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A Qualitative Investigation into Components of Patient Safety Organizational Culture in the Medical Education Centers: A Medical Errors Management Approach

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Abstract

Introduction: The patient safety is a subset of organizational culture and is defined as a set of individual and organizational priorities, values, attitudes and behaviors which look for minimizing errors and damages arising from the process of patient treatment. This study seeks to describe the experiences of patients and their companions about the patient safety organizational culture and medical errors management.

Methods: This qualitative study was conducted in the health and medical education centers affiliated with Isfahan University of Medical Sciences in 2017. A total of 15 patients and companions receiving health services in medical education centers were selected using purposive sampling and in-depth interviews were conducted with the participants. Conventional qualitative content analysis was used to analyze the data.

Results: 186 initial codes, 23 sub-subcategories and 6 main themes were extracted from the data which are as follows: culture of errors acceptance vs. non-acceptance, culture of disclosing vs. hiding errors, psychological and physical consequences and financial burden of medical errors, learning from errors, the culture of patient participation and training, developing the culture of safety and all-inclusive quality improvement.

Conclusion: The results of the present study indicate a vast array of culture of non-acceptance vs. acceptance of errors and disclosing vs. hiding errors. Thus, it is imperative for the organization's senior managers to make corrective interventions so as to maintain and promote the culture of learning from errors and patient education and participation in the process of their treatment and ultimately the culture of safety and all-inclusive quality improvement.

Keywords: Organizational Culture, Patient Safety, Error Management, Medical Education Centers, Qualitative Content Analysis

Introduction

Patient safety is a global health concern that affects patients in various areas of health services in all developed and developing countries (1). Patient Safety Organizational Culture, as a subset of organizational culture, is a combination of individual and group values, attitudes, perceptions, competencies, and behavioral patterns that express an organization's commitment, method, and skill in terms of safety management(2). Patient safety organizational

culture is a complex and multifaceted issue on which many factors influence. Thus, it demands multidimensional attention. One approach adopted is the management of health-related errors (3). Errors should be used as an opportunity to gain experience and learning in preventing their re-occurrence, upgrading system, troubleshooting and ultimately enhancing patient safety organizational culture (4). Patient safety organizational culture is characterized by features including: beliefs about the high risk of health care liability (5), proper management of errors, not hiding errors, using reporting system data in improving processes (6). Errors in the medical and health sciences are fundamentally different from errors in other domains. Aside from damaging the system, the emergence of medical errors hurts the patient as the leading client of the organization (3). Medical errors are one of the most important challenges which threaten patient safety in all countries. Annually, they cause deaths and physical and mental complications for patients, their family members, and even the society (1). Medical errors are one of the five most common causes of death in the world. According to the estimates provided by the World Health Organization, tens of millions of patients worldwide are victims of injuries and deaths derived from unsafe care and treatment activities (7). For example, medical errors in the United States lead to 44,000 to 98,000 hospital deaths annually (2). In the UK, adverse events occur in 10% of hospital admissions; in Australia, 16.6% of hospital admissions lead to adverse events (8). In addition to causing death and financial disability, the occurrence of such errors will also bring about huge costs in the health sector (4). Given the high figures of medical errors, which is an indispensable feature of healthcare systems both worldwide and in Iran, issues such as patient safety and health-related errors are not only a concern for the health sector, but also for patients and their companions. Understanding the overriding importance of patient safety organizational culture in increasing proper error management and decreasing medical errors has led to numerous studies in this area. The current challenge of medical education centers is monitoring patient safety in therapeutic processes through proper error management. As can be seen, in Iran there are few studies in the field of patient safety organizational culture and error management, most of which have been conducted quantitatively. Certainly, quantitative methods cannot deeply examine the various dimensions of this phenomenon from the perspective of first-hand experiences of patients and their companions. However, qualitative methods enable the researchers to discover the depth and intrinsic complexities of a phenomenon and to validate knowledge through the experiences of those involved in the phenomenon. Thus, a qualitative content analysis approach is used in this study which to describe the experiences of patients and their companions about the organizational culture of patient safety and error management (9).

Methods

The study at hand adopts a qualitative research method and, in particular, conventional content analysis approach. In qualitative research, researchers attempt to create meaning for the phenomena and interpret them in terms of the meanings provided by patients and their companions in their natural places. Content analysis refers to the process of systematically categorizing the collected data through which codes and themes emerge (9). Purposive sampling was performed in line with the type of qualitative research. In purposive sampling, the researcher seeks those who have a rich experience of the phenomena under study as well as those are willing to take part in the study (9). Thus, those individuals were sampled who had the experience of being hospitalized, had suffered from medial errors and had complained about it. They were also willing to participate in the study. The participants included 15 patients and their relatives receiving health care services in the medical and educational centers affiliated with Isfahan University of Medical Sciences. In-depth and unstructured interviewing was used to gather participants' information so that

participants have more leeway to talk about the study topic. The researchers first acquainted with the participants in the hospital setting. Afterwards, the time and place of the interviews were scheduled with them. The interviews were conducted outside the hospital setting. After referring to each one of the participants, it was tried to provide them with detailed explanation of the research purpose and procedures in order to gain their full satisfaction in participating in the study. Prior to the interviews, participants' permissions were asked for recording the interviews. They were also assured of the confidentiality of their information. Each interview lasted from 20 to a maximum of 45 minutes and open-ended questions were designed as interview guides. In each interview, patients and their companions were asked about their understanding of patient safety and the experience of error occurrence. The general question which was asked in all interviews from the patients and their companions was, "What is your perception of patient safety and hospital error experience?" This question generally included their experiences, thoughts, feelings, concerns, and worries about safety issues and error occurrence in the hospital. Depending on their answers, further questions were asked. The guiding principle in qualitative research sampling is data saturation until no further information is obtained (9). Thus, in the present study, data collection continued until a saturation point was reached by interviewing 15 patients and their companions. Simultaneous with data collection, the data analysis process was conducted using a conventional content analysis method. Qualitative content analysis is a research method for conceptual interpretation of contextual data through systematic categorization, coding, theming or designing known patterns. Qualitative content analysis allows researchers to interpret the originality of the data in a mental though scientific manner. The objectivity of the study findings is guaranteed by a systematic codification process. The content of the recorded interviews was transcribed verbatim and then the resulting contents were matched again with the recorded information. As the qualitative research requires the researcher to get immersed in the data, the researcher listened to the interviews several times and then extracted meaning units from the participants' statements in form of initial codes. The codes were also categorized according to their semantic and conceptual similarity and were summarized as much as possible. The process of downgrading data flowed across all units of analysis and categories and subcategories. Finally, the data were subdivided into several general and conceptual categories from which the main themes were abstracted (10). Specific methods were used throughout the study to ensure the robustness of the data. The data validity was obtained through reviewing the content of the recorded interviews, using the complementary comments of the participants as well as through the long-term involvement of the researcher with the data. In addition, two experts in the field of qualitative research supervised and audited the entire research process. Maximum diversity sampling also provided data portability (9).

Results

The participants included 15 patients and their companions receiving health services in medical education centers affiliated with Isfahan University of Medical Sciences. They aged between 32- 60 years old with the average age of 42.3. The demographic characteristics of the participants are listed in Table 1.

Table 1. Demographic characteristics of the participants

Interview Code	Gender	Patient/ Companion	Age	Career	Education
Code 1	Male-	Patient	44	Self-employed	Diploma
Code 2	Female	Patient	44	Housewife	Diploma
Code 3	Male-	Companion	38	High school Teacher	Bachelor's degree
Code 4	Male-	Companion	45	Mechanical Engineer	Bachelor's degree
Code 5	Female	Companion	35	Nutritionist	Bachelor's degree
Code 6	Male-	Companion	48	Self-employed	Diploma
Code 7	Male-	Patient	55	Retired	Diploma
Code 8	Male-	Patient	60	Retired	Junior Certificate
Code 9	Female	Companion	32	Housewife	Bachelor's degree
Code 10	Female	Companion	38	Bank Clerk	Associate degree
Code 11	Male-	Patient	45	Employee	Associate degree
Code 12	Female	Companion	38	Computer Engineer	Bachelor's degree
Code 13	Female	Companion	40	Housewife	Junior Certificate
Code 14	Male-	Patient	39	Civil Engineer	Master's degree
Code 15	Female	Patient	34	Housewife	Bachelor's degree

Table 2. Initial codes, subcategories, and main themes extracted from interviews

Main Theme	Subcategories	Some Initial Codes
Culture of Errors Acceptance vs. Non-Acceptance	Accepting responsibility for errors	The medical education system's accepting of the error; the medical center's accepting responsibility for the adverse effects of the error; the nurses' faults for the patients' feeling bad; not accepting the errors by physicians or nurses; not blaming oneself (physician or nurse)
	Thoughts of invincibility and infallibility	Not relying solely on individual knowledge; downplaying the error; the nurse's claiming mastery over his/her own tasks; using the strategy of justification for explaining the error
	Causes of error	Lack of career skills; lack of adequate erudition; making haste in doing care services; being careless in doing health care tasks; not allocating enough time to talk with the patient/companion; the drug's formal similarity with antiseptics
	Error type	Hiding errors; clear and obvious errors; intentional errors and unintentional errors
	Causing no more harm	Not adding a further pain to the patient's physical pains and problems; the deterioration of the patient's physical conditions due to hospital infections;
Culture of Disclosing vs. Hiding Errors	Hiding errors	The physician and the nurse's refusing to accept the error; hiding the error which has occurred
	Patient's right to be informed of the error	Informing the patient/companion about the error; the patient's right of being aware of the error which has occurred; Informing the patient and his/her family about the damages of the errors
Psychological and Physical Consequences and Financial Burden of Medical Errors	Error-induced physical problems and complications	Developing long-term physical adverse effects due to not receiving enough training; damaging the administrative system; damaging to the patient's cornea due to spreading chemical drugs over his/her eyes
	Error-induced mental problems and complications	The patient's/ companion's anxiety and stress due to the occurred error; loss of their confidence in the medical education centers

	Error-induced Problems and Costs	losing job due to physical consequences; imposing extra costs to the patient due to not receiving enough training
	The manner of dealing with the error	The patient's/companion's aggression due to the occurred error and their mental imbalance
	Legal complaints	Appealing to deal with the complaint and Proving the Error
Learning from Errors	Preventing similar errors	Preventing similar errors for other patients
	The experience of learning from errors	Learning from error
The Culture of Patient Participation and Training	Patient's need for being informed and trained	Not training preventive and curative do's and don'ts to the patient; the companion's confusion in taking care of the patient due to insufficient training; not training dangerous signs when discharging the patient
	Patients' participation in their treatment process	Not heeding and trusting what the patient says; not allowing the patient to participate in his/her treatment
	The patient's free and informed choice	Asking the patient's opinion about his/her treatment; explaining the benefits and dangers of treatment measures to the patient/ companion; granting the patient the right to decision-making in his/her treatment process
	The necessity of the patient's awareness from the legal complaint process	The patient's/ companion's lack of information about medical lawsuits; needing a committed person not affiliated with the hospital to follow up the error
Developing the Culture of Safety and All-inclusive Quality Improvement	Environmental health safety and infection control	Adhering to hygiene principles and not receiving extra hospital infections
	Monitoring the performance of the medical education system	Doing aggressive medical treatments under the supervision of a professor; not supervising of the physician over the resident physician's prescriptions; the necessity of monitoring medical students in health medical education centers
	Safe and standard medication	Appropriate drug prescription with proper dosage; paying attention to drug sensitivity
	Safety of equipment and supplies	Poor quality of venipuncture; standard hospital equipment and facilities
	Conducting preventive corrective interventions for the secondary adverse effects	The need for timely and instant action in case of error and prevention of secondary effects of error

In the present study, 186 primary codes, 23 sub-themes (or sub-categories) and 6 main themes were extracted, some of which are presented in Table 2 and are described in detail below.

Culture of Acceptance vs. Non-acceptance of Errors

This main theme consisted of 5 sub-themes (subcategories) of: acceptance of responsibility for the occurrence of the error; thoughts of invincibility and infallibility; factors causing the error; type of error and causing no more harms.

Acceptance of responsibility for errors included: the medical education system's accepting of the error; the medical center's accepting responsibility for the adverse effects of the error; the nurses' faults for the patients' feeling bad; not accepting the errors by physicians or nurses; not blaming oneself (physician or nurse)

*"Unfortunately, there is a problem that the physicians often do not want to admit that what happened to the patients was due to their failures and mistakes…They can at least accept their mistakes and take responsibility for the consequences." (*Code1- Patient)

Lack of career skills; lack of adequate erudition; making haste in doing care services; being careless in doing health care tasks; not allocating enough time to talk with the patient/companion; the drug's formal similarity with antiseptics.

"The nurse's carelessness caused the injection of a wrong drug into me and it made me feel bad …I nearly died…After checking out, they said the two

drugs were similar in shape and my nurse had not noticed." (Code 2- patient)

The type of error included hiding errors, obvious errors; intentional vs. unintentional errors.

"...An error is not always obvious ...Errors are often hidden..." (Code 11-patient)

Doing no more harm, included not adding a new pain to the patient's physical pains and problems; the deterioration of the patient's physical conditions due to hospital infections;

"...When a patient is admitted to hospital, no further pain should be added to her/his pains, and the patient should not played with in the educational health system." (Code 14- patient)

Culture of disclosing vs. hiding errors

This main theme consisted of 2 sub-themes of: hiding errors and the patient's right to be informed of the error.

Hiding errors included the physician and the nurse's refusing to accept the error and hiding the error which has occurred.

"...Unfortunately, there are a lot of errors in medical education centers and if the patients and their companions do not realize them, the wards' staff would conceal them ..." (Code 3 - companion)

Patients 'right to be aware of the errors included notifying the patient about the patient and his/her companion about the error and informing the patient and his/her family about the damages of the error.

"...The patient has the right to know what has happened to him/her If a deliberate or inadvertent error is made on a patient, the patient must be notified if the he/she has been damaged... " (Code 11-patient)

Psychological and Physical Consequences and Financial Burden of Medical Errors

This main theme included 5 sub-themes of: physical, mental and psychological problems and complications, error-induced costs, the manner of dealing with the error, and the legal complaint.

The error-induced mental problems and complications included stress, anxiety of the patient/companion and their non-confidence in medical education centers, etc.

"...Every time I get hospitalized, because of a previous accident that had happened to me, I was given the wrong medication, I get so agitated and can't help worrying that a terrible incident is again waiting for me..." (Code 8- patient)

The error-induced costs included losing job due to physical consequences and imposing additional costs on the patient due to not receiving adequate education.

"...The negligence and failure of the hospital staff forced me to stay in the hospital for a few more weeks, and it cost me a lot more ...I was dismissed from my job too..." (Code 7- patient)

The manner of dealing with the error included the patient's/ companion's aggression following the occurrence of the error and their mental imbalance after their awareness of the error.

"I couldn't control myself when I realized this error had happened to my baby and I ruined the hospital by my screams..." (Code 13- companion)

Legal complaint included appeal for dealing with the complaint and trying to prove the error.

"...After a lot of complaints to the medical system, it was found that they had misidentified the place of operation because they had written in the file right hernia instead of the left hernia ... " (Code 10- companion)

Culture of learning from Errors

This main theme consisted of 2 sub-themes of: preventing similar errors and learning from errors.

Preventing similar errors included precluding similar errors for to occur for other patients.

"...I asked the head of the hospital to address this problem so as to prevent this error to occur for other patients ..." (Code 12 - companion)

Learning from errors meant the willingness to learn from errors.

"What has happened has happened, but at least hospital staff can look into why this problem has happened and what was wrong with their procedures..." (Code 11- companion)

The Culture of Patient Participation and Training

This main theme included 4 sub-themes of patient awareness and training; patient participation in their treatment process; the patient's free and informed choice and the need to be aware of the legal complaint process.

Patients' awareness and training needs included not training preventive and curative do's and don'ts to the patient; the companion's confusion in taking care of the patient due to insufficient training; not training dangerous signs when discharging the patient

"...When you want to get discharged, the doctors and nurses often do not properly train you the things you have to obey. For me, this is the biggest mistake, because a lot of other problems happen to you, if you are not taught the necessary instructions." (Code 7- patient)

Patient's participation in the process of treatment included not heeding and trusting what the patient says; not allowing the patient to participate in his/her own treatment and ...

"..They didn't heed my warnings that this medicine didn't suit me. When they injected that medicine into me, my body reacted and I felt bad. If they had listened to me, that incident might have not happened ..." (Code 2 -patient)

Free and informed choice of the patient included asking the patient's opinion about his/her treatment; explaining the benefits and dangers of treatment measures to the patient /companion.

"They should ask the patients' opinion about what they want to do on them and tell them what the benefits and risks are, what the possible consequences may be, and to allow the patients to decide on their treatment..." (Code 14- patient)

The necessity of awareness of the legal complaint process included the lack of patient's / companion's awareness of the rules for pursuing medical complaints.

"I wish there was a person or an authority in the hospitals with no affiliation with the hospital that could advise patients on the procedures of their medical complaints..." (Code 10- companion)

Developing the Culture of Safety and All-inclusive Quality Improvement

This main theme included 5 sub-themes of: environmental health safety and infection control; monitoring the performance of the medical education system; safe and standard medication; safety of equipment and supplies; making corrective interventions to prevent the secondary consequences of errors.

Environmental health safety and infection control included complying with the health principles and not developing extra hospital infections.

"...The most important thing to be kept in the hospital is to follow hygiene standards...If the hygiene standards are followed, the patient will no longer get another infection that may make him/her feel be worse... " (Code 2-patient)

Medication safety standard consisted of prescribing the right drug with the right dosage and paying attention to the patient's drug sensitivities.

"At the time of discharging, the intern prescribed Phenobarbital in my baby's health insurance card...We didn't think either that it might be harmful. We gave it to our baby, and he passed out and kept getting black in face. After bringing him back to the hospital, we were told that the medication was 3 times more than the baby's weight ... " (Code 6- companion)

Safety of equipment included the low quality of venipuncture needle; standard hospital equipment, etc.

"Sometimes it takes a few times to pierce the kid's limbs and catch his/ her vein, but some other times they rapidly catch his /her vein ... When I asked for the reason, the nurses told me that it depended on the quality of the venous needles that the hospital provided. If they were not of good quality, they would get broken when applied. So the nurses had to pierce the patients' limbs several times to catch their vein ..." (Code 12 - companion)

Discussion

The study findings were analyzed and categorized in six main themes which are discussed in detail below. As it can be seen, one of the subcultures which is seen in the patient safety organizational culture in medical education centers, is the culture of acceptance vs. non-acceptance of errors. Accepting the global view that error is an integral part of life and its avoidance is impossible, but that it can be minimized can help the organization to admit and identify errors and to take preventive and corrective interventions (5). Also, the lack of the culture of non-acceptance and perfectionism in

the organization is among other cultural strategies to disclose errors by service providers and ultimately reduce the incidence of error (3). The findings of the present study are consistent with those of Hashemi's study entitled "Ethical Response to Nursing Errors" regarding the theme of acceptance vs. non-acceptance of errors. He emphasizes a number of issues, including human fallibility, errors' universality and unavoidability in health services (11). Another finding of the present study is the culture of hiding vs. disclosing errors from the perspective of patients and their companions. Disclosure is one of the most important factors in reducing errors and their management. Nasiripour et al. concluded that error disclosure, which consists of organizational culture factors, provider-related factors, error-related factors, disclosure settings, and structural factors, is an effective factor in error control and has the greatest impact on error management and prevention (3). Studies conducted by Leape (12) and Etchegaray et al (4). also confirm the impact of error disclosure on the management of medical errors prevention. In a qualitative study conducted to evaluate nurses' experiences of disclosing errors to patients, Greene argues that proper error disclosure should focus on patient as one of the key components of this process. The providers of care and training services should sympathize with the patient and his/her family, provide emotional and financial support whenever possible, assure them of not repeating the error in future, and give full details of the error and its causes (13).

The need for the culture of learning from mistakes and preventing the repetition of similar errors was another theme extracted from the views of patients and their companions. One of the most important ways to enhance patient safety is through personal and organizational learning and gaining experience from hospital errors. This requires appropriate leadership in health care systems and a culture that facilitates the learning process and the sharing of error experiences (2).

In a study seeking to examine the cultural dimensions of safety in Lebanese hospitals, El Jardali et al. displayed that one of the dimensions which obtained the highest positive score in safety culture was related to organizational learning and continuous organizational improvement (14). In a study to identify systemic factors in nurses' perceptions of patient safety organizational culture, Aboshaiqah AE also confirms this fact (1). The results of a quasi-experimental study conducted by Patt Sullivan to investigate nursing students' perceptions of culture and its relationship to active errors management and students' errors and near misses in their apprenticeship field before and after an educational intervention showed that disclosure rates and reporting errors ranged from 19.2% before intervention to 40.4% after intervention. Also, the results of this study implied an increase in the culture of learning from errors among students (15). A study by 5-Top and Tekningunduz, which examined nurses' perceptions of safety culture in one of the Turkish public hospitals, revealed six important predictors of overall safety perception, one of which was improving continuous organizational learning and learning from errors (5). Richter also identified error feedback and organizational learning from errors as important predictors for error reporting (7). Another finding of this study is the culture of patient participation and training. Patients as clients of health care organizations have rights which physicians, nurses, and other health professionals are responsible to preserve them, including the right to receive training and to participate in health care decisions. Parsapour and Larijani compared the attitudes of patients, physicians and nurses about the necessity of complying with the provisions of the Patient Rights Charter and demonstrated that compliance with the patients' right to information and decision-making far outweighed this need, especially from the patients' point of view (16).

Among the other main themes of this study reference can be made to the development of safety culture and all-inclusive quality improvement. As patient safety has many dimensions, promoting patient safety in health care centers thus requires a multiple approach.

Developing a comprehensive approach guides health service professionals and practitioners to identify specific safety priorities and programs and allocate the required resources to develop and implement them. In a study to assess patient safety standards in health educational centers, Asefzade et al. presented a comprehensive approach including six dimensions: structure, environment, equipment, processes, individuals, systems of leadership and culture. Environment referred to health standards and infection control; equipment referred to the safety of equipment; processes referred to the correct clinical protocols and processes including the safe medication system; and individuals and leadership systems referred to staff monitoring and leadership practices. They argued that using this approach and understanding the factors that contribute to the rise of errors, the required concepts and principles needed to reduce errors and promote patient safety culture can be used (17).

Conclusion

In health and medical education centers, these errors are inevitable. Due to their greater sensitivity and wider range of consequences in the health system, it is necessary to control and manage errors. Therefore, by instituting a culture of correct disclosure of errors to patients through a reciprocal honest relationship and the patients' training and participation in their treatment process, patients' rights must be respected. On the other hand, healthcare providers should be supported based on this view that every human being is fallible. This way, an open and fair environment away from any reproach and punishment for preventing errors can be provided so as to discuss errors and learn from them.

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Conflicts of Interest

There is no conflict of interest.

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