

Nursing Students' Errors and Their Causes: A Qualitative Exploration of Clinical Instructors' Perspectives

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ARTICLE INFO	ABSTRACT
<p><i>Article type:</i> Original article</p> <hr/> <p><i>Article History:</i> Received: 28-Aug-2018 Accepted: 22-Jan-2019</p> <hr/> <p><i>Key words:</i> Error Kurdistan Nursing education Nursing students Patients Safety</p>	<p>Introduction: Students may commit errors while learning and developing their clinical skills. This study was aimed to explore clinical instructors' view about nursing students' errors.</p> <p>Materials and Methods: A descriptive qualitative study was conducted using a qualitative approach in 2016. Semi-structured interviews were conducted with 12 clinical instructors of Kurdistan University of Medical Sciences, Sanandaj, Iran and analyzed using inductive content analysis.</p> <p>Results: Two main categories emerged from the data as "Nature of nursing students' errors" (Acting against the instruction set and Repeating the same mistake) and "Causes of nursing students' errors" (Personal characters and Educational characters).</p> <p>Conclusion: There is a need for a precise definition of nursing students' errors to promote patients' safety. It is necessary to concentrate attention on the causes of the student's error and improve preventive measures from the perspective of education practitioners such as clinical instructors and especially students. The presence of clinical instructor with the standard ratio to nursing students and proper communication with the nurses could prevent the occurrence of mistakes. Improvement of the educational condition of clinical teaching and making a calm and motivational clinical learning environment is necessary.</p>
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Introduction

Patient safety today plays a central role in healthcare system (1). The ultimate goal of all healthcare institutions is to provide the services with a small number of defects and errors (2). Despite the fact that the occurrence of an error is an inevitable part of all professions (3), especially in the healthcare field, the occurrence of an error is of great importance since it may cause irreparable harms (4). Although healthcare professionals are expected to function with no error, no health personnel are infallible (5), and nurses, midwives, and all healthcare providers can make a mistake regardless of their level of expertise, knowledge, and accuracy through practice (6).

The nursing profession is also conflicted with the errors (2, 7). Low skill level and learning process are the main causes of error by nursing and midwifery students in an educational system (8). Nursing students are at the risk of committing unintentional errors (1, 9). Several studies evaluated the role of nursing students in clinical errors and showed that medication errors made by nursing students were above expectations. Factors such as lack of knowledge and experience and organizational issues contributed to students' errors (10, 11). For example, Koohestani and Baghcheghi (2009) reported that 30% of nursing students had committed at least one medication error during their academic years (1).

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Errors potentially make patients lose their trust in the healthcare system (12). Thus it is extremely important to act against errors (13). Clinical instructors have a crucial role in dealing with and managing students' errors (14). The importance of eliminating nursing errors in patient safety necessitates assessing students' progress in developing necessary knowledge and skills for providing patient care (1).

Nursing educators have a special role in improving patient health outcomes by identifying human and systemic problems affecting patient safety. Henman et al. (2010) emphasized the importance of planning effective strategies to reduce nursing students' errors (15). Although many of the clinical errors made by nursing and midwifery students are near errors, they can influence individual performance at work in the future (16). Fear of committing errors is a significant stressor for nursing students in clinical practice (17). The present study was aimed to explore clinical instructors' view about the concept of nursing students' errors and its causes.

Methods

Design

Qualitative content analysis method was used to conduct the study.

Participants

Considering that clinical instructors may be faced with students' errors during their career, they could explain the meaning of nursing students' errors and its causes to the researcher. Hence, all clinical nursing instructors with a minimum of one-year clinical education experience were the main participants in the present study. Using purposive sampling, interviews were conducted simultaneously with data analysis and continued until data saturation was achieved. Saturation achieved after interviewing with 12 participants.

Data collection

Data were collected by in-depth semi-structured interviews. The time, place, and length of the interviews were chosen by the participants' preferences. Finally, face-to-face interviews were conducted in a special quiet room in the nursing and midwifery faculty. The researcher established credibility and trust with participants using communication techniques, making prior appointments, giving any details about the research process, providing participants' confidentiality, etc. and began the interviews by asking an open-ended question. Then the interview was directed by leading questions using interview techniques to pursue the research aims. Participants were encouraged

to clearly state their opinions and asked to resolve the ambiguity in their statements. A paper-based interview guide was used to direct the interview toward the research aims. It included the specific questions such as "Can you explain the errors your students have committed during clinical training? What are nursing students' errors from your viewpoint? Which causes have led to the occurrence of nursing students' errors from your side?" The interviews lasted an average of 30-40 minutes. Follow-up questions were used to encourage expansion of ideas (18) such as "Can you give me an example?," "What do you mean by...," "Can you tell me more about ...?".

Ethical considerations

This study was approved by the code of ethics of the Ethics Committee of Kurdistan University of Medical Sciences (No. IR.MUK.REC.1393.105). Methods and objectives were described to all the participants who had voluntarily given written informed consent before the start of the study. One of the major ethical issues was to deal with students' errors in clinical practice. Keeping students' errors completely confidential was guaranteed on the basis of mutual trust. Participants were informed of using recorder, and the purpose of recording and how to use it were explained to them. A given code was assigned to the name of each interviewee in the transcription process and extracted information from each interview was stored in a safe place. All participants were permitted to leave the study at any desired time.

Data analysis

In order to analyze the interview data, the researcher accurately transcribed the interviews by listening to the interview audiotapes several times. In this study, data were analyzed using inductive content analysis developed by Elo and Kyngäs (2008)(19). After content preparation, the organization phase included open coding, creating categories, and abstraction. In open coding, notes and headings were written in the text while reading it, necessary headings for describing all aspects of the content were written down in the transcript margins, and categories were freely created. Categories were grouped under higher order headings after open coding. Abstraction means to formulate a general description of the research topic through creating categories. Each category was denoted by keywords characterizing its content. Sub-categories were grouped into the generic-categories, and the resulting generic-categories were grouped into main-categories in the same way. Abstraction iterated until it was a

reasonable and feasible process.

Rigor

The rigor of the study was examined by building credibility through active involvement with participants, member checking, and peer debriefing. Professors with the same rank checked all the stages of transcribing the tape-recorded interviews, open coding and creating categories to verify the findings from data analysis and the outcomes. When different codes were created, the raw data were analyzed to achieve the agreed codes in the presence of the research team. The study was conducted by an associate professor and a clinical assistant professor of nursing. The authors used reflexive journaling to evaluate the effect of previous instruction experience in different clinical departments. In order to achieve a higher level of rigor in the present study, proper place and sufficient time were allocated to data collection, effective communication was established with the participants through trust-based feature, the data were presented to participants after analyzing, and participants' corrective feedback was used. Specific themes emerged from the transcripts were discussed with and supported by a number of participants.

Results

Participants consisted of twelve clinical instructors (eight males and four females) with a maximum of 28 years and a minimum of 1 year instruction experience and clinical experience of 2-26 years from surgical, management, pediatric, and midwifery fields. Analyzing data on managing students' errors in clinical practice showed that nursing students' errors resulted from acting against the instruction set and repeating the same mistake, from clinical instructors' point of view (Table1). Representative quotes were pulled from the transcripts.

3.1. Nature of Nursing Students' Errors

3.1.1. Acting against the instruction set

The first part of the results obtained from the study covered the definition of students' errors

provided by the clinical instructors. From clinical instructors' perspective, students' errors were acting against the instruction set and repeating the same mistake. Since students were under theoretical and practical instruction to enter the clinical practice, acting against the instruction set was defined as an error: "...performing any action against the instructions that have already been given and followed in clinical practice is considered an error... (P3)". Another participant's view "...any behavior, action or procedure outside the framework imposed by the instructions is regarded as error... (P5)". One of the participants said: "...clear guiding principles are established in clinical practice, against which all actions are referred to as error... (P6)".

3.1.2. Repeating the same mistake

The repetition of an error was another important factor in determining students' errors by clinical instructors: "...when students enter the ward in semesters 6 and 7, they have a good knowledge or understanding of their work. That is why repeating the same mistake is considered an error... (P1)". Another participant also pointed repetition: "...repeating the mistake with regard to all the detailed instructions given in previous semesters is expressed as error... (P12)".

3.2. Causes of Nursing Students' Errors

Two main categories emerged as causes of nursing students' errors: personal characteristics and educational characteristics. Personal characters were being in a hurry, stress, lack of motivation and distractions. Educational characters were student congestion, shortage in instructors, unreasonable expectations from the students, following the wards' nurses and inappropriate communication.

3.3. Personal characters

Regarding personal factors, participants mentioned various cases in the students; most notably, being in a hurry for performing a task, existence of stress and distraction and lack of motivation.

Table1. Clinical instructors' perspectives of nursing students' errors and their causes

Main Category	Category	Subcategories
Nature of nursing students' error	Acting against the instruction set	
	Repeating the same mistake	
Causes of nursing students' error	Personal characters	Being in a hurry Stress Lack of motivation Distractions
	Educational characters	Student congestion Shortage of instructors Unreasonable expectations from the students Following the wards' nurses Inappropriate communication

3.3.1. Being in a hurry

One of the important causes of errors in nursing students from the view of clinical instructors was being in a hurry for performing nursing care. In this regard, one of the participants stated that ".... They are so rushed to deliver their work that it could lead to a mistake...." (P8). Another participant also mentioned this issue ".... One of the causes of the mistakes made by students is that they rush themselves, for example, they want to do their job quickly and get a break..." (P6).

3.3.2. Stress

Most participants pointed out that the stress of nursing students was very important too. One of the participants expressed his view in this way ".... Stress is one of the most common causes of error in students during early semesters, for example, they have hand tremor during the process of blood sampling...." (P7). Another participant also indicated to this cause: ".... Some students have higher stress than other students due to individual characteristics and experience more mistakes, I had students who had a lot of stress in dealing with the smallest problems, and then they committed the error...."(P9).

3.3.3. Lack of motivation

From the view of participants, there was a lack of motivation in nursing students that could have been the basis for their errors. One of the participants explained "... I think they do not study enough because they lack motivation... their lack of motivation towards their profession makes them uninterested in studying well and feel that they are only studying for a degree and getting a work...."(P6). Another participant alluded to lack of motivation in nursing students by saying that ".... Most of the mistakes are committed by unmotivated students, they only want to tinker their work and finish it soon... they do not pay attention to the explanations given to them..." (P10).

3.3.4. Distractions

One of the important causes of nursing students' errors from the view of clinical instructors was distractions. "... Students are now focusing on cell phones and social networking. It makes them sleep late in the night and then wake up hard in morning... consequently, they do not have enough focus for performing their work precisely ..." (P9). Another participant explained "... Most of our students do not focus on the work and lessons and think about other issues, including future and financial issues....it makes them unable to concentrate well on the tasks that

are delegated to them ... that would cause errors by them"(P11).

3.4. Educational characters

Majority of the participants referred to the educational factors from their point of view as one of the causes of nursing students errors. It had five subcategories of student congestion, shortage in instructors, unreasonable expectations from the students, following the units' nurses and inappropriate communication.

3.4.1. Student congestion

From one the participants' view, "... One of the important factors that could lead to student errors is the large number of students in the ward at the same time... so the clinical instructor would not be able to accompany the students while performing all the procedures...in some cases, when several students are working simultaneously, clinical instructor cannot monitor them all..."(P2). Another participant described the student congestion in the ward as "... The simultaneous presence of several groups of students in the ward inhibits the instructor's concentrate on the educational goals and supervising students' activity, which can increase the chance of making mistakes by the students" (P5).

3.4.2. Shortage in instructors

The participants considered shortage in instructors as one of the educational characters' causes for nursing students' errors. In the context of this study, there were no clinical instructors during the internship period. As argued by one of the participants, "... In the wards that internship students are without instructors, there is not enough supervision over their work that can lead to mistakes by them..." (P6). Another aspect of shortage in instructors was that some instructors had to supervise two groups of students in two different wards simultaneously. "...When the instructor is responsible for monitoring two groups of students in separated wards, it would lead to insufficient supervision ... so when the students need some advice or guidance there are no instructors in the moments... these can underline mistakes by the students" (P3).

3.4.3. Unreasonable expectations from the students

The participants believed that unreasonable expectation from the students was one of the causes of nursing students' errors."...In many cases, nurses have unreasonable and unreachable expectations from the students and assign them to tasks that they may not have enough skills for performing them. For example, one time, nurses

wanted my student to take an ABG sample while he/she was not educated for it..."(P6). Another participant said, "...In some cases, the students were shy and accepted procedures that they did not have sufficient skills to perform and led to a mistake..." (P9).

3.4.4. Following the wards' nurses

One of the important views of the participants about the causes of nursing students' errors was following the staff nurses by the students. One of the participants reported "... Many of the students do not perform the tasks in the way we have told them. They watch the ward's nurses and how they work, which often leads to errors..." (P8). Another participant mentioned: "... In many cases, nurses, due to the lack of time, may carry out the procedures in different ways. Many of our students would follow them and because they are not skilled enough, they cannot perform with the same quality and would make mistakes..." (P4).

3.4.5. Inappropriate communication

The participants described inappropriate communication between wards' nurses and nursing students or clinical instructors as another cause of nursing students' errors. From the participants' view, "... In many cases, in the wards where the personnel do not have a proper communication with the students or even the clinical instructors, the probability of students' errors would increase..." (P7). One of the participants expressed his concern about the effect of inappropriate communication on nursing students' errors by saying, "... Our students were in trouble in the wards where there were no proper communication between the instructor and the staff... due to lack of coordination, a doubled stress was imposed on the instructor and students that might increase the chance for errors..."(P9).

Discussion

Clinical instructors' reaction to the students' errors depends on their definition of the event. Error must be defined in a scientific way. People always behave against error with respect to their view of the type of error (20). Nurses apply a number of criteria for deciding on errors. Many events may not be considered as an error in their perspective (21). Given that there is no precise definition of student error thus far, clinical instructors have actually redefined it based on the existing definitions. Gregory et al. (2008) described student error as an event with no risk to patient for which students are responsible(22). Based on many offered definitions for medical error, any action against the acceptable standards is an error (23). Instructors have added the

frequency of error to the definition because repeating the same mistake with respect to emphasis on important issues is a main cause for their concern(22). Considering that students have undergone an education period and repeating the same mistake plays a significant role in determining the type of reaction, guarantying the patient's safety necessitates behaving against the error at the first time.

Regarding being in a hurry as an individual character from the viewpoint of clinical educators causing mistakes of students, the hurry-up syndrome was identified as a causal factor in human errors (24). Preoperative nurses mentioned being under pressure to work quickly and rushing as a reason for error (25). In general, when nurses have to carry out several tasks simultaneously, it is more likely to perform tasks in a hurry and commit an error (26). Therefore, there is a need for scheduling the nursing students' work by clinical instructors proportional to their time. Checking the start-up steps can have a key role in preventing errors, especially before giving medicines (27). Introducing the list of their duties to nursing students (28) and using checklists of procedures (29) are recommended.

There are many sources for nursing students' stress. A systematic review reported clinical sources as fear of committing mistakes toward patients and presence in unknown situations or mistake in handling the technical equipment (30). It is of significant importance for the clinical instructors to prevent stress in the students. The factors of stress among nursing students should be identified contextually (31). The continuous presence of clinical instructor especially during the procedures and explaining the steps in advance could help reduce the stress. Clinical instructors should teach the students that stress and the sense of lack of competency would disappear with further practice (32). Nursing students should recognize their presence in the clinical practice as an opportunity to learn and not to be evaluated. Using learning-oriented assessment can help reduce the stress of evaluation (33). Participating in stress management workshops for students is also recommended.

Lack of motivation was another cause from the view of clinical instructors. One of the main aims of clinical instructors is to motivate nursing students to acquire skills for providing proper quality nursing care in the future. Motivating nursing students has been a challenge for a long time (34). It has been reported that the educational motivation of the nursing students would decrease during the course of study (35). Students' personal characteristics are an internal

factor of nursing students' motivation (36). The clinical instructors should identify the effective factors in lack of motivation among nursing students and use motivational regulations like regulation of values, performance and mastery goals (37) for increasing the motivation and reducing the chance of committing errors.

Distraction was determined as a personal character cause of nursing students' errors. Distractions are a threat to human performance and safety especially for the healthcare professionals (38). Identifying the distraction factors and implementing safe practice using mindfulness such as no interruption zone and education and mobile device management strategy (38, 39) are recommended.

Overall, individual reasons were introduced as the causes of nursing errors (23). It could be unique to every group of the students. Therefore, clinical instructors should establish close communication with the nursing students to identify their problems and try to decrease them.

The majority of the participants referred to the educational factors from their point of view as the causes of nursing students errors. It had five subcategories of student congestion, shortage of instructors, unreasonable expectations from the students, following the units' nurses and inappropriate communication.

Another emerged main category for the causes of students' errors was educational factors, and the clinical instructors believed that these factors were external and related to the educational environment.

Regarding the student congestion, the high number of students in one ward simultaneously could affect the quality of learning. Based on the standards, in clinical education involving direct patient care, the group should total no more than 10 students, and for patient's safety, it may mandate lower ratios (40). Even with this standard ratio, there is inadequate time to monitor all the students. Reducing the ratio of clinical instructors to the students in clinical education is recommended for preventing errors.

Shortage of instructors was mentioned as one of the educational characters' causes for nursing students' errors. In the context of this study, there were no clinical instructors in the internship period. Clinical instructor is responsible for supervising the care that is given by the students to ensure that care is implemented safely (41). So the presence of clinical instructor is recommended for all time.

In some cases, especially when there is a shortage of clinical instructors, nurses may assign students to perform tasks that they do not have enough skills for performing. Therefore, considering this fact, clinical instructors should

introduce the nursing students and explain their skills and duties to the nurses of the ward (28). In this regard, common procedure checklists in the wards can be helpful since they might lead to avoiding reliance on students' vigilance (42). Also, students should be aware of their educational goals in each ward so that they would accept the tasks based on their goals.

Following the units' nurses was another cause in the educational environment from the view of clinical instructors. Nurses who work in the ward are a role model in the process of learning for nursing students and play an effective role (43). In some cases, nurses may work without adherence to the standards of care and nursing students might be influenced. Students may be more interested in performing technical procedures. Therefore the clinical instructors should emphasis on patient-centered principles instead of the technical skills.

Inappropriate communication between wards' nurses and nursing students or clinical instructors was mentioned as a cause of nursing student errors. Supportive relationship of the nurses of the ward with clinical instructors would lead to acceptance of the students as a part of the treatment team and help their learning process (43). Also, the presence of instructors and proper communication with the nurses can prevent negative contacts between the students and the nurses (28). Training communicative and coping skills is required for nurses, nursing students, and clinical instructors.

Limitation and recommendation

Despite adopting certain measures in the present research for increasing the precision of the study, the generalizability of data is limited due to the selection of a few numbers of clinical instructors, but we believe our participants described a broad range of experiences. Therefore, more studies are necessary for further exploration of clinical instructors and nursing students' perceptions. Also, more studies are required for further exploring of our subcategories. It is also suggested to include patient's safety and error management programs into the nursing curriculum and inform the students of them during their clinical education period. High-level discussions about how to deal with the nursing students' error must be explored and included in the nursing curriculum.

Conclusion

The results showed that acting against the instruction set and repeating the same mistake was defined as the cause of the nursing students' errors from the clinical instructors' point of view. It is necessary to concentrate

attention on the causes of the student's error and improve preventive measures from the perspective of education practitioners such as clinical instructors and especially students.

Improvement of the educational condition of clinical teaching and making a supportive and motivational clinical learning environment is also necessary. The presence of clinical instructor with the standard ratio to nursing students and proper communication with the nurses could prevent the occurrence of mistakes.

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Conflicts of Interest

Authors declare there has no conflict of interest.

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