Original Article

Nurses' families' experiences of involvement in nursing errors: A qualitative study

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ABSTRACT

Background: The most important and irreversible consequence of medical errors is the human impact caused by unintended actions. In a few studies, the significant impact of this error on the private life of healthcare staff have been mentioned, but the problems of the involved nurses' families had been ignored, as of now.
Aims: This study aimed to explain the nurses' families' experiences of involvement in nursing errors.
Methods: This is a qualitative study using conventional content analysis with 20 semi-structured interviews conducted with nurses and family members of nurses involved in medical errors, done through purposeful sampling and willingness to participate in the study.
Results: The results of the data analysis consisted of five main categories including disruption in family functioning, the crisis of fear, oppression, damage, and neglect, along with 15 subcategories.
Conclusion: Considering the effects of nursing errors on the families of nurses involved in the error, such as disruption of family functioning, the family of nurses involved in the error should also be considered and paid attention to. These families are abandoned and the need to promote the culture of supporting the family is tangible.

1. Introduction

Job mistakes can have adverse consequences for employees and organizations [1]. Studies have shown that the medical error effect up to 10% of hospitalized patients [2]. Medical errors have been identified as the failure of a planned action to complete an intended purpose or pursuing a wrong plan [3]. Nurses as health care providers are more prone to commit errors than any other team members [4]. Nursing error is defined as a special string term incorporating an unwanted mistake made by a nurse who is at the end of an event and whose action can severely leave a negative impact on healthcare quality and safety [5]. The human outcomes of nursing errors are divided into two categories: the consequences related to the patient and his/her family, and the consequences related to the nurse and the healthcare professionals involved in the error [6]. Their involvement in medical errors will cause emotional reactions and distress [7—9] For more than a decade now, researchers have studied the adverse effects of fatal errors on healthcare practitioners and have eventually come up with a phenomenon of the second victim [10]. The term, the second victim was invented by Albert Wu in 2000 [11].

This phenomenon goes beyond the career of a person and has a significant impact on his/her private life [12—14]. Such that the position of the second victim has also been termed as caregiver error and can cause a severe disturbance in his/her private life [15]. In Aasland's and Forde's study, 28% of doctors had an adverse experience with patients, with 17% of the respondents having negative impacts in their private lives [16]. A study by Strobl et al. showed that the effects of error on the practitioners are very serious and will greatly affect their work and private life [17]. In the study of Harrison et al., about one-third of the samples reported that their professional and their private lives suffered from the medical error [4]. In the study of West et al., it was found that the error had a significant relationship with the quality of life of the 184

residents in the study [18].

Many people resort to their family members as soundboards to deal with their work lives. This may affect their own and family life qualities since errors as unexpected events can occur in their life courses. Despite the fact that families can serve as acceptable sources of trust, they may not have enough experiences and be sufficiently prepared to provide proper supports, thus causing other unwanted problems in many cases. This issue leads to an interference with the boundaries between work and family life [19]. Luu et al. examined the response of surgeons to untoward events in a qualitative study. They found that the surgeons followed four stages after adverse events, one of which was the fall, i.e. the surgeons saw their private lives in a blackened robe [20]. Seys et al. conducted a review to identify supportive intervention strategies for the second victims. Organizational strategies include two categories of programs: programs specifically aimed at protecting the second victims, and programs aimed at supporting all those involved in the error, including the patient, his or her family, the practitioners, and the organization. The study however, did not consider the family members of the practitioner involved in the error [21]. It is important to pay attention to the family in a systemic view. The family system emphasizes the importance of understanding a family as a complex and integrated society. In other words, the individual members of a family are interdependent [22] and thus, the staff's family life must be included in this process based on the realistic analysis of organizational events, such as occupational errors [23]. A review of the researches conducted in Iran and world over on nursing errors showed that most of these studies have been related to the human consequences of error associated to the patient, his/her family, and the practitioners involved in the error (second victims), and the problems of the second victims' family had been ignored [14,24,25]. Given the lack of research in both, Iran and the rest of the world, as well as taking into account the cultural and social differences between Iran and other countries, it is necessary to conduct qualitative studies in this field. By carrying out an in-depth qualitative study, it is possible to examine different aspects of this subject and understand this phenomenon in its social, cultural, economic, and linguistic context [26]. This study aimed to explain the nurses' families' experiences of involvement in nursing errors.

2. Materials and methods

2.1. Study design

This study was conducted in a qualitative approach, using conventional content analysis. The analysis of qualitative content as a research methodology aims to subjectively interpret the content of textual data. This approach improved the comprehension of data in the study [27].

The participants compromised 18 family members of nurses involved in the medical error. Family members contain parents, spouse, wife, or children living with a nurse under one roof. The incidents involving the nurses and the patient outcomes are displayed in Table 1. The subjects were selected through purposive sampling method, which is suitable for qualitative research designs [26]. In this method, the researcher looks for the subjects who are rich in the issue under study who are capable of expressing the facts with an inclination for participation. The nurses working in the teaching hospitals throughout Tehran City stated that they had involved in errors leaving significant impacts on their families' interactions with their own participants.

The inclusion criteria, included the willingness to participate in the study, being a parent, spouse, or children living with a nurse at home, who was likely to affect them with a nursing error, and voluntary cooperation with the researcher. The subjects had the right to withdraw from the study at any time. In this study, the nurses used to work at healthcare units. We asked those responsible at different hospitals and their related departments whether nursing errors had had any impacts on their nurses' private lives.

The research was conducted in Tehran, either at the place of work (n = 6) or outside of work environments (n = 12) depending on the participants' preference. Data were collected (face to face)by an in-depth interview in an eight-month period from January to September 2017 by the first author. There was no relationship with the participants before the study and after identifying the nurses involved in the error; permission was taken to communicate with the family after which the goals of the study were explained to the family members to attract their informed participation. Also, all participants received written information about the goal and the procedure of the study. Sessions were carried out by the first author, while introducing herself, announced that she is a Ph.D. student of nursing, and this study is a part of a nursing doctoral dissertation, she explained the reasons and interests in the research subject of the study. And allowed the participants to ask questions for clarification and received written informed consent from all participants. At the beginning of the study, the data were collected through unstructured interviews with a general question then continued with semi-structured questions based on our main study question. The background "scientific" combinations of the selected topics were used as a guide to the interviews, the questions of which were based on the literature and the decisions made by one or two authors. During the interview, further exploratory and in-depth questions were used to probe the explanations, such as please explain this further, could you clarify it with an example from your personal experience, why, and how. The interview guide was used in the process and demographic data were also gathered using the interview guide.

A list of the questions asked in the interviews is outlined in Table 2. All interviews were conducted in Persian on a private site and duration of interviews varied between 30 and 80 min' according to the participants' desire to recall and share. And were audio recorded. During the interviews, some handwritten notes were taken about the condition and the participant's emotional status. No participant rejected or dropped out of the study.

Finally, data saturation was reached and the primary categories were formed by interviewing with 16 participants and conducting 18 interviews (two subjects were interviewed twice). Two additional interviews were conducted, but no new information was obtained to form a new category. Totally, 20 interviews were conducted with 18 participants. It should be noted that for some incidents, more than one family member was interviewed.

2.2. Data analysis

The analysis of the data was performed by content analysis [27] which was done alongside the data collection process, simultaneously. Content analysis is appropriate for identifying nurses' families' experiences of involvement in nursing errors. It can predict or conclude the phenomena that cannot be directly seen [28]. The inability to address the phenomena of interest was the main motive for using content analysis. Since there is little knowledge about the research topic, we used new content insights associated with a potential content analysis. The data were prepared by transcribing the interviews immediately after they were concluded, and the transcripts were read several times to gain an accurate understanding of the data. The extracted texts were encoded and the codes were categorized into various subcategories, which were more abstract. After each new interview, the previous categories or classes were either revised, merged, or a new category was created.

Table 1
Incidents involving nurses and the patient outcomes.

No	Incident	Patient outcome
1	Rapid intravenous injection of ceftriaxone vials leading to cardiopulmonary adverse events.	Admission into ICU and complete recovery.
2	Patient with bone marrow transplantation transfused with non-irradiated blood instead of irradiated RBC.	No reaction.
3	Rapid injection of ranitidine.	Death
4	Burning neonate's legs.	Increased duration of hospitalization and complete recovery without grafting.
5	Patient falling out of bed.	Increased duration of hospitalization and postponement of surgery.
6	Scalding a semi-conscious patient's body with a hot water bag.	Permanent scar.
7	Transfusion of 220 ml of blood instead of 60 ml to an infant.	Underwent monitoring, oxygen therapy, frequent hospital visits, and full recovery.
8	Giving food to a NPO patient.	Increased duration of hospitalization and recovery.
9	Injecting morphine for pain in an ARDS patient.	Admission into ICU, intubation, and recovery.
10	Patient suffering from mental illness committing suicide.	Death.
11	Accidental disconnection of tracheal tube during nursing care.	Admission into ICU, intubation, and recovery.
12	A neonate's distal phalanx cut off while being separated from the splint.	Replantation done.
13	NG tube slipping out while undergoing esophageal surgery	Transferred to the operating room for repair surgery.
14	Non-recognition of death in last-stage patient.	Already dead.

Table 2
Interview question.

How do you describe your experiences of committing a nursing error affecting your household?
What did you do?
How did you feel?
Please explain the effects of that event!
What were the impacts on your family relationships?
Did you feel any changes occurring to your family members' behaviors and needs?

In this way, the main categories of the study were extracted through categorization, and the relationships between the categories were determined based on the level of abstractness, similarities, and differences. In order to form the main categories, the extracted subcategories were combined depending on their relationship. All the authors participated in this process and met in face-to-face meetings to compare the codes, and disagreements were resolved after discussion [27]. The interviews were analyzed using the Maxqda 2010 software.

2.3. Trustworthiness

The four criteria of transferability, dependability, credibility, and conformability were used to increase rigor. The credibility of the data was improved through constant contact with the data during the year. The categories and all the texts extracted from the interviews were reviewed by the researchers' colleagues, who had conducted qualitative studies before. Furthermore, the participants were invited to attend a peer review to establish the credibility of the results. In this regard, prior to the analysis, the initial coding of each interview was returned to the participants. The codes were approved by participants who had provided the feedbacks.

Additionally, the data was validated by sharing the different sections of the categories with two faculty members, who were familiar with qualitative studies. By documenting the research process, other researchers are provided with a better understanding of how to conduct such studies. To improve the transferability of the data, the contributors' quotes were presented verbatim. During the process of data collection, the researcher documented all the mental sparks associated with the data and used them in the interviews that followed.

2.4. Ethical considerations

This study was approved by the Ethics Committee of Tehran University of Social Welfare and Rehabilitation Sciences with No. IR.USWR.REC.1394.384. The study objectives, confidentiality of data, and recording of interviews were explained to participants prior to the interviews. The ethical principles of autonomy, beneficence, non-maleficence, fidelity, and confidentiality were described as relevant to the study. Additionally, the participants were advised that they could withdraw from the study at any time, and they could have a copy of the research results.

3. Results

The participants included 10 female and 8 male with mean age of 37 years (ranging from 21 to 58 years), see Table 3. According to the results, five main categories including disturbances in family functioning, the crisis of fear, oppression, damage, and neglect along with 16 subcategories of 490 primary codes were extracted. Below is a more precise presentation of the results. The process of obtaining the theme, main categories, and subcategories are displayed in Table 4.

3.1. Disturbances in family functioning

The category of disturbance in the family functioning was formed by the subcategories of emotional disruptions in the family, changes in routine daily life and the family unit being affected by the error as a whole.

3.1.1. Disruption of family affective relationships
Participants' expressed the following experiences: paying no attention to the others' problems; being unaware of each other's problems; not spending time with each other; being unkind with each other; taunting each other; complaining about being involved in the nurse's problem; not having fun together; not talking to each other; being bored or disinterested; feeling a sense of family loss, were all indicative of disturbances in the emotional relationships of the family.

Table 3
The demographic characteristics of the study participants.

Participant no.	Gender	Age	Family's occupation	Family relationship with the nurse involved in an error
P1	Male	27	Company secretary	The son of a nurse involved in an error
P2	Female	52	Housewife	The mother of a nurse involved in an error
P3	Female	34	Company director	The wife of a nurse involved in a medical error
P4	Female	29	Housewife	The wife of a nurse involved in a medical error
P5	Male	34	Company employee	The husband of a nurse involved in an error
P6	Male	41	Computer operator	The husband of a nurse involved in an error
P7	Male	29	Shopkeeper	The son of a nurse involved in an error
P8	Male	52	Accountant	The father of a nurse involved in an error
P9	Male	32	Librarian	The husband of a nurse involved in an error
P10	Male	58	Retired army member	The father of a nurse involved in an error
P11	Male	43	Advertising agent	The husband of a nurse involved in an error
P12	Female	32	Housewife	The wife of a nurse involved in a medical error
P13	Female	50	Housewife	The mother of a nurse involved in an error
P14	Female	31	Nurse	The wife of a nurse involved in a medical error
P15	Female	21	University student	The daughter of a nurse involved in an error
P16	Female	45	School teacher	The mother of a nurse involved in an error
P17	Female	33	Tutor	The wife of a nurse involved in a medical error
P18	Female	23	University student	The daughter of a nurse involved in an error

Table 4
The process of obtaining the theme, main categories, and subcategories.

Theme	Main categories	Subcategories
Neglected victim	Disturbance in family's functioning	Emotional disruptions in the family
		Changes in routine daily life
		Family unit affected by the error as a whole
	The crisis of fear	Fearing loss of family honor
		Being worried about error repetition
		Being worried about legal proceedings
		Being worried about the nurse's future
	Damage	Psychological involvement
		Physical damage
		Attitude damage
	Oppressed	Secondary trauma experienced by family members
		Unjust punishment
		Paying off atonement mismanagement
	Neglected	Disregard for the nurse's family members
		Being sidelined
		Forgotten

"I felt that we were less friendly at that time. It was a situation, in which we could not even eat or take a break with each other." (P1)

3.1.2. Change of the normal life of the family

According to the participants, following were the experiences which represented a lack of normal family life, mainly increased financial pressure, increased work pressures, change in roles within the family, negative tendencies in life, reduced leisure time, reduced shopping time with their spouses, stopping walks with child and spouse, and other family members taking on the affected member's (nurse) responsibilities.

"Our family used to throw a party once a month, but all the parties stopped due to my child." (P2)

3.1.3. Family affected by errors as a whole

The participants expressed certain experiences that were indicative of how their family was affected by the error as a whole, including heavy impact on the family, involvement of children, involvement of all the family's members in the error, problems for the nurse's spouse and children, increased responsibilities, and disruption in family members' jobs.

"I knew that this was not only my husband's problem, it was a problem for my family as a whole. But my husband was annoyed. He annoyed us because he was being annoyed a hundred times more than us." (P4)

3.2. The crisis of fear

The category of crisis of fear was formed by the subcategories: fearing loss of family honor, being worried about error repetition, being worried about legal proceedings, and being worried about the nurse's future.

3.2.1. Fearing loss of family honor

The family members of the affected nurse feared that apart from rumors spreading behind the nurse's back, there would be judgments made about the nurse by others. Some others were worried about society's negative attitude towards the family and were anxious about having to explain this problem to others. They were also afraid that news of this issue would spread elsewhere.

"Our family and I were worried. We were scared to even talk about this incident on TV. Our family's reputation was gone." (P17)

3.2.2. Being worried about error repetition

The family members of the nurses involved in the error were afraid of this error being repeated or other errors being committed by the nurse. At times, their minds would be preoccupied with the fear that the nurse would commit similar errors in future, and sometimes, they warned the nurse to be more careful.

"For example, we had a party last night, and we did not sleep well. In the morning, when my husband left for work, I was more worried and started thinking that something bad may be happening." (P12)

3.2.3. Being worried about legal proceedings

The family members of the nurses were afraid that the nurse would be prosecuted and they investigated information on judicial proceedings. They were worried that the nurse would be penalized, e.g. required to pay blood money or face conviction. They were worried about the nurse's physical and mental health, should he/she be needed to attend a hearing in a court of law.

"I knew that my daughter would face a hard situation if she was forced to go to the court since she might begin to scold at the court and thus, face a serious outcome. I was scared." (P13)

3.2.4. Being worried about the nurse's future

The family members of the nurses involved in the error were worried that the nurse would be rejected by his/her colleagues; his/her relationships with colleagues and patients would be endangered. They were also concerned that this family member would face problems in carrying out their nursing duties and could miss out on future job opportunities due to this error.

"My child was glad because she was studying for M.S degree and wanted to get a good position in the hospital. It's not clear what is happening." (P2)

3.3. Damaged

The category of damage was formed by subcategories of psychological involvement, physical damage, and negative attitude towards the healthcare setting.

3.3.1. Psychological involvement

The family members of nurses involved in an error, experienced psychological problems, such as aggression, feelings of misfortune, emotional problems, discomfort for family members, nightmares, high anxiety, sexual problems, difficulty in falling asleep, crying, tension, stress, being sad for nurse's suffering, and frequent flare ups with family members.

"I should help, and this made me feel a lot of stress. I had butterflies in my stomach. I was very apprehensive." (P7)

3.3.2. Physical damage

Family members of the nurse involved in an error experienced physical problems, such as dizziness, chest pain, recurrent obsession, muscle aches, physical exhaustion, headache, recurrent tingling at night, appetite loss, lack of energy for work, recurrence of gastric reflux, malnutrition, and back pain.

"Sometimes, I felt a pain below my heart when I slept at night. Every time I felt under too much stress, I got a headache. All my body's muscles ached." (P15)

3.3.3. Attitudinal damage

The family members of the nurses involved in errors were pessimistic about the nursing profession and hospitals. They encouraged the nurses to change their workplace or leave the nursing profession. They did not want a member of their family to be a nurse and had a negative attitude towards the medical team; they were annoyed by the behavior of the hospital managers and had a negative impression of them.

"I'm so tired of the hospital. I do not want any of those I love to have a hospital occupation. I reject a hospital job." (P10)

3.4. Oppressed

The category of oppression was formed by the subcategories of secondary trauma experienced by family members, unjust punishment and human resource mismanagement.

3.4.1. Secondary trauma experienced by family members

The nurse' family members were experiencing secondary stress unfairly, as well. They were impacted by the nurse's punishment and experience it as their own punishment. The nurse's problems transferred onto the family, making them involved with the nurse's experience and causing them to feel oppressed by the system, as well.

"I think it is my husband that has made errors at work; why should I or both of us be punished? I have become a partner of his problems and troubles." (P14)

3.4.2. Unjust punishment

A number of family members of nurses involved in the error feel that the nurse had committed no fault and the nurse had been considered guilty unjustly. Thus, with their unfair judgment, they thought they were victims.

"It was not my mother's fault. It was completely unfair that my mother and I were unjustly caught up in these problems." (P18)

3.4.3. Paying for management's misdeeds

Some of the affected nurses' family members experienced tension in the family due to an inadequate system and mismanagement. The family felt that such crises occur due to human resource mismanagement, inappropriate selection, and lack of attention to meritocracy in choosing managers.

"The problem is the managers; my daughter has one-year work experience. I had complained about the university to the manager. We have to pay for the incompetence of such managers." (P8)

3.5. Neglected

The category of feeling neglect was formed by subcategories of disregard for the nurse's family members and being sidelined.

3.5.1. Disregard for the nurse's family members

The family member participants' experiences indicated that the nurses were disrespected and disregarded by others like the hospital managers and coworkers. Hence, at home, they had to endure the silence of the nurse and were sometimes criticized and accused by the nurse and others, and were even blamed for the nurse's involvement in the error.

"She did not speak at all, there were only silence and inattention, and I had to tolerate such situations." (P9)

3.5.2. Being sidelined

The participants' experiences indicated that the family members of these nurses were ignored; their problems were not recognized or solved; their condition and problems should be regarded, and they needed support to settle the problems.

"He didn't mind our problems at home and thus, he didn't understand what problems we had at all." (P11)

3.5.3. Forgetting

The participants' experiences indicated that their nurses were so involved in their work problems that they were forgetting they were doing errors.

"I thought my Mom would remind that she had children at home with some expectations though being completely overwhelmed with hospital problems." (P15)

4. Discussion

The findings of the present study revealed the experiences of the nurses' families involved in nursing errors in the five main categories of the crisis of fear, damaged, disruption in family functioning, oppressed, and neglected. The findings of this study showed the concept disruption in family functioning with disturbances in family cohesion, loss of normal lifestyle and negative impact on the family due to the nurses' involvement in error.

The results of this study showed that various individuals and groups, including the nurse's family members, were affected by the nurse's involvement in error. Involvement in nursing errors threatens a family's functional ability and integrity. When some damages occur to a family's biological, cognitive, emotional, and social functions, its members gradually experience unpleasant feelings and the family home group will get unhappy along with the processes.

Based on the justification for these findings, we can conclude that Stressful job experiences can, directly and indirectly, influence family relationships [29]. When a member experiences stress or when confronting stressful and difficult situations, this stress is transferred on to the others in the family, causing tension or despair for its members. Family is the most suitable place to meet human needs and provide emotional security and psychological support for its members. The relations and emotional affairs among family members are influenced by the factors of consolidation and stability or functioning impairment. The pressure in the nursing profession can affect family life and marital affairs, cause sexual problems, collapse social frameworks, and increase family conflicts [30].

The concept of the crisis of fear in the present research was rooted in the nurses' families' experiences of the errors. It was showed that family members worried about the repetition of the nurse's error were afraid of losing to family honor, legal proceedings, and the nurse's future. From the legal and ethical points of view, nurses must be responsible for their cares and errors. It should be noted that such fears as the fears of consequences, legal problems and penalties, and losing credibility and personal and professional reputation after committing nursing errors may be transferred to the nurses' families to experience them in an attempt to sympathize with their involved nurses.

In this study, the nurses' families were appalled at the consequences of legal conflicts, such as compensation for the patients' losses, imprisonment, prolonged litigations in the country, and loss of family honor. In Iran, there is no systematic approach to medical errors, while only blaming people can be the dominant practice within the culture of Iranian hospitals [31]. Nurses avoid error reporting due to legal consequences. The factors affecting Iranian nurses' failure to report errors were found to be the fears of legal consequences, organizational negative treatments, and lack of managerial supports, all of which represented the Iranian non-supportive culture [32].

The damage concept emerged in this research as a result of the experiences of the family of nurses involved in the error. The nurses' family members involved in the errors in addition to their psychological involvements and physical damage further experienced attitudinal damage. Nurses' families following their nurses' problems would disguise the nursing and medical staff. Some nurses were encouraged by their families to leave this job. sIt is worth mentioning that failure to properly recover after doing an error and lack of appropriate workplace support could have a nursing cross-stress effect on the nurses' families.

Secondary stress is a process in which the stressor psychological pressure is transferred from one family member to the spouse and other members with the occurrence of interpersonal transmission of occupational stressors [33]. The complications resulted from this stress have been found to lead to physical, psychological, and attitudinal threats to the nurses' families' members. Although nursing care is one of the most valuable jobs in the world, the nurses' families had a negative attitude towards this job due to the subsequent emergence of such problems.

In this research, the concept of the oppressed appeared to indicate that the family members of nurses involved in the error experienced the nurse's punishment as their own punishment, and they too felt tortured and victimized due to the impact of poor human resource management and the inefficiency of managers in the organization. The participants believed that their problems were a direct result of their manager's poor performance. Based on the experiences of the participants, it would seem that the families are punished for the error committed by the nurse and this could be considered as the hidden face of the nurse's punishment. This indicates the roles of the victims. The family of nurses involved in the error, although they did not play any part in the nurse's error, also considered themselves responsible for the consequences of this incident and had many concerns. In 1982, Jackson and Maslach introduced the phenomenon of families being victims of job stresses [34] Alam et al., in 2011 mentioned children as the worst victims of conflict in work and family [35].

Based on the participants' experiences in this research, the concept of negligence appeared to indicate that the nursing family members experienced a kind of disregard and marginalization. These problems may be the consequences of defects in the stress management of the nurses involved in the errors. The nurses had difficulties in managing stress to such an extent that they had to pay off their recoveries. In this situation, the involved nurses would probably encounter other mental problems, such as being disregarded by their family members, while their families felt that

they had been forgotten in the midst of the problems. Nurses had some shortcomings and pressures caused by the conflicts that would consequently affect their communication qualities and family lives. A person who receives too much stress from the workplace cannot afford sufficient resources, including enough energy and time for his family, which can lead to conflicts between work and family [36]. In the present research, the concept of the neglectful victim of nursing errors was addressed. The patients and their families were the first victims of medical errors, healthcare providers were the second victims, and the organizations, in which the errors had occurred, were the third victims [37]. This research showed that the nurse's families might be another class of victims of the errors, while being neglected and in need of a support. The nurses' families involved in the nursing errors were considered as the neglected victims.

Hence the system of the family and its members cannot be ignored. The problems that follow because of involvement in an error are not intrapersonal in nature, but an interactive process among family members. With this regard, it would be helpful to hold briefing services with the presence of family members, based on the nursing profession, problems and issues concerning it, paying more attention to the needs of families, soliciting the support of the head nurse, especially for nurses involved in an error and those who are facing similar problems.

5. Conclusion

The results of this study showed that the nurses' families' experiences of involvement in nursing errors included disruption in family functioning, fear, experience of oppression, physical, and mental harm, and unawareness in families. Due to the strong potential impact of nursing errors on a nurse's family, there is an identified need for specific support. Organizational leaders in healthcare centers need to establish resources to help nurses' families deal with the emotional impacts of nursing errors and ensure that they will be treated respectfully and compassionately. It was found that besides the medical error being an issue for the patient, his/her family, and the nurses involved in the error, the nurses' families were also affected and required support initiatives. It is clear that the development of appropriate coping strategies for this phenomenon, including the empowerment of nurses and their families, is essential and the prevention of harm to the families of nurses involved in the error is necessary as a moral principle.

Author contributions

Zahra Mokhtari designed the research, conducted the interviews and data analysis, and prepared the first draft of the manuscript. Mohammad Ali Hosseini and Hamid Reza Khankeh were as a supervisor in all stages of research, especially analyzing data and preparing the final version of manuscript. Masoud Fallahi-Khoshknab and Alireza Nikbakht Nasrabadi were consultants in research process. All authors contributed substantially to its revision and read and approved the final manuscript.

Conflicts of interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Appendix A. Supplementary data

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