Original Article Open Access

The Challenges of Applying Theoretical Knowledge in the Clinical Settings: A Qualitative Study

Mina Hashemiparast [1*], Aylin Jahanban Esfahlan [2], Mohammad Masoud Vakili [3]

[1] Department of Public Health, Maragheh University of Medical Sciences, Maragheh,Iran.
[2] Department of nursing, Maragheh University of Medical Sciences, Maragheh,Iran.
[3] Department of Health Education & Health Promotion, Zanjan University of Medial Sciences, Zanjan, Iran.

Article Info

Article history:
Received 04 Aug 2018
Accepted 04 Sept 2019
Published 22 Sept 2019
Keywords:
Theoretical Knowledge
Clinical Education
Learning
Qualitative Research

***Corresponding author:**
Mina Hashemiparast, Department of Public Health, Maragheh University of Medical Sciences, Maragheh,Iran.
Email: mina.hashemi26@yahoo.com

Abstract

Background & Objective: In recent years, insufficient clinical education and the lack of integration with theoretical knowledge has caused problems in patients' care. This study aimed to identify the barriers of applying learned lessons in the classroom in clinical settings

Materials and Methods: A qualitative content analysis approach was adopted. Individual semi-structured interviews with clinical trainees, faculty members and experienced clinical staffs were done. Data collected until data saturation and concurrently analyzed, assisted by MAXQDA 10

Results: In this study, the five main categories of "tendency toward routine care in clinical settings", "inefficient teaching-learning", "lack of confidence in clinical adequacy", "lack of supportive professional relationships", and "difference between the nature of theory and practice" were extracted as the barriers of utilizing theoretical knowledge in the clinical settings.

Conclusion: Transfer of learning is influenced by several factors with different natures. This phenomenon creates in a structure composed of the climate of clinical setting, lack of professional support in workplace, distrust and contradiction between the nature of theory and practice. Therefore, elimination of barriers requires improving the cultural, educational and professional settings.

Introduction

An important key to human development, higher education relies on the educational quality of higher education institutions (1). Accordingly, some of the most important goals of schools of medical universities include integrating education and health services, transferring theoretical knowledge to the clinical field, and preparing medical students to take various healthcare-related responsibilities (2). Clinical education is the most important and fundamental parts of educational programs for medical students, so as that the development of professional and scientific education is not possible without enhancing the quality of clinical education (3). In other words, the provision of healthcare and learning of students can be significantly improved by integrating the theoretical knowledge learned in theoretical and practical classes and through performing clinical duties (4). While education of clinical work skills is an opportunity for turning the knowledge perceived from classes into mental, psychological and mobile skills to provide healthcare to patients (5), the theory-practice gap has caused problems in provision of suitable healthcare to patients in the past few years. In fact, the medical graduates' ability to provide services in this area has been extremely criticized. A witness to this claim is the high number of medical graduates who lack the practical ability and skill despite strong comprehension of theoretical foundations (6). According to studies, one of the barriers to effective role-playing is the difference between what is learned during education years and what is experienced in practice (7). Inefficient clinical education and its lack of integration with academic education have not only caused problems for instructors and planners in internship field but also they have led to lack of trust of students and inefficiency in learning clinical skills (2). On the other hand, several factors affect the

quality of clinical education, and there are many challenges in this field, not only in Iran but also all countries of the world (8, 10).

Some of the issues pointed out by various studies include lack of interest and motivation of students, ineffective teaching of clinical skills and constraints related to facilities of clinical field (11-13). In addition, lack of adaptation and coordination of university education with the clinical field (theory-practice gap) is considered as one of the most important challenges in the area of transferring theoretical knowledge (14). Meanwhile, expanding the expertise of healthcare providers is only possible through using theoretical knowledge in clinical care (15). The theory-practice gap has been defined differently in various sources (16, 17); in the present study, the lack of ability to use the theoretical knowledge learned in school and transfer the knowledge to clinical situations is considered. In fact, the lack of coordination between what is learned and what is used in clinical field is regarded in the current research. This continues to be a major problem in clinical education disciplines such as operating room, medical emergencies and especially nursing, and somehow affects the quality of patient care (18).

Several solutions have been proposed to deal with this issue and reduce the theory-practice gap, including active learning methods and collaborative teaching model. According to studies, the success level of these methods cannot be determined due to the lack of accurate evaluation of their consequences (19). Understanding the hidden challenges in the field of transfer of theoretical knowledge to clinical field leads to a deeper understanding of the phenomenon under study. Moreover, considering the importance of providing a solution based on social, cultural, and local situation of the country, quantitative studies and application of questionnaires will not be the best solution. Despite quantitative studies, most aspects of this area have remained unknown, and no clear solution has been found for this challenge. On the other hand, the majority of qualitative studies in this area have been performed on nursing students while this challenge can be found in other disciplines with clinical education, which might be due to similar learning environment and professions of the mentioned fields (20-22). Therefore, using the experiences of different groups dealing with the studied phenomenon, such as students in the fields of operating room and medical emergencies, clinical instructors, faculty members, and staff working in the clinic, will lead to a deeper understanding of the issue. With this background in mind, this study aimed to determine the barriers and challenges of using theoretical and practical knowledge in clinical field by medical students using a qualitative approach.

Materials and Methods

This qualitative research was performed in Maragheh University of Medical Sciences in 2017 using a conventional content analysis approach. The participants included internship students in fields of nursing, operating room, and medical emergencies, as well as faculty members and clinical staff of hospitals with the orientation of nursing, midwifery, and medical emergency, selected as informed individuals. The participants were selected by Purposeful sampling with the maximum variation in terms of age, gender, clinical work experience and level of education. In total, 15 individuals were interviewed from different ranges, characteristics of whom are shown in Table 1.

Data were collected using individual semi-structured interviews, where the participants were asked to talk about their experiences in terms of barriers to the use of theoretical knowledge learned in classes in clinical settings. The process was carried out by asking some questions in line with research goals using the interview guideline. Some questions raised were: "According to your experience, what are the barriers to the implementation of clinical skills learned in academic setting in clinical field?", "When do you feel a gap between the content learned and work in actual environment?". In addition, other questions would be asked depending on the conversation with participants, which included exploratory questions such as: could you please explain more, Whyand How; to learn more about the experiences of the subjects. The interviews were carried out in places such as hospital, work office of the researchers, or classes in the university based on the opinion of the participants. In addition, the mean duration of interviews was 60 minutes, and each interview was recorded (after receiving permission from the participants) and was written down word by word. Interviews were conducted simultaneously with analysis, meaning that each interview determined the direction of the next interview. Data collection and interviews continued until data saturation. Data analysis was performed using conventional content analysis approach, where researchers carefully reviewed the interviews immediately at the end of the process to get an overall sense. Following the coding of interviews, the conceptually similar codes were classified into one category. The classes were

distinguished in terms of features and dimensions and their similarities and differences were determined as the process of analysis progressed and extracted codes and classes were repeatedly studied. Finally, the categories were integrated and the main categories were extracted through constant comparison. It is notable that the extracted codes were managed by MAXQDA 10.

Table 1: Characteristics of the participants

Participants' code	Job	Age (Year)	Gender	Work experiences(Year)
1	Operating room student	21	Male	Semester 6
2	Nursing students	22	Female	Semester 8
3	Medical emergency student	22	Male	Semester 3
4	Medical emergency student	21	Male	Semester 3
5	Nursing students	24	Male	Semester 8
6	Operating room student	22	Female	Semester 6
7	Nursing students	22	Male	Semester 5
8	Operating room student	21	Male	Semester 6
9	Operating room student	22	Male	Semester 6
10	Faculty Member	34	Female	5
11	Faculty Member	42	Male	18
12	Faculty Member	32	Female	8
13	Nursing staff	43	Female	17
14	Nursing staff	31	Male	9
15	Nursing staff	40	Female	15

To increase data credibility, the primary analyses were reviewed by some of the participants, and long-term involvement with the participants, especially students, helped the main researcher gain the trust of participants and have a better understanding of the phenomenon under study. Moreover, the data review by research team increased the credibility of data analysis. The researchers attempted to clearly and fully explain the context and characteristics of the participants as well as the research pathway for researchers to follow. Research objectives were explained to the participants and they were ensured of the confidentiality terms regarding their personal information. In addition, a written informed consent was obtained to record the voice of the participants. Furthermore, the participants were allowed to withdraw from the research at any time. The study was approved by the committee of ethics of Maragheh University of Medical Sciences with the code of ethics of IR.MARAGHEHPHC.REC.1395.

Table 2: The main categories and sub categories of the barriers of utilizing theoretical knowledge in clinical settings

Main categories	Sub -categories	An example of the codes
Tendency to routine care in clinical settings	System's resistance to standard work in clinical settings	Prohibition of staff from doing things according to standards
	Following routine approaches in clinical settings	Influencing staff on student performance
Inefficient Teaching-Learning	Inefficient Learning	Laziness in learning
	Inefficient Teaching	Teachers' weaknesses in transferring content
	Inefficient Educational Program	Long time gap between theory and practical lessons
Lack of Confidence in Clinical Adequacy	Lack of confidence in receiving clinical services	Patients' resistance towards care by students
	Lack of confidence in allocation of clinical work	Not giving a chance to try and make mistakes for students
	Lack of confidence of students in ability to provide clinical services	Lack of confidence in their knowledge for utilizing in clinical settings
Lack of Supportive Professional Relationships	Lack of support by the instructor	Absence of the instructor during work on the patient
	Lack of support by clinical staff	Failure to cooperate with students
Difference between the nature of theory and practice	Difference between simulated situations and actual clinical settings	The difference between working in simulated situations and working on patients
	Stressful nature of the clinical settings	Fear and stress in dealing with the patients

Results

According to the experiences of the participants, challenges and barriers to the use of theoretical knowledge in clinical settings were classified into five main categories of "tendency to routine care in clinical settings", "inefficient teaching-learning", "lack of trust to clinical efficiency", "lack of supportive professional relationships", and "difference between the nature of theory and practice" (Table 2), all of which are explained below along with their related subcategories:

1. Tendency to Routine Care in Clinical settings

In the present research, "tendency to routine care in clinical settings" was defined as the habit of performing tasks in a non-standard way and based on clinical conditions. Students might not use the theoretical knowledge learned in university during their clinical work and use non-standard methods of the staff due to various reasons. This concept is explained in the form of two subcategories entitled "system's resistance to practical work in the clinic" and "following routine care approaches in the clinic".

1.1. System's Resistance to standard Work in the Clinical Settings

According to the experience of participants in this context, performing substantial work in clinical settings based on theoretical knowledge raises resistance in hospital staff. For a variety of reasons, including lack of time and facilities, hospital staff have been reluctant to apply principles consistent with theoretical knowledge and scientific evidence, and have prevented students from working in a principled and content-based manner. In this regard, some of the participants pointed out:

"We learned in classes that since the tip of powder vials becomes blunt, they must be changed to make the process easier for patients. However, we are always hurried during the process in the clinic and we are told that these processes are only for the books and everyone work this way in the clinic." (Participant 2, nursing student)

One of the nursing instructors explained:

"Students might be willing to implement the standard form of processes must encounter system's resistance.

They change wound dressings without sterile gloves. In contrast, since students learned that they must wear sterile gloves from their books, we do the same in practice. On the other hand, the staff claim that this is their routine developed based on empirical work. They pay special attention to routine work in the ward. Practicing the learning content in clinic scientifically demands the cooperation of the authorities in the ward, who should not increase problems by turning to routines." (Participant 12)

1.2. Following Routine Approaches in Clinical Settings

According to participants, since the work is not carried out technically and science-based work has been replaced by traditional methods of the staff, the participants were no longer eager to use their scientific learning and were forced to apply the work method of the staff. In this regard, one of the instructors stated:

"We have encouraged hand washing over and over again. However, students never wash their hands. They do not even do handrub, and their reason for lack of adhering to this issue is that none of the other staff do it. These are points that are only noted in books and are not adhered to in practice." (Participant 10)

2. Inefficient Teaching-Learning

This class points out the challenges and problems related to learning theoretical and practical concepts in students, lack of ability of professors to transfer the educational content, and ineffective training program, explained via subcategories of inefficient learning, inefficient teaching, and inefficient training program:

2.1. Inefficient Learning

Data analysis showed that inefficient learning in students due to "lack of theoretical knowledge reserve", "poor practical practices", "lack of learning motivation", and "inefficient learning opportunities in clinic" has caused problems for students in terms of using their knowledge in practice.

2.1.1. Lack of Theoretical Knowledge Reserve

Lack of expertise in theoretical concepts and scientific content is one of the causes of lack of using theoretical knowledge learned in classes in the clinic. In fact, students lack the necessary information to turn it into skill and use in the clinic. In this respect, one of the operating room students expressed:

"Students fail to properly learn the theoretical concepts and fail to answer the questions of the instructor." (Participant 9)

One of the professors in the field of emergency medicine asserted:

"Students lack a proper scientific base and theoretical information. During venipuncture, students have no idea whether they have to use a superficial or deep vein. They just now that they must close the elastic strap and get blood sample. They just learn something in practice, which is not supported by knowledge." (Participant 11)

Given the lack of familiarity with the content of scientific resources such as textbooks, students lack sufficient scientific knowledge and information to apply to the clinic. This issue has been pointed out by some of the instructors:

"In terms of catheterization, I ask students to fully understand the theoretical foundation of the process first and then use the information they learned in practice. However, they think that there is no need to read the books and they must only learn the process in practice. I have repeatedly asked them to first learn the basics of the process and then do the work." (Participant 10)

2. Inefficient Practical Practices

Another cause of inefficient learning, which leads to the poor performance of interns in the clinical field, is lack of practicing the learned techniques in simulated situations, which results in lack of ability of students to use the techniques in actual situations. In this regard, one of the students in the field of operating room declared:

"Something would be explained in the classroom but the professor would not show the process in practice. During the second semester, I had to start an IV and I did not know how to do it. It was very difficult because itwas my first timeand I had nopractice." (Participant 1)

"Seven types of the suture were explained in the book, none of which were practiced in class. We had no practice and if we had, we would not be scared so much. Even if the practice were on a model, we would learn the process. It is difficult to practice on a human being." (Participant 9, operating room student)

2.1.3. Lack of Learning Motivation

Another barrier to efficient learning in lack of interest in the field of study and the necessary

motivation to learn clinical skills. Some of the students pointed out their lack of learning motivation:

"Some of the students have no interesting in the nursing field. They have a bad feeling when performing some of the tasks (e.g., suction) and hate to do them." (Participant 2, nursing student)

One of the hospital personnel, who was a nursing instructor, stated:

"Students are not motivated. They are not interested in their field. They just waste their money. Most of them have turned to nursing since they believe that they can be easily recruited after graduation. This job has good merit pay, which is the only reason for selecting this field. Otherwise, the students were not eager to take shifts and had no interest in hospital environment." (Participant 13)

2.1.4. Lack of Learning Opportunities in Clinical Settings

According to the participants, the lack of learning conditions and facilities in educational settings, both university, and hospital, has hindered learning opportunities. Lack of hands-on training facilities and lack of clinical examples of learning in clinic, on the other hand, have limited learning opportunities for students. Lack of facilities and equipment for applying theoretical knowledge learned in the classroom in simulated situations makes it difficult for students to learn and transfer theoretical knowledge to clinical practice. This issue was pointed out by the participants :

"We had no practice in the school in order to implement the theoretical knowledge we learned in classes. We had to practice them in hospitals. For instance, we practiced injection on patients and the first time was very difficult." (Participant 5, nursing student)

In addition, participants pointed out the lack of learning samples in the clinic. In this regard, one of the students stated:

"Most theories learned in classes are not observed in the hospital. For instance, there are seven types of sutures in books, and we practiced none of them, not even on a model." (Participant 1, operating room student)

2.2. Inefficient Teaching

In the present research, inefficient teaching was one of the causes that explained the challenges related to the process of learning and turning theoretical knowledge into clinical work skills. The subcategories on this class included "poor teaching skills" and "conflict in information transfer".

2.2.1. Poor Teaching Skills

Students lack the base knowledge to be applied in the clinical field due to the inability of some professors to apply the methods and techniques of teaching and lack of experience of clinical instructors.

Some participants noted:

"One of our teachers had the worst teaching method, in a way that we learned nothing in classes. For instance, I can only understand a healthy ECG and cannot detect other diseases." (Participant 5, nursing student)

"They failed to properly teach the theoretical foundations of the field. Some of the professors were unable to transfer their knowledge. While being a professor is important, it is more important to know how to teach. Having knowledge about a topic does not mean that we can suitably teach it to others. Despite the fact that a PhD holder has sufficient information in his field, he may not be able to transfer this information to others as a teacher. People might be professional in performing a task but fail to teach it to others" (Participant 3, student of medical emergencies)

Some participants emphasized the inefficiency and inexperience of clinical instructors:

"I was eager to learn more from hospital staff instead of internship instructors since they only had theoretical knowledge and had no practice and their experience was related to their work in over 10 years ago." (Participant 5, nursing student)

2.2.2. Conflict in the Provision of Clinical Education Content

Instructors' use of contradictory practices and lack of coordination in how to apply practical skills in working with patients has led to confusion in students in terms of learning and applying standard principles. In this regard, one of the nursing students expressed:

"The general methods are implemented differently by each instructor. For instance, we learned how to change the dressing in practice. However, when we go to the ward, the instructor shows a different way,

which makes us confused. I do not know which method is the proper technique, the one we learned in class or the one we learned in the ward." (Participant 2)

One of the operating room students mentioned: "When we attend an operation, the doctor implements the operation in a way that is completely different from what we have learned in the classroom. Everything is confusing in practice." (Participant 6)

2.3. Inefficient Educational Program

One of the damages of the educational system is the weakness of educational programs, problems in the curriculum, and the short period of the clinical learning, all of which were recognized as an inefficient educational program in the present study.

2.3.1. Poor Educational Planning

Improper timing and the long gap between theoretical classes and practical courses and internship were among other issues explained by participants as barriers to the use of theoretical knowledge in clinic. In terms of improper timing for presenting credits, one of the participants stated:

"There is a long gap between our specialized courses and internship. We only have general courses on the fifth and sixth semesters. What is the use of physical activity as a course this semester? These courses must be passed on the second or third semesters. We must learn about surgery technology this semester." (Participant 1, operating room student)

2.3.2. Course Syllabus Defects

"Our syllabus is not updated and has many issues. The syllabus of our main courses must be changed based on our need. Some practice sessions must be added in order to learn new topics in practice." (Participant 12)

Some of the students mentioned inadequate theoretical courses for clinical work, believing that some of the discussions and procedures required for the clinic are not presented in theoretical classes. One of the nursing students expressed: *"some of the courses have inadequate credits, including evaluation of health status. We need courses such as pharmacology as well." (Participant 7)*

In this respect, one of the instructors declared:

"Most procedures are not defined in courses. For instance, tubing is not taught to anesthesiology students in practice. They learn the theoretical foundation of the procedure but do not practice it on models. I believe that professors must not just rely on syllabus and must add practical work to the courses even though there is no practice in the syllabus." (Participant 12)

2.3.3. Short Course

According to the participants, the short period of the course limits the opportunity to gain experience, learn skills and apply them in the clinic. One of the instructors of medical emergencies pointed out:

"Our students have no opportunity to learn the necessary skills. One semester only includes general credits and there are only three courses with specialized credits. They have short practice time and cannot be involved in processes." (Participant 11)

3. Lack of Confidence in Clinical Adequacy

Lack of confidence in clinical ability and adequacy to work in the field was one of the issues pointed out by participants when explaining about barriers to the transfer of theoretical knowledge in the clinical field. Data related to this concept was classified into three subcategories of "lack of confidence in receiving clinical services", "lack of confidence in providing clinical services", and "lack of confidence in allocation clinical work".

3.1. Lack of Confidence in Receiving Clinical Services

This subcategory refers to the resistance of patients and their companions to the work performed by students. In this regard, one of the participants shared their experience:

"…One of the patient's companions threw a tantrum over the work of a student, demanding that a nurse carry out the process of venipuncture and not the student." (Participant 15)

One of the nurses stated:

"Patients' companions do not trust students and ask nurses to carry out their patients' procedures. I always say that I am also a nurse and I know what I am doing. However, they do not even let me touch their patient." (Participant 7)

3.2. Lack of Confidence in Allocation of Clinical Work

Distrust of students to execute some procedures independently and without the intervention of the

instructor eliminates the possibility of trial and error and direct experience, impeding the application of what is learned in the clinical field. Instructors prevent students from performing work and direct intervention for a variety of reasons, such as lack of confidence in students' clinical competence, students' fear, and lack of self-esteem. This, in turn, deprives students of the opportunity to apply knowledge and gain experience and skills. In this regard, one of the participants affirmed:

"They do not trust students. Our professor always asked us to prepare the drug at the bedside but do not apply the drug until he was present. The same applied to other procedures such as venipuncture. I never worked alone until the seventh semester." (Participant 5, nursing student)

"They do not give the opportunity to students to test and error. As long as we are unable to carry out patients' procedures alone, we will be afraid forever. I am sure that all students can apply what they have learned in practice if allowed." (Participant 6, operating room student)

On the other hand, instructors are hesitant in allocating work to students after seeing their fear. In this respect, one of the instructors described:

"I see that a student has a peripheral venous catheter in hand and is shivering with fear and is full of stress. I cannot trust this person since they might fail the process." (Participant 13)

According to the participants' statements, it seems that lack of trust in the allocation of clinical work to students is due to the lack of confidence of instructors in their guidance and management of students. Some of the instructors asserted:

"Instructors themselves are afraid to carry out the process. Professors must manage the procedure both scientifically and managerially. As a professor, I do not have confidence in myself when visiting a patient. I am sometimes afraid that I might fail the process. When a professor is an expert, both in terms of theory and practice, students' self-confidence is affected" (Participant 14)

3.3. Lack of Confidence of Students in Ability to Provide Clinical Services

On the other hand, students doubt their ability to use the learned knowledge in practice. Due to a lack of confidence in their clinical adequacy in terms of providing services to patients, they do not think that they can independently do the work. One of the operating room students stated:

"I know that I have learned the theoretical foundation but I still doubt my level of competence. Maybe I am wrong. We are inexperienced and need an experienced person to help us. I lack the necessary self-confidence to ask for help from others." (Participant 6)

4. Lack of Supportive Professional Relationships

Supportive professional relationships refer to the support of students by instructors and hospital staff. Most participants considered the lack of a supportive and friendly environment in the clinical field as a barrier to their lack of ability to use learnings in the clinic.

4.1. Lack of Support by Instructor

Some of the students introduced the perception of poor support by an instructor and aggressive behavior in case of error as barriers to their competent work:

"One of our professors would point out our mistakes in front of the patient with a very bad tone. Sometimes they would yell at us for making a mistake, which extremely discouraged students, some of whom were afraid and would not want to continue their work." (Participant 2, nursing student)

On the other hand, the absence of an instructor beside the students or ineffective presence of professors has caused the learners not to receive the necessary support for the work in the hospital and to be ignored by the clinical staff, which has led to lack of proper use of their learnings in the clinic. One of the nursing students stated:

"…I had no instructors during four semesters of working in the hospital. We only observed for a few semesters, which made us left behind. We wanted to work but our instructors thought that we might make a mistake, which is why they would not let us practice. Therefore, we had no opportunity to use our learnings in the clinical field." (Participant 7)

4.2. Lack of Support by clinical Staff

Improper behavior of the staff or humiliation of students in front of others were among the barriers to trust-based interaction between these individuals and the motivation to carry out the work by students. In this regard, some of the nursing students asserted:

"They behave extremely rude and humiliating even for the smallest errors, which makes us clumsy and afraid. We think that our reputation is at risk if we make a mistake." (Participant 2)

5. Difference between the nature of theory and practice one of the challenges of using the theoretical knowledge in the clinical field was recognized as the contradiction of nature of knowledge learned in educational environments with working in the actual clinical field. This concept was explained based on two subcategories:

5.1. Difference between Simulated Situations and Actual Clinical settings

According to the participants, even though students experience procedures in simulated situations, students might encounter events that would not occur in simulated situations, such as working with a model. In this regard, one of the instructors expressed:

"…We have many general topics in practice because some things cannot be taught. For instance, we cannot simulate emergency situations for students." (Participant 12)

According to the participants, theoretical discussions and practical exercises on models are abstract in nature and very different from working in a real clinical field. One of the nursing students expressed:

"The things we learn in classes are very different than what we encounter in hospitals. Some techniques must only be applied to patients and would not work in practice or theory. For instance, they taught us to massage the patient's hand in case of vein blockage, which cannot be performed on a model. A similar phenomenon is blockage of IV. They would twist the IV tube to make pressure and remove clots, which could not be shown on a model." (Participant 7, nursing student)

5.2. Stressful Nature of Clinical Settings

The stressful nature of the clinical field has led to fear of clinical experiences in learners. In general, students considered working in the actual clinical environment and dealing with patients as a reason for the fear and stress of performing in the real environment and the inability to apply their knowledge. One of the nursing instructors pointed out:

"…Students work efficiently in practice, but they become afraid when they face actual patients in hospitals. Yesterday, one of the patients had severe internal bleeding and low blood pressure. I asked one of the students to take the pressure of the patient and we were performing venipuncture on the same patient. The student became so scared that he failed to complete the process." (Participant 12)

The emergency situation itself increases fear in students and prevents the use of learnings in actual situations:

"Emergency situations are very stressful. They immediately give you an order to perform venipuncture or injection. You lose your head for a second and do not what to do." (Participant 5, nursing student)

Discussion

According to the results of the present study, different factors prevented the use of knowledge learned in classes in the clinical field. In this regard, one of the unique results was related to the culture of the clinical environments, known as the tendency toward routine care in the ward. Some of the participants believed that despite knowledge of evidence-based principles and up-to-date knowledge in providing services to patients, they could not use these principles due to the tendency toward routine care in the clinical field. In such a situation, students have no choice but to step on the same path of the staff and use their techniques since the use of non-principle methods has been turned into a common behavior in clinical works. Our findings also demonstrated that the learning environment perceived by students affected their learning, and clinical learning occurs in a complicated social context, in a way that students gain professional competency through observing role models in clinical situations (23). According to the environmental compliance theory, people's perceptions of the environment shape the behavior of individuals (24).

On the other hand, the system's resistance to principled work by students in clinical field motivates them toward using the non-principled methods applied in the clinic. The emphasis of clinical staff on the current of works in the clinical environment has been reported in other studies as well (25). In addition to official and direct educations in clinical area, students learn much content through non-official

education such as learning through observation of hospital staff. This issue is recognized as latent educational program in the field of medical education and can be rarely detected. However, it has deep impact on the behavior and attitude of students and plays an important role in interpreting phenomena and behaviors (26).

In the current research, insufficient theoretical knowledge to be used in the clinical field was pointed out by the participants. In this respect, scientific performing of clinical tasks requires a theoretical background since students fail to understand the reason behind the clinical procedures without sufficient theoretical foundation. In this regard, Yang (2012) affirmed that the use of applied knowledge in practical jobs is impossible without theoretical knowledge as the basis (27). On the other hand, improper teaching methods of professors in theoretical classes and lack of use of applicable examples were mentioned as the barriers to the use of knowledge in clinical field. Unfortunately, despite the importance of education, especially in the medical fields, where students are prepared to work in clinical settings, research in Iran has shown the lack of competence of professors in terms of theoretical and clinical education. In this regard, theoretical contents are rarely transferred to clinical situations, and students cannot use their learnings on patients in actual situations (28).

Furthermore, incompetence of clinical instructors and lack of sufficient clinical experience to transfer to students have made a problem in the link of theoretical knowledge and clinical field. According to studies, an instructor is a person who transfers his knowledge and experience to students can be a communication bridge between theory and clinic (29). In a study in Jordan on the importance of the role of instructor, it was demonstrated that despite high academic levels, clinical instructors lacked the applicable clinical experience in a way that they would use lecture teaching for theoretical discussions in clinical field (30).

Lack of confidence in clinical abilities was another issue involved in the theory-practice gap. Confidence is a fundamental component that increases independence perceived by students and positively affects their clinical performance (7). Patients' confidence in students is one of the major concerns of students in clinical settings, which has also been confirmed in different studies. Aggressive behavior and lack of cooperation with patients might prevent students from direct use of their learnings in the clinic (31). It seems that lack of understanding students' abilities by patients and their companions lead to a lack of trust in the capabilities of these healthcare providers, which causes problems in providing services. Patients with high levels of confidence in the professional competence of health care workers are more likely to accept health care services provided by these individuals (32).

Another aspect of trust is the confidence that learners have in their ability to apply what they have learned while delivering clinical services. This finding may be explained by self-efficacy theory, which is defined as one's belief in one's ability to perform the desired functions that refer to one's perception of the ability to perform specific tasks effectively (33). According to studies, self-efficacy is a mediator between knowledge and behavior and plays a role in the clinical field by using knowledge and professional skills. In this respect, the increased confidence of students in the knowledge and self-efficacy acquired will result in the application of the knowledge learned while providing clinical services (34). On the other hand, instructors' lack of trust in learners' knowledge and abilities precludes them from directly experiencing clinical skills. In this respect, our findings are in line with the results obtained by Baraz, who showed that trusting students will increase their use of theoretical knowledge in actual clinical field and their ability to perform tasks independently (35).

Lack of a supportive atmosphere and positive working environment relationships were introduced as another barrier to the use of theoretical knowledge in the clinical field. Students believed that their relations with others in the clinical field affected their performance. Inappropriate feedback from instructors and clinical staff, and pointing out errors aggressively in the presence of patients discouraged students to perform their professional duties and led to decreased self-esteem and a sense of inferiority in these individuals. Participants believed that support from the instructor and staff was a prerequisite for motivating them to apply their learning in provision of good quality care. Confirmation of this finding can be attributed to studies on the role of instructors in motivating students and professional support of staff in the clinical setting. Studies show that lack of attention and support from the instructor decrease self-esteem and self-believe in students (18).

In a study assessing the barriers and facilitators of clinical education, student support by the instructor was one of the most important facilitators in clinical learning when dealing with a problem. The arrogant

behavior, harshness, and anger of staff were also identified as the most important deterrents in clinical education (36). A proper relationship with and respect for instructors and clinical staff reinforce learners' motivation and sense of integrity for performing science-based clinical practice. In a study explaining nursing students' perceptions of the clinical learning environment, it was shown that when welcomed at work by the staff, students became more interested in better function in terms of provision of healthcare to patients (37). The results of another study in this area demonstrated that the existence of supportive relationships in the clinical environment would internalize the role of nurses as health care providers (38).

Leaving students in wards without the presence of an instructor or an ineffective instructor makes it difficult to apply what they have learned in the clinical setting. In a research explaining the theory-practice gap in nursing education, lack of attention of clinical instructors to students and their lack of presence were among the causes for lack of use of learnings in class in the clinical field (30). Therefore, the need for monitoring of the instructor in the application of theoretical knowledge and professional competence is required and has been proven in other studies (39). According to the results of the present study, doing actual work in the clinical field differs from the experiences that learners gained in simulated learning environments. According to the participants, clinical settings are particularly stressful, especially in emergency situations. Research has shown that clinical education, in general, is a stressful experience as it relates to human life (40). Dealing with patients' lives and limited time in provision of services to patients when facing emergencies such as life-threatening events make learners unable to apply the lessons learned in the classroom.

Furthermore, some of the clinical duties cannot be simulated in academic education due to the difference in the nature of theory and practice. In actual clinical situations, a person encounters situations that are impossible to learn in unrealistic academic environments. In this regard, Saifan et al. have shown that, in students' view, theoretical discourse is shaped in an abstract world and performing work in the clinical field is formed in another actual world (30). Therefore, learning is different in real clinical situations. For example, Foru et al. marked that simulation is not capable of enhancing some learner skills such as clinical reasoning and critical thinking (41). Although simulated environments are safe environments that are capable of practicing a wide range of clinical skills without harming a real patient, they have a different context than the clinic, which makes it necessary to use them simultaneously.

In a study conducted by Howard et al. to compare the effect of educational strategies on the knowledge and professional skills of nursing students, the students' scores in the posttest care of patients with myocardial infarction were higher in the in-patient training group, compared to the group that received the score through simulation and in a simulated environment (42). While the use of experiences of participants in various clinical fields (e.g., operating room and medical emergencies) in addition to nursing, which has been assessed in several studies, was one of the strengths of the current study, lack of access to graduates of these fields, who seem to have deep experiences regarding our topic, was one of the limitations of the current research.

Conclusion

Application of the knowledge acquired in classes in the clinical field is affected by various factors with different natures. This phenomenon is formed in a structure encompassing the situation governing the clinical field, lack of professional support in the workplace, lack of trust and the pragmatic nature of the clinical field. Therefore, various strategies at different educational and attitude levels can be used in the application of the knowledge learned in classes in the clinical field. In this regard, it is important to eliminate the barriers to the provision of the cultural, educational and professional groundwork.

Acknowledgments

The present study was financially supported by the school of medical sciences of Maragheh with the code of 64/D1/694. Hereby, we extend our gratitude to the students, faculty members and staff of hospitals affiliated to Maragheh University of Medical Sciences for assisting us in performing the research.

References

1. Poorman, SG, Webb CA, Mastorovich ML. Students' stories: How faculty help and hinder students at risk. Nurse Educ. 2002; 27(3): 126-131.

2. Rahimi A, Ahmadi F. The Obstacles and Improving Strategies of Clinical Education from the Viewpoints of Clinical Instructors in Tehran's Nursing Schools. Iran J Med Educ. 2005; 5(2): 77-84.

3. Bagheri H, Bazghaleh M. Clinical education and its related factors in nursing: A qualitative meta-synthesis study. J Nurs Educ. 2016; 4(4): 26-39.

4. Preston L. Making connections with nature: bridging the theory--practice gap in outdoor and environmental education. Australian Journal of Outdoor Education. 2004; 8(1): 12.

5. Heidari M, Norouzadeh R. Nursing students' perspectives on clinical education. J ADV Med Edu Prof. 2015; 3(1):39-43.

6. Sobaski T, Abraham S. Self-Evaluation in a Clinical Setting to Develop Nursing Students' Clinical Judgment. International Journal of Studies in Nursing. 2018; 3(1):48-55.

7. Bagherian B. Nursing Mangers Views of the Educational Hospitals of Kerman University of Medical Sciences Regarding Barriers of Nurses'roles Performance .J Urmia Nurs Midwifery Fac 2015; 13(8): 655-665.

8. Raingruber B, Bowles K. Developing student evaluation instruments to measure instructor effectiveness. Nurse Educ. 2000; 25(2): 65-69.

9. Hadizadeh F, Firoozi M, Shamaeyan Razavi N. Nursing and midwifery students perspective on clinical education in Gonabad University of Medical Sciences. Iran J Med Educ. 2005; 5(1): 70-78.

10. Kuper A, D'Eon M. Rethinking the basis of medical knowledge. Med Educ 2011; 45(1): 36-43.

11. Alavi M, Abedi H. Nursing students' experiences and perceptions of effective instructor in clinical education. Iran J Med Educ. 2008; 7(2): 325-334.

12. Rahimi A, Ahmadi F. The obstacles and improving strategies of clinical education from the viewpoints of clinical instructors in Tehran's Nursing Schools. Iran J Med Educ. 2005; 5(2): 73-80.

13. Mongwe, Rirhandzu Norah. Student nurses' experiences of the clinical field in the Limpopo Province as learning field: a phenomenological study [dissertation]: University of South Africa, Pretoria, (2009).

14. Gheraghi M. Theorize on Theoretical Knowledge Transfer into Practice in Nursing: A Grounded Theory Approach. Sci J Hamdan Nurs Midwifery Fac. 2009; 17(12): 24-34.

15. Yoshida M et al. Factors influencing the academic motivation of individual college students. Int. J. Neurosci. 2008; 118(10): 1400-1411.

16. Salehi S et al. Learning activities and clinical nursing services gap and the related factors: a comparative study. Iran J Med Educ. 2001; 1(3): 43-49.

17. Sharif F, Masoumi S. A qualitative study of nursing student experiences of clinical practice. BMC nursing. 2005; 4(6): 1-7.

18. Haghanie F. Active learning: An approach for reducing theory-practice gap in clinical education. Iran J Med Educ. 2012; 11(9): 1179-1190.

19. Beal, J.A. Academic-service partnerships in nursing: an integrative review. Nurs Res Pract. 2012; 501-564.

20. Kermansaravi F, Navidian A, Imani M. Nursing students' views toward quality of theoretical and clinical nursing education: A qualitative Study. Journal of Medical Education and Development. 2013; 7(4): 28-40.

21. Sharif F, Masoumi S. A qualitative study of nursing student experiences of clinical practice. BMC nursing. 2005; 4(6): 1-7

22. Corlett J. The perceptions of nurse teachers, student nurses and preceptors of the theory-practice gap in nurse education. Nurse Educ Today. 2000; 20(6): 499-505.

23. Mirzaei R, Borhani F, Fasihi T. Nursing students' perception of clinical learning environments: A qualitative study. J Qual Res Health Sc. 2015; 4(1): 1-11.

24. Morovati Z, Cheraghi A. Identifying the Components of Effective Learning Environments Based on Health Students' Perception. Education Strategies in Med Sci. 2015; 8(4): 261-268.

25. Titler MG. The Evidence for Evidence-Based Practice Implementation. In: Hughes RG, editor. Patient Safety and Quality: An Evidence-Based Handbook for Nurses. Rockville (MD): Agency for Healthcare Research and Quality (US); 2008 Apr. Chapter 7.Available from: https://www.ncbi.nlm.nih.gov/books/NBK2659/

26. Murakami M, Kawabata H, Maezawa M. The influence of learning environments on medical education: a qualitative research study in one Japanese medical school. South East Asian Journal of Medical Education. 2009; 3(2):45-53.

27. Tang, Y. The mode of theoretical knowledge and practical knowledge combination: The significance of internship. World Journal of Education. 2012; 2(4): 55.

28. Mokhtari Nouri J et al. Importance of role-model teaching in nursing students' education. Education Strategies in Medical Sciences. 2011; 3(4): 149-154.

29. Toulabi T, Alhani F. A comparative study of educational programs' objectives for professional needs from the viewpoints of nursing graduates in three periods of three years. Yafteh. 2011; 12(2): 53-66.

30. Saifan A, AbuRuz M, Masa'deh R. Theory Practice Gaps in Nursing Education: A Qualitative Perspective. Journal of Social Sciences/Sosyal Bilimler Dergisi. 2015; 11(1):20-29.

31. Sanagoo A, Kalantari S, Taheri T, Jouybari L. The Nursing Students'perspective and Experiences of Patients'interest in Receiving care by Trainees. Daneshvar Medicine. 2016.23 (123): 51-60.

32. Einstein A, Podolsky B, Rosen N. Can quantum-mechanical description of physical reality be considered complete?. Physical Review. 1935; 47(10):777.

33. Bahram Rostami EF, Naderi H, Vakili MM, Mohammadi J. Evaluation of Relationship between Self-efficacy and Addiction Potential and Acceptance among Students of Zanjan University of Medical Sciences. Journal of Medical Education Development. 2018; 10(27): 10-18.

34. Haghani F, et al. Correlation between self-efficacy and clinical performance of the internship nursing students. Research in medical education. 2013; 5(1): 22-30.

35. Baraz S, Memarian R, Vanaki Z. Learning challenges of nursing students in clinical environments: A qualitative study in Iran. Journal of education and health promotion. 2015; 4:52.

36. Moridi G, Khaledi S. The Survey of Facilitating and Inhibiting Factors of Clinical Education from the Perspective of Intern Nursing Students of Faculty of Nursing and Midwifery. Scientific Journal of Nursing, Midwifery and Paramedical Faculty. 2015; 1(2): 10-19.

37. Mirzaei1 R, Borhani F, Fasihi Harandi T. Nursing students' perception of clinical learning environments: A qualitative study. J Qual Res Health Sci 2015; 4(1): 1-11.

38. Killam LA et al. First year nursing students' viewpoints about compromised clinical safety. Nurse Education Today. 2013; 33(5): 475-480.

39.Jonsén E, Melender HL, Hilli Y. Finnish and Swedish nursing students' experiences of their first clinical practice placement—A qualitative study. Nurse Educ Today. 2013; 33(3): 297-302.

40. Raji M et al. Assessment of Clinical Stressful Factors among Academic Students of Nursing and Operating Room of Dezful University of Medical Sciences. Community Health (Salāmat-i ijtimāī). 2015; 3(2): 111-118.

41. Fero L.J et al. Critical thinking skills in nursing students: comparison of simulation-based performance with metrics. J. Adv. Nurs. 2010; 66(10): 2182-2193.

42. Howard VM. A comparison of educational strategies for the acquisition of medical-surgical nursing knowledge and critical thinking skills: Human patient simulator vs. the interactive case study approach. 2007: University of Pittsburgh.

Hashemiparast M S, Jahanban Esfahlan A, Vakili M M. The Challenges of Applying Theoretical Knowledge in the Clinical Settings: A Qualitative Study. J Med Educ Dev. 2019; 12 (34) :22-33