU		Neurology		Labora- tory		sig
	N	F	%	F	%	F	%	F	%	F	%	F	%	F	%	
Management and Organiz- ing	10	6	60	8	80	8	80	8	80	8	80	8	80	8	80	0.423
Staffs Human Resources Affairs	5	3	60	4	80	4	80	4	80	4	80	4	80	4	80	
Policies and Processes	3	2	66.66	1	33.33	1	33.33	1	33.33	1	33.33	1	33.33	2	66.66	
Staffs training and Improvement	5	4	80	4	80	4	80	4	80	4	80	4	80	3	60	
Facilities and Equipment's	5	4	80	4	80	4	80	4	80	4	80	4	80	3	60	
The Program of Quality Reassuring	3	1	33.33	2	66.66	2	66.66	1	33.33	2	66.66	1	33.33	1	33.33	
Safety Affairs Against Firing	19	14	72.8	9	46.8	9	46.8	9	46.8	9	46.8	9	46.8	11	57.2	
Safety Plans	14	8	56.8	9	63.9	9	63.9	8	56.8	8	56.8	10	71	10	71	
Technical Facilities and Construction Services	7	4	56.8	6	71	6	71	4	56.8	4	56.8	6	71	3	42.6	
Incidental and Crisis Plans	8	4	50	6	75	5	62.5	6	75	5	62.5	4	50	6	75	
The total number of stan- dard questions	79															

The standards of stafforganizing, management, human resources affairs and also their guiding ,education and promotion achieved the highest rate of the standards with 80% of the mean score related to clinical wards including Neurology, Surgery for men, Cardiology, ICU and CCU. On the other side, safety standards of policies, guidelines and against firing achieved the lowest mean score (in turn 33.33 and 46.8). In addition, the general score of SM standards was 63.73 in clinical wards (Table 1).

and also accidents with 58.2±12.55 and 55.56±8.81 scores achieved the highest and lowest levels of the studied factors in SM, respectively.

The standard of staff promotion and their education with a mean score of 91.3±10.45 and the standard of policies and guidelines with a mean score of 63.5±28.34 achieved the highest and lowest scores in the surgery ward, respectively. The general score of SM was 77.36 in the studied hospital's surgery ward (Table 2).

**Table 2.** The Mean and Standard Deviation of every studied factor in safety management of hospital

	Assessed factors	Mean	Standard deviation
<b>The condition of Safety Management in operation room</b>	Organizing and Management	80	15.69
	Human Resources and Leadership	72	8.16
	Methods and Policies	63.5	28.34
	Staffs Education and Improvement	91.3	10.45
	Facilities and Instruments	80	14.77
<b>The function of Accident and Safety Committee from Safety Management viewpoint</b>	Organizing and Management of hospital's accident and safety	77	18.44
	Instructions, Laws, Contracts and Policies	77.53	16.71
	Human, physical and financial resources	58.2	12.55
	Permanent Education and Orientation	83.32	8.16
	Productivity and Monitoring Safety Management	74.99	9.35
	Management and Monitoring of possible damages	75	12.54
<b>Hospital's Organization and Structure from management viewpoint</b>	Health and Safety	75	13.13
	Hospital's organizational Structure	61.5	18.77
	Staffs guiding and improvement, Permanent Education	68.75	18.34
	Monitoring possible dangers	63	8.85
	Health and Safety	78.6	11.34
	Preparation in urgent situations and accidents	55.56	8.81

The results of Kruskal Wallis test showed no significant difference among the studied standards of the monitored units (Table 1) (P-value>0.05).

In this Table, F represents the number of correct answers in every standard. Symbol % sign represents the achieved score out of scale 100. In addition, the percentages are shown columnar.

## Discussion

In some units, including radiology and laboratory, especial consideration for safety measures should be given due to the existing expensive and modern devices and the potential to cause dangerous accidents in these units. So, implementation of safety programs is the cornerstone to provide safety in hospital activities especially in radiology and laboratory units (18). The safety score of laboratory in Gilan's educational hospitals was 65 in Pourreza et al.'s (2006) study (5). The investigation of Kerman's educational hospital's laboratories showed 60.1 safety score in Khalouei et al.'s (2013) project (12). This score was 62.57 in the present study for the same units and their condition of safety was evaluated appropriate. In other words, our findings are in the same line with the two mentioned studies. The study by Mustafa et al. (2008) in India showed that over 95 percent of the investigated laboratories had a safe system of solid waste disposal (19). Regarding the safety principles, radiology units have a significant role in protecting the patients and staff against absorption of dangerous rays(14). The mean score of our studied hospital's radiology unit was 61.63. Fathi(2002) found a mean score of 60 for the same unit in his study(20), which agrees with our study's result. This rate was 73 in Norouzi et al.'s (2012) project, which is higher than that of the present study's finding(13). They justified this high score regarding tough disciplines of Atomic Energy Organization and also close observation of hospital's official being supposed to control this affair. Debra Storm(2007) in his study stated that to find the ways for developing hospitals' safety measures against applying radiology rays, permanent education of the staff in addition to observing safety principles were necessary to perform for increasing safety in radiology units(21).

Since clinical wards have complicated and modern facilities and educated staff and provide a great deal of therapeutic services, especial focus on safety issue is very important in these units (5). As shown in the present project, the condition of SM in clinical wards was appropriate with a score of 63.73. This was the same as the results found in Kermanshah University of Medical Sciences in which 65 percent of safety standards were regarded (22).

The success of safety plan in hospitals depends on various factors, among which Safety and Accidents Committee plays an important role in the safety of the organization. This committee should provide safety instructions in hospital according to its apparent responsibilities (16, 23). The score of SM standards, in the present study, was 69.95 in the mentioned committee. This was compatible with Zaboli et al.'s (2006) results in which it was 62.97(3). Norouzi(2012) implied in his study that the most significant SM in this committee included lack of a plan

for assessing and managing the potential risks; providing written safety instructions, safety plans, designs and education; holding the committee sessions; and also lack of the official responsible to follow the affairs related to safety in hospital(13). Milstein(2000), in his study on the hospital's responsibilities in critical situations, found that one of the most important reasons of failure in achieving the safety management necessities is that this committee must have basic science enough for implementing safety principles and provide preparation plans for accidents and also develop them(24).

## Conclusion

This study showed that the safety condition in the studied hospital's units was appropriate. Since observing the safety of patients, staff and people who refer to hospital is very crucial, this issue should be taken into consideration seriously by hospital officials and necessary facilities must be provided as well. For reducing accidents and improving safety condition in hospitals, it is suggested that the staff and managers should be educated and safety rules and principles be implemented precisely. Goal-oriented and regular observations and considering safety principles as an important criterion in assessment of the hospitals and its influence on determining their grades are the other alternatives to diminish the accidents and promote the safety condition.

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