

Factors affecting patient safety: a qualitative content analysis

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Abstract

Background: Patient safety is one of the main components of good-quality health services. The main objective of this study is to explore the most effective factors relating to patient safety in Iran.

Methods: This qualitative study was done using content analysis. Data were collected using semi-structured interviews. Through purposive sampling, 14 participants were selected by experts who were familiar with the patient safety friendly hospital program. Interviews were recorded and then analyzed by framework analysis using MAXQDA software.

Results: Of 2,474 initial codes, 10 main themes and 53 sub-themes were identified, including importance of human resources; organization and management; interactions and teamwork; medication; equipment and physical environment; patient-related factors; patient safety and quality improvement; the importance of documentation; assessment and monitoring; medical errors; barriers and challenges.

Conclusion: Factors affecting patient safety can be divided into two groups: facilitators and barriers. Hospitals can improve the implementation of patient safety standards, reduce the adverse events and enhance patient safety by strengthening facilitating factors, such as providing human resources, adequate medical equipment and facilities, increasing employee participation in quality improvement programs, improving staff training, communicating with patients and their families, and addressing the existing challenges and barriers. [*Ethiop. J. Health Dev.* 2019; 33(2):73-80]

Key words: Patient safety, safety, patient, patient's safety friendly hospitals, hospital

Introduction

Patient safety is one of the main components of health service quality (1), defined as preventing and reducing adverse events and injuries to the patient when they are the recipients of health care (2). It should be noted that proper and safe care is one of the primary rights of patients (3), and the patient safety index is one of the most important hospital management indicators (4).

Today, despite significant advances in medical knowledge, there are still many adverse events in hospital settings around the world that threaten patients (3). Current statistics indicate that patient safety conditions are inadequate, and can cause harm to the patient, including damage to health (5).

Each year, approximately 10 million people around the world suffer from debilitating injuries or death due to unsafe health care, according to the World Health Organization (WHO) (6). Studies show that almost 10% of inpatients in hospitals are associated with adverse events (7,8). In Iran alone, it is estimated that 24,500 people die annually due to medical errors (9).

Harmful and sometimes irreparable consequences of unsafe cares make the patient safety issue one of the key priorities of the health system, leading to global and national efforts to implement its principles (10). In the past few years, major ongoing efforts have been made by policy makers and health care providers to improve patient safety (11). One of the important issues identified by the WHO is to build patient safety friendly hospitals to improve the safety of patients (12).

In 2007, for the first time, the WHO in the Eastern Mediterranean region founded a patient safety friendly hospitals program to address the problem of unsafe services in health centers. The pilot covered six countries: Egypt, Jordan, Morocco, Sudan, Tunisia and Yemen (13). In Iran, the Ministry of Health and Medical Education, in 2011, in cooperation with the WHO, implemented the patient safety friendly hospitals program as a pilot in 10 hospitals (14).

Standards of patient safety friendly hospitals are divided into five main domains (15), the ultimate goal of which are to improve patient safety in hospitals (16). Nine years after the introduction of the patient safety friendly hospitals program, this study was conducted to identify factors affecting patients' safety in Iran.

Method

This qualitative study was carried out in 2017-2018 using the content analysis method. The participants in the study were those familiar with the patient safety friendly hospital program and experts in the field of patient safety. To qualify to participate in the study, participants had to have at least five years of work experience in a hospital, be familiar with patient safety friendly program, and agree to participate in the study. Sampling was done based on objective sampling. Data were collected through semi-structured interviews.

Data collection and analysis were aimed at answering the following two questions:

1) Which factors facilitate the establishment of patient safety friendly hospital standards?

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2) Which factors prevent the establishment of patient safety friendly hospital standards?

The sample size for conducting interviews was 14 to reach data saturation. Data collection started in September 2017 and continued until March 2018.

Interviews were conducted informally by one member of the research team.

The times and locations of the interviews were determined by the participants themselves. The interviewer sought the participants' consent to record the interviews. Average interview time was 80 minutes. After completing each interview and listening to the interview audio file, the implementation were transcribed. The framework analysis approach was used simultaneously with the data collection, in order to

Results

In this study, eight interviewees had master's degrees (57.14%), two had professional doctorate degrees (14.28%), two had PhDs (14.28%), and two had bachelor's degrees (14.28%). The average length of

analyze the data after conducting the interviews. After the interviews, a copy of the extracted codes was sent to the interviewees for confirmation. To understand the interview data, they were read through repeatedly. So, the identification of initial codes and the similar initial codes were put together in the same class, and the initial classes were formed. The classes were then merged to form themes. Maximum variation sampling was used to increase the credibility of the data. After the data was encoded, the categories were formed and then themes were created. Qualitative content analysis was performed using MAXQDA software in the section for entering interview texts, indexing them, encoding, identifying themes, and extracting related citations to support the findings. Ethical considerations were addressed by obtaining informed consent.

their work experience was 18.07 years. From the analysis of interviews about the factors affecting patient safety, 2,474 primary codes, 10 main topics and 53 sub-topics were identified. Table 1 shows the main topics and sub-topics that were extracted.

Table 1: Factors Affecting on Patient Safety

Row	Topics	Category
1	Importance and Status of Human Resources	Role and position of personnel Personnel Training Role and position of physician Students Role and position of head nurses
2	Organization and Management	Role and status of managers Hospital meetings and committees Planning to establish patient safety Resource management in the hospital The importance of hospital processes Hospital statistics, information and indicators Health system development plan The importance of ministry's plans and decisions on the performance of hospitals The position of hospital technical officers Hospital bed manager The importance of the university headquarters
3	Interaction and Teamwork	Co-operation and participation of all in the patient safety program The importance of departments and units in patient safety Hospitals' relationship with each other Proper patients delivery in delivery time
4	Medication, Equipment and Physical Environment	The importance of medical equipment and facilities Physical environment and facilities Medicine Mobile, Software and Networks (Software Facility)
5	Patient-Related Factors	The role and position of patients Communicating with patients Training and empowering patients Examples of harm to patients Consultation and Para clinical measures of patients Obtaining informed consent from patients
6	patient safety and quality improvement	Patient safety friendly hospitals program Implementation of patient safety program Continued quality improvement programs The Importance of compliance with patient safety standards The position of quality improvement office in implementing patient safety program Patient safety culture Patient safety in hospital accreditation Hospital measures in line with patient safety Implementation and performance of hospital standards and clinical guide lines
7	Importance of Documentation	Correct recording of patient information and documentation
8	Evaluating and monitoring	Patient Safety Executive Walk-Rounds Evaluation of patient safety standards in hospitals
9	Medical Errors	Root cause analysis and learning from errors Error reporting system Medical errors and patient safety threats Causes of errors and harm to patients
10	Barriers and Challenges	Hospital problems Crowded sections and the large number of patients Plenty of changes in programs over time Hospital financial problems High workload in hospitals The large number of running programs in the hospital Delay in personnel payment

The importance and status of human resources: In the present study, the interviewees expressed that cooperation and participation of personnel were among the most important factors in establishing patient safety standards in hospitals. One of the interviewees said: *“This program calls for the cooperation of all personnel; everyone involved in the safety of the patient is important.”*(Interviewee no. 10)

Another interviewee stated: *“If all personnel are not involved in implementing quality improvement programs in the organization, the goal will never be achieved.”* (Interviewee no. 11)

The interviewees also held that teaching quality improvement issues and patient safety standards are other factors in the success of establishing a patient safety program in hospitals: *Education is very important and it must be continuous. It must be held for everybody overtime.”*(Interviewee no. 9)
“We work very little to educate and empower people if this is so important.”(Interviewee no. 14)

Organization and management: The role and importance of managers in hospitals is obvious. One of the interviewees stated: *“The position and role of hospital managers and administrators is very critical. Managers are the main decision-makers. Hospitals can succeed in their programs and goals when their managers are qualified.”*(Interviewee no. 2)
Another interviewee said: *“In order to achieve the quality improvement program’s goals, hospital managers are very influential.”* (Interviewee no. 3)

Interaction and teamwork: According to the interviewees, other important factors in the successful implementation of quality improvement programs are teamwork and participation. In addition, multi-hospital collaboration for safety improvements is increasingly common (17): *“I think the biggest mistake a manager can make is to assist patient safety and quality improvement activities just for an office and an expert. These programs require teamwork.”*(Interviewee no. 7)

Medication, equipment and physical environment: The interviewees highlighted the importance of the effects of drugs, medical equipment and physical environment in hospitals. One of the interviewees said: *“One of the main issues about patient safety is precise medication. Identifying the high alerts and similar drugs, separating them and coloring them, are very important in patient safety.”*(Interviewee no. 9)

Another interviewee expressed the importance of medical equipment: *“We have patients who are connected to the devices 24 hours a day. I think the importance of medical equipment and its impact on patient safety is really evident.”*(Interviewee no. 6)

It must be acknowledged that the effects of the physical environment on the patient’s safety are multifactorial. Confirming this view, one of the interviewees stated: *“Corridors, stairs, toilets, windows, beds, even floorboards, are all important in patient safety.”*(Interviewee no. 5)

Another interviewee asserted: *“If the windows of the hospital are not guarded in children’s departments, patients are likely to fall. If sections are not systematically placed, the possibility of transmitting contamination and noise can damage the patients’ health.”*(Interviewee no. 11)

Patient-related factors: The role of patients and their families is also very important. Patient education, interaction with patients and their involvement in the treatment process are significant issues in improving patient safety. Examples of interviewees’ statements are as follows: *“I always remind the personnel to communicate well with the patient, talk with them, and have a detailed biography about them.”*(Interviewee no. 4)
“Communicating with patients can be very helpful in preventing adverse events and medical errors. It is very important to teach patients or their families. They should be well aware of their treatment. In many cases, the patient’s awareness prevents the incident and harm.”(Interviewee no. 7)

Patient safety and quality improvement: It is essential that the patient safety program is comprehensive. Interviewees on the patient safety program acknowledged this: *“The patient safety program is good but complex. If I want to briefly describe patient safety, I would say that it is a comprehensive, complex and time-consuming program.”* (Interviewee no. 1)

Another interviewee stated: *“The patient safety program is good, it has comprehensively focused on everything. This program and its standards are very broad...”*(Interviewee no. 3)
The interviewees believed that the proper implementation of the patient safety program requires ongoing planning. Supporting this view, interviewees stated: *“Quality improvement programs should be continuous and targeted, and continue over time.”*(Interviewee no. 8)
“Implementing standards is not possible in the short term, and it requires time and change of thoughts and behaviors.” (Interviewee no. 10)

Importance of documentation: The interviewees believed that accurately written patients’ medical records significantly reduce the risk of errors and mistakes, and therefore harm to the patient. One of the interviewees said: *“Registering patients’ information in medical records is another important issue that is directly related to the lives of patients.”*(Interviewee no. 3)
A further interviewee said:

“Patient information and biography, medical history and the work done for the patient must be properly recorded, since the correct and complete recording helps the correct decision and treatment of the patient.” (Interviewee no. 10)

Evaluating and monitoring: From the interviewee’s perspective, another current program that is important in improving patient safety and identifying pros and cons of hospitals is having continuous and purposeful visits based on patient safety standards:

“Patient safety executive walk rounds that show clinical and para-clinical parts are all important and are involved in patient safety.” (Interviewee no. 4)

Another interviewee corroborated this statement:

“Undoubtedly, periodical patient safety walk rounds have a significant impact on establishing patient safety standards.” (Interviewee no. 12)

Medical errors: In the present study, the interviewees stated that although there are many programs and activities to improve patient safety, medical errors are still considered as one of the main risks to patient safety. Therefore, it is important to analyze the errors in order to root them out and prevent them recurring. One of the participants stated:

“Events that happen for patients are not insignificant, from medication errors to patient falls, misdiagnosis of patients, and many other things that damage patient safety.” (Interviewee no. 9)

Another interviewee said:

“Personnel are not willing to report errors since they think they will be punished and fired if they report it.” (Interviewee no. 1)

In contrast, another interviewee believed that reporting hospital errors, and summarizing and analyzing, them is a worthwhile task:

“Knowing which one of our mistakes is related to which group or which segment, or in which shifts we have the most errors, we can apply, analyze, and use them in making decisions, and preventing them from repeating.” (Interviewee no. 5)

Barriers and challenges: The interviewees believed that different barriers and challenges make implementing patient safety standards difficult. Examples of interviewees’ statements are as follows:

“My colleagues should constantly answer the phone. Well, it is clear that he loses his focus on doing the job, writing a patient’s medical record and so on. In my opinion, the amount of workload and the number of patients affect the safety of patients and can even lead to errors and mistakes.” (Interviewee no. 1)

“It is hard to require hospitals to run programs without regard to the proper working environment.” (Interviewee no. 5)

“Nowadays, many hospitals have faced shortage of equipment and drugs due to financial problem. Lack of medical equipment in diagnosis, treatment or rehabilitation affects everyone’s life and health.” (Interviewee no. 6)

“We had a lot of programs that changed over and over again, and many of them were even totally cancelled. These successive changes, and shifting programs and

priorities, lead to waste of resources.” (Interviewee no. 9)

Discussion

In this study, factors affecting patient safety were classified into 10 main categories. In a study by Ridelberg *et al.*, nurses ranked 22 factors affecting patient safety in seven groups of patient-related factors: personal factors, team work, duties, technology and equipment, work environment, management and organization, and organization and institution conditions (18). Razmara *et al.* prioritized the factors affecting patient safety in the form of task, team, individual, managerial, hospital, patient and ‘beyond hospital’ factors (19). In both of the above studies, the importance and position of management, teamwork and participation and the role of patients in improving patient safety are emphasized. Also, in a study by Nobahar, four main categories – constant nursing care, patient participation, organizational strategies and intellectual management – were identified as being effective for patient safety (20).

From the perspective of the interviewees, managers and organizations’ human resources are important in improving patient safety. It should be noted that managers’ commitment and their participation are essential to support patient safety activities in hospitals (21) and that strong leadership is needed to make the patient’s safety plan successful (15,22).

Results of this study show that teaching quality improvement programs and patient safety standards are other factors in the success of establishing a patient safety program. Other studies confirm this (23-26).

Other factors influencing patient safety are teamwork and participation. Improving communication and teamwork lead to improved patient safety (19,26,27). In contrast, communication problems between treatment team members is an important contributor to health problems (5). In another study, Lee stated that an unpleasant relationships between treatment team members increase medical errors (28).

In this study, interviewees stated that other factors that have an impact on patient safety in hospitals are medical equipment and the hospital environment. In fact, providing a safe environment should be central to a hospital’s goals and priorities (28). Nobahar considers that the most important factor in patient safety and the quality of care in medical and health care organizations is work environment (26). Another study found that suitable work environments and adequate medical equipment are associated with decreasing patient deaths, decreasing falls, reducing medical errors, and reducing the patient’s length of stay (28).

We found that educating patients, communicating with them and involving them in the treatment process, are factors that influence patient safety. The results of similar studies show that educating the patient and their family and engaging them in the treatment process have an important role in patient safety (18,20,29,30).

In fact, communicating with patients is very effective in reducing medical errors (31). Hospitals can help patients make good decisions and participate in the treatment process by increasing the patient's health awareness (32).

Interviewees stated that the best way to identify threats to patient safety are executive walk rounds, the purpose of which are to identify and address risks, and thereby improve patient safety in all clinical wards (33). Indeed, patient safety walk rounds are a valuable tool to identify patient safety factors in hospitals, as well as a solution to solve the systemic patient safety problem (34). Also, regular and periodic visits are an important step in promoting a positive patient safety culture (35).

In the present study, the interviewees stated that the occurrence of adverse events and medical errors are factors which threaten patient safety in hospitals. It should be noted that medical errors are one of the biggest problems in the health system and the main concern of patient safety in health care organizations (36-38). Factors such as lack of knowledge, and lack of sufficient skills of health care providers, lead to medical errors (39). Moreover, the shortage of human resources, including physicians and nurses in many medical units, and the consequent increase in workload, significantly increases the number of medical errors (5,24). Interviewees also stated that hospitals can decrease this problem and improve the level of patient safety by promoting a patient safety culture (35,40), because establishing a patient safety culture is a vital step in providing good-quality service to patients (41), and establishing a medical error reporting system allows hospitals to learn from and prevent them (37,42,43). Also, analyzing previous errors, improving the 'learn and share' system, and learning from other countries' experience, are recommendations to reduce medical errors in the health system (24). In addition, a study by Nemati *et al.* shows that communicating with patients, and engaging skilled and observing the standards of staffing in terms of quantity and experience, can reduce error rates in hospitals (44).

According to the interviewees, there are many different challenges – such as financial problems, large numbers of programs running in hospitals, lack of human resources, high workloads – that make patient safety standards in hospitals hard to achieve. Doshmangir *et al.* state that a lack of clinical guidelines, lack of an effective and targeted system for proper monitoring of the programs, not localizing patient safety knowledge, failing to implement planned programs to prevent and decrease errors, are challenges to implementing patient safety program in hospitals (24).

Conclusions

Factors affecting patient safety can be divided into two groups: facilitators and barriers. By strengthening the facilitators, such as providing enough human resources and medical equipment, running comprehensive educational programs, improving patient safety culture, improving communication and team working, and improving medical error reporting, and by removing

existing difficulties and providing required infrastructures, hospitals can facilitate the implementation of patient safety standards to yield improved quality of care, decreased adverse events and, of course, patient safety. The patient safety friendly hospital in Iran can be considered as a model to reduce of medical errors. The World Health Organization has also recommended this model for hospitals.

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