



Investigating Factors Affecting Pharmaceutical Care Learning in Clinical Education in the View of Nursing Students in 2016 - 2017

Ellnaz Yazdan Parast¹, Bahare Rezvani Dehaghani², Sahar Nadimi², Seyed Hassan Ghorbani³ and Malihe Davoudi^{2,*}

¹Department of Nursing, Faculty of Qaen Nursing and Midwifery College, Birjand University of Medical Sciences, Birjand, Iran

²Department of Nursing, Faculty of Ferdows Paramedical, Birjand University of Medical Sciences, Birjand, Iran

³Hazrat Rasool Educational, Therapeutic and Research Hospital, Ferdows, Birjand University of Medical Sciences, Birjand, Iran

*Corresponding author: Department of Nursing, Faculty of Ferdows Paramedical, Birjand University of Medical Sciences, Birjand, Iran. Tel: +98-5632732301, E-mail: davoudi.ma@bums.ac.ir

Received 2018 March 10; Revised 2018 June 20; Accepted 2018 August 13.

Abstract

Background: Pharmacological knowledge learning is of great importance to nursing students. The views of nursing graduates in this regard are acknowledged because this will lead to identifying the strengths and weaknesses of educational programs, resources, and trainers.

Objectives: Therefore, the aim of this study was to investigate the factors affecting pharmaceutical care learning in clinical education from the viewpoint of nursing students in 2016 - 2017.

Methods: A descriptive cross-sectional study was conducted on nursing students (n = 120) recruited through a census method. The data collection tool was a self-administered questionnaire consisting of two parts. The first part was to gather demographic information including age, sex, semester, history of student work, and written score of the pharmacology course, and the second part was related to the areas affecting the learning process including professional competence of the instructor (11 items), teaching ability of the instructor (13 items), interpersonal communications of the instructor (5 items), clinical teaching environment (11 items), course plan (3 items), and learner characteristics (8 items). The collected data from 100 students were analyzed by SPSS16 software using descriptive statistics.

Results: 47 (47%) male students participated in the study and most of the participants (59%) were aged 20 - 21 years. From the viewpoint of the students, the variables related to the areas of the clinical instructor, learner characteristics, and educational environment were the first to third factors affecting the pharmacological care learning, in sequence.

Conclusions: Paying attention to the characteristics of the instructor, adaptation of clinical environment, characteristics and motivators of the students in gaining experience, and understanding the importance and necessity of learning the knowledge and practice of medicines can facilitate and strengthen the pharmaceutical care learning.

Keywords: Clinical Education, Pharmaceutical Care, Nursing

1. Background

Considering the important role of the nursing group and the emphasis placed on the educating this group, the need for a regular scientific and professional system encompassing the university, as a real ground for human resource training, is undeniable (1). Since nursing is a practical profession, clinical education forms a basis for this training program. Considering the responsibility of nurses in the promotion of the health status of the community, special attention should be paid to the quality of clinical education of nursing students (2). The goal of the nursing education is to graduate students ready to use their learning in clinical settings when they are recruited

in different nursing positions (3). Nursing students' learning in the clinical teaching environment is considered as a major factor in the nursing educational programs, helping students to integrate theoretical training with clinical practice and eliminate the gap between theory and practice in nursing (4). In other words, the goal of nursing education is to create a good level of knowledge and skills in nursing students, as well as make measurable changes in the students for clinical care and improve clinical decision-making of the students. Achieving this goal mainly depends on improving the level of clinical education in nursing (5). In most cases, the lack of matching the theoretical knowledge with the practical skills or the poor quality of

the clinical environment is considered as a major barrier to clinical education. Clinical education is the core of nursing vocational education because, at this stage of education, the learning is practiced, skills are taught, and the realities in the workplace are conveyed to the learners. Clinical education is one of the most important parts of the training process since most of the professional learning is completed in the clinical setting (1). Clinical education provides students with an opportunity to turn their knowledge into the mental, psychological, and motor skills essential for the patient care, convert theoretical findings into action, and increase their skills and abilities in providing comprehensive, effective, and efficient care to help the client (5).

There are over 20000 drugs in the world today that can be harmful despite having therapeutic effects. Therefore, healthcare providers need to be aware of the importance of recognition and correct use of the drugs to prevent their possible complications due to drug errors (6). Drug administration is one of the basic nursing tasks that require using necessary skill and paying attention to the progress of the patient recovery and safety. Nurses spend, on average, 40 percent of their time at the hospital for medication administration. Therefore, nurses as the holders of one of the major health care professionals who spend a lot of time in interacting with patients must have sufficient knowledge of pharmacology to provide safe and high-quality care (7). Assessing patients before taking medication, planning health care goals, administering safe and effective drugs, monitoring and evaluating unwanted side effects, educating the patient and his/her family, helping families to take care of the patient, and setting up the discharge schedules indicate the need for pharmacological skills in nurses. Nursing education is required to provide the basic knowledge of pharmacology for the nursing job and accelerate its development so that it can achieve the ultimate goal of pharmacological knowledge in nursing students, namely optimizing the drug use and ultimately improving the health outcomes for patients. Therefore, one of the issues that are very important for nursing students to learn and require urgent attention is the knowledge of pharmacology (8). However, instructors and students pay little attention to teaching and learning pharmacology. According to Morrison-Griffiths et al. qualitative study in 2002, as quoted by Khodaei et al. in 2015, approximately 25% of UK nurses in educational institutions believe that the highest degree of education should be related to pharmacological learning (9). Several studies evaluating pharmacological knowledge declared that student skills in pharmacology are not satisfactory. Zarei et al. in 2013 also quoted Hadi Grandel and stated that the reason for the inappropriate practice by nursing students is their inadequate phar-

macological knowledge. In the study of Courtenay, nursing students felt that they had insufficient knowledge of pharmacology. The latter study also found that only 10 percent of the sample students believed that their pharmacology skills were sufficient. Other studies have emphasized the poor pharmacological knowledge in nursing students and considered it as the most important cause of incidents such as drug errors in students (8). A study in Japan in 2007 also showed that the main cause of drug errors was the low level of pharmacological knowledge in the graduated nurses (7).

While studies point to the importance of combining drug education with the learning of nursing skills and important clinical issues, particularly in relation to drug administration, Kuhestani et al. stated that the time specified to the theoretical teaching of pharmacology is low. In a study, Grendell considers the lack of time devoted to education as one of the reasons for the poor pharmacological knowledge (8). Although nursing students spend a significant part of their education in clinical settings, this alone does not guarantee the quality of education because many variables such as student and his/her personality, clinical instructor and his/her skills, the ward staff and their collaboration, personal relationships, attitudes, physical structure, hierarchical patterns, and other factors in the teaching environment can affect the outcomes of pharmacological learning (4). Undoubtedly, knowing the factors influencing the learning of clinical skills is effective in reducing problems and strengthening positive points. One of the most important sources for studying is the students themselves who are directly involved with this process (10). Therefore, students' opinions and ideas, as an educational element, can be the basis for upcoming plans. This is because the elimination of deficiencies leads to professional development and provides an opportunity to improve the quality of educational and clinical services (11).

2. Objectives

Therefore, the aim of this study was to determine the views and opinions of nursing students about the effective factors in learning of the clinical pharmacology course.

3. Methods

This is a descriptive study recruiting all nursing students of Ferdows School of Paramedicine and Health in the academic year 2016 - 2017 by census method. Students giving their informed consent and passing the pharmacological apprenticeship course were included in the study. The data gathering tool was a self-administered questionnaire

(12) consisting of two parts. The first part was to gather demographic information including age, sex, and semester of the study, and the second part was related to the areas affecting learning including the professional competence of the instructor (11 items), teaching ability of the instructor (13 items), interpersonal communications of the instructor (5 items), clinical teaching environment (11 items), course plan (3 items), and learner characteristics (8 items). The items were scored based on a 4-point Likert scale comprising no-impact (score 0), low impact (score 1), moderate impact (score 2), and high impact (score 3). The content validity of the questionnaire was confirmed in the study of Ghamari Zare et al. and its reliability coefficient was estimated to be 0.82 by the test-retest method (12).

After coordination with officials, all nursing students at Ferdows School of Paramedicine (120 students) were invited to participate in the research. After presenting required information about the purpose of the research and obtaining informed consent, the questionnaires were administered to the students by one of the researchers during the apprenticeship, internship, and the theoretical courses, and they were explained how to complete the questionnaires. After being collected, the incomplete and invalid questionnaires were excluded and data of 100 questionnaires were analyzed. The participants were assured that the information would remain completely confidential. After coding the questionnaires, the data were analyzed in SPSS16 software using descriptive statistics (absolute and relative frequency, mean, and standard deviation).

4. Results

The study presents the data of 100 students participating in the research (response rate of 83.33%). The average age of the students was 21.71 ± 2.82 ; 47% of the students were men and 53% were women. In terms of the semester of the study, 18% were eighth-semester students and 26% sixth-semester students, while the remainder comprised equal numbers of fourth and second-semester students (Table 1).

The results of the analysis to determine the factors affecting the pharmaceutical care learning in clinical education are presented in Table 2. The data obtained from the tool are expressed as the absolute and relative frequency presented in front of every item below the points of the Likert scale including high impact, moderate impact, low impact, and no impact. In addition, the numbers representing the means and standard deviation appear in front of each domain and item.

In order to compare the areas of the questionnaire, the scores of the items in each area were summed and divided by the number of items of the same area. The obtained

Table 1. Absolute and Relative Frequency Distribution of Demographic Characteristics of the Nursing Students

Variable	Percentage ^a	Frequency
Age, year		
20	29	29
21	30	30
22	19	19
23	13	13
24	9	9
Sex		
Male	47	47
Female	53	53
Semester of the study		
2	28	28
4	28	28
6	26	26
8	18	18
History of student work		
None	70	70
1 year or lower	26	26
1 - 2 years	4	4

^aValues are presented as percentage.

scores in the range of 0 to 3 are reported in Table 3. Based on the findings shown in Table 3, the clinical competence of the instructor, learner characteristics, and clinical teaching environment with a mean and standard deviation of 2.42 ± 0.41 , 2.34 ± 0.45 , and 2.26 ± 0.48 , respectively, were the first, second, and third factors most effective in pharmaceutical care learning. The interpersonal communications between the instructor and the student, the teaching ability of the instructor, and the course plan also ranked fourth to sixth in the learning of the pharmaceutical care skills.

5. Discussion

The findings of this research included factors that are effective in the pharmaceutical learning of clinical education from the viewpoint of nursing students. Clinical competence of the instructor, learner characteristics, and clinical teaching environment were first to third most effective factors in learning pharmacology. The clinical instructor is a very important element in planning and acquiring clinical experiences and is the most important factor in creating favorable conditions for the realization of clinical educational goals. This is because the instructor can compen-

Table 2. Frequency Distribution of Students' Opinions about the Factors Affecting Pharmaceutical Care Learning in Clinical Education

No.	Items	Mean \pm SD	No. Impact	Low Impact	Moderate Impact	High Impact
1	Introducing highly consumed drugs at the start of each apprenticeship period	1.43 \pm 0.65	1	6	28	65
2	Applying the theory of pharmacology in the clinical environment	1.62 \pm 0.73	1	12	35	52
3	Emphasis on nursing attention	1.37 \pm 0.66	2	4	23	71
4	Emphasis on professional ethics in reporting drug errors	1.47 \pm 0.65	0	2	29	62
5	Emphasis on professional ethics in using sterile techniques	1.58 \pm 0.71	0	13	32	55
6	Guidance for questions	1.62 \pm 0.73	1	12	35	52
7	Warning about the consequences of errors in drugs and serum administration	1.39 \pm 0.58	0	5	29	66
8	Being patient in favor of accuracy in drug administration rather than being in a rush	1.60 \pm 0.69	0	12	36	52
9	Being patient in decision making instead of immediate guidance	1.86 \pm 0.89	7	13	41	39
10	Emphasis on tracking the vital signs and results of the tests before administering drugs	1.64 \pm 0.68	1	9	43	47
11	Expressing tips during preparation and administration of drugs and serum	1.60 \pm 0.79	3	10	31	56
12	Describing the necessity and purpose of learning pharmacology	1.89 \pm 0.79	3	17	46	34
13	Teaching pharmacology based on individual differences between students	1.93 \pm 0.86	6	16	43	35
14	Teaching with the patient-based approach	1.73 \pm 0.76	2	13	41	44
15	Supervising according to my ability to prepare drugs	1.82 \pm 0.83	4	15	40	41
16	Supervising according to my ability for drug administration	1.77 \pm 0.76	1	17	40	42
17	Monitoring drug registration and correcting mistakes	1.67 \pm 0.78	1	16	32	51
18	Questions and answers at pharmaceutical conferences	1.80 \pm 0.86	3	20	31	46
19	Motivating to recognize new drugs seen in the wards	1.72 \pm 0.76	2	13	40	45
20	Using modern teaching methods to teach medicine	1.70 \pm 0.77	1	16	35	48
21	Strengthening the student motivation to acquire drug knowledge	1.66 \pm 0.76	2	12	36	50
22	Guidance on how to learn pharmacology content through self-contained teaching	1.76 \pm 0.69	0	15	46	39
23	Continuous evaluations by asking questions or taking quizzes during the course	1.98 \pm 0.93	7	21	35	37
24	Assessing pharmacology learning properly and realistically	1.76 \pm 0.79	2	16	38	44
25	Useful criticism in case of drug errors, wrong technique or incorrect drug registration	1.84 \pm 0.88	6	14	38	42
26	Positive feedback on the correct drug knowledge and practice	1.78 \pm 0.81	4	12	42	42
27	Negative feedback on misunderstanding and misconduct	1.84 \pm 0.89	5	18	33	44
28	More emphasis on student strengths rather than weaknesses	1.67 \pm 0.79	4	8	39	49
29	The way of interaction between the instructor and ward staff in taking the responsibility of drug and existing conditions	1.53 \pm 0.73	4	2	37	57
30	Observing differences in sections, patients, and medications	1.65 \pm 0.77	3	9	38	50
31	Seeing and reading the medications in the drug cards and patient cases	1.46 \pm 0.65	1	6	31	62
32	Pharmacology books available in the hospital ward or library	1.85 \pm 2.07	3	7	43	47
33	Standing alongside the students to see their work or hear their experiences	1.66 \pm 0.79	3	11	35	51
34	Knowledge and practice of the staff in relation to drug administration	1.71 \pm 0.70	0	14	43	43
35	Brochures, booklets, pamphlets, seminars, workshops, etc. availability in the hospital	1.92 \pm 0.86	5	18	41	36
36	The interaction and communication of staff and ward managers	1.84 \pm 1.20	1	17	37	45
37	Stress, anxiety, and bustle in the ward	1.77 \pm 0.85	4	15	35	46
38	Number of teammate students	1.63 \pm 0.82	4	10	31	55
39	Differences in knowledge between teammate students	1.86 \pm 1.30	3	14	39	44
40	The physical structure of the ward	2.08 \pm 0.88	8	19	46	27
41	Behavioral goals in the lesson plan for the course	2.04 \pm 1.29	7	19	35	39
42	Scoring for the drug knowledge and drug administration task	1.83 \pm 0.76	4	10	51	35
43	Drug administration as the nurse job description	1.68 \pm 0.72	0	15	38	47
44	Experiences of self, instructor, and students	1.60 \pm 0.72	0	14	32	54
45	Drug training and pamphlet preparation for the patient	1.78 \pm 0.78	3	13	43	41
46	Having the motivation to learn about an unknown or new drug	1.64 \pm 0.71	0	14	36	50
47	Commitment to learning and self-confidence to take advantage of learning opportunities	1.65 \pm 0.71	1	11	40	48
48	Seeing the staff drug performance and getting consultation and assistance from the staff	1.57 \pm 0.65	0	9	39	52
49	Fear of incompetence until getting started in the workplace	1.78 \pm 0.85	5	13	37	45
50	Self-efficacy after drug administration independently and without supervision	1.59 \pm 0.68	1	8	40	41
51	A positive view of the importance and necessity of acquiring the proper knowledge and practice of the drug	1.65 \pm 0.77	3	9	38	50

sate for the shortcomings of educational facilities or, conversely, make the best of the situation to an unattractive environment by not being able to create an appropriate emotional connection or scientific inability (13, 14). Clinical instructors have a tremendous impact on improving

the quality of clinical education and can provide students with favorable clinical experiences. Therefore, it is necessary to further study the factors affecting the promotion of the motivation of clinical professors to provide an active and more effective presence in the educational and

Table 3. Mean and Standard Deviation of the Scores on Factors Influencing Pharmacology Learning

No.	Variable	Mean \pm SD	Max Score	Min Score
1	Clinical competence of the instructor	2.42 \pm 0.41	3	0.82
2	Teaching ability of the instructor	2.21 \pm 0.44	3	1.08
3	Interpersonal communications of the instructor	2.25 \pm 0.51	3	0.61
4	Clinical teaching environment	2.26 \pm 0.48	3	0.45
5	Course plan	2.17 \pm 0.63	3	0.33
6	Learner characteristics	2.34 \pm 0.45	3	1.38

therapeutic fields so that clinicians, with an emphasis on their valuable experiences, actively engage in clinical education (15). It should also be noted that instructors have an important role in the successful clinical education of the students. Knowledge, attitude, and experience of the instructors affect students' learning. As a result, nursing students in Alavi and Abed research acknowledged a key role for instructors in clinical learning, as well as their academic and professional competence (16). Ghamari Zare et al. also found in their study that from the perspective of Arak nursing students, the clinical competency of the instructor is the most important component of the pharmacology course learning (12), which is in line with the results of the current study.

The learner characteristics area was ranked second with an average of 2.34 ± 0.45 with a slight difference from the variable clinical competence of the instructor. The review of the literature showed that in the view of instructors and students, one of the most influential factors in clinical teaching is the characteristics of students, which can increase the level of clinical education. From the point of view of instructors, a strong, disciplined, curious, and interested student, who has a higher level of knowledge, will increase the scientific and practical activities of the instructor, as well as his/her ability (17). Nasiri et al. also concluded that motivation, self-esteem, and other personality traits of the learners were the most important determinants of the effectiveness of clinical education from the perspective of the students (18). Smith et al. also showed that personal factors in students, such as motivation and interest in the profession, play an important role in obtaining desirable clinical experiences (19). Ramazanibadr et al. also achieved similar results in a qualitative study (20). Yekeh Fakhah et al. introduced learners' characteristics as the most important factor in the learning of clinical skills by midwifery students (21). Evidence suggests that some of the characteristics of students such as adherence to discipline, knowledge level, interest in the field of study, and their previous mentality of the lecturer have an impact on increasing their level of learning in clinical education.

Therefore, considering the undeniable role of psychological and psychological dimensions and internal and external motivations of learners in clinical skills training, it is recommended to improve the level of interest of nursing students in their field of study and encourage them to improve their academic level (22).

Based on the results, the domain of clinical teaching environment ranked third in terms of effectiveness. In this regard, Ramezani et al. showed that the physical environment has a direct impact on the quality of clinical education (23). The clinical teaching environment is defined as a complex and interactive network of forces that influences students' clinical learning outcomes (24). Research has shown that clinical teaching environment has great impacts on students, the most important of which are the development of attitude, psychomotor skills, knowledge, problem-solving skills (25), clinical competence, communication skills, and critical thinking skills (25). The vast majority of professional nurses' socialization occurs in the clinical setting; the richer the setting is, the sooner and better the socialization will be (25). Qamari Zare et al. and Nazarian et al. pointed out in their studies that the characteristics of the clinical environment have a great impact on the quality of clinical education, and the alignment of therapeutic-care objectives with the educational objectives of the instructors can have a positive effect on clinical education outcomes (12, 26). It should be noted that a proper educational environment in terms of facilities and equipment is important for the effectiveness of clinical education (27, 28). Considering the importance of this issue for learners in clinical education, it is necessary, in addition to strengthening the ability of adaptation and problem solving in the students, to focus on the educational environment and conditions, including the clinical physical environment, the psychological environment of the clinical centers, assessment atmosphere, appraisal approaches, and other influential conditions. All of the events are filtered through the students' life experiences to shape students' perceptions of those events; it is, therefore, important that educators consciously focus on messages that are

transmitted by people, places, policies, and processes in the educational environment (22). It should also be noted that the clinical environment plays a vital role in the professionalization of nursing students, and any disturbance in this environment may lead to the impaired learning of nursing students. Therefore, concerning the importance given by researchers to the clinical teaching environment for nursing students, as well as the negative effects that can arise from the gap between the actual and expected clinical teaching environment, the results of this study suggest that nursing education managers should pay more attention to nursing students' education (29).

The interpersonal communications of the instructor also ranked fourth in the viewpoint of the students. One of the characteristics of a clinical instructor is the ability to create interpersonal communications and interactions with students, either individually or in the form of a group (30). Heydari et al. also emphasized the importance of the role of teacher-student interpersonal communication (31). Nursing students from the Thompson Rivers University of Canada, in a study aiming at identifying the characteristics of effective educators, gave the highest priority to the professional communication and feedback skills second to professional competence (32). Alavi and Abedi also showed that the most important characteristics of clinical instructors are good personality, strong communication skills, and clinical skills in the viewpoint of nursing students (16).

The positive relationship between the teacher and the student brings about positive outcomes in the student such as increased self-esteem, increased learning motivation, developed professional skills, positive learning experiences, reduced fear and anxiety, reduced probability of academic failure, improved professional identity, and delivering more support at the time of care (33-36). In fact, the type of communication can play a role in creating the best clinical scenario (37). In addition, in cases where the instructor has a proper relationship with the students and shows his/her interest in teaching, the self-concept and cognitive ability will improve in the students (38).

In this study, the teaching ability of the instructor and the course plan obtained lower mean scores and ranked fifth and sixth, respectively, compared to the other domains. Different studies referred to the teaching ability as one of the indicators and skills of the instructors (15, 30, 36, 39, 40). In the domain of educational skills, it should be noted that the role of clinical educators is not only the transfer of knowledge and skills to the learners but the development of thinking, especially critical thinking, as one of their most important tasks, which will be possible by using innovative and active learning methods (41). The results of various studies indicate that clinical educators,

in addition to having sufficient knowledge and skills and special characteristics, need to know when and how they should use their knowledge and skill and be aware of educational strategies and teaching-learning principles. An effective clinical educator is expected to have the ability to train with features such as fitting the educational activities with the goals of learning, making the students clearly aware of their duties and responsibilities, forcing the students to think more, encouraging the students to learn independently, and using new and advanced teaching methods (41, 42).

Regarding the course plan area, it should be mentioned that the purpose of nursing education is to educate nurses who have the ability and knowledge of caring for patients in clinical settings (43). Nursing students who are graduating from the universities all over the country may often have an acceptable theoretical basis, but usually, lack the skill and ability to work in a clinical setting and are unable to make decisions and take appropriate action. Many studies have suggested that perhaps the reason for this deep gap between theoretical and clinical education is the way of educational planning for this major, and most students believe that conventional clinical education in our country does not give them the qualifications required to work in the clinical setting (15). The failure of the expectations of the curriculum to match the expectations in the hospital wards makes nursing students in their clinical environments wander around the expectations of the instructor and clinical nurses when facing with different clinical situations, preventing them from generalizing and applying what they have learned in theory. This has been always a concern about this field of study because of its particular nature of instructors, students, and nurses (44, 45).

The area of course plan had the least importance in pharmaceutical learning. In this study, students were asked to express their views on the effect of each item on learning, while some might not have actually experienced it, and only inserted their own opinion.

5.1. Conclusions

Based on the results, it was disclosed that the students emphasized on the areas of instructor clinical competency, learner characteristics, instructor interpersonal communication, clinical teaching environment, instructor teaching ability, and course plan as the factors influencing pharmaceutical learning, in order of priority.

Acknowledgments

This article is a result of a research project conducted at Birjand University of Medical Sciences with an intercept

code of 4405 and the ethics code of Ir.bums.REC.1396.70. It was approved by the Research Council of Birjand University of Medical Sciences; hereby, students from the Ferdows Faculty of Paramedicine and Health, the head of the faculty, and all the colleagues who helped us in this study are greatly acknowledged.

References

- Gwee MC. Teaching of medical pharmacology: the need to nurture the early development of desired attitudes for safe and rational drug prescribing. *Med Teach*. 2009;**31**(9):847-54. [PubMed: 19811191].
- Dobrowolska B, McGonagle I, Jackson C, Kane R, Cabrera E, Cooney-Miner D, et al. Clinical practice models in nursing education: implication for students' mobility. *Int Nurs Rev*. 2015;**62**(1):36-46. doi: 10.1111/inr.12162. [PubMed: 25559068].
- Chee J. Clinical simulation using deliberate practice in nursing education: a Wilsonian concept analysis. *Nurse Educ Pract*. 2014;**14**(3):247-52. doi: 10.1016/j.nepr.2013.09.001. [PubMed: 24120521].
- Association of Women's Health O, Neonatal N. Nursing education. *Nurs Womens Health*. 2014;**18**(1):83-4. doi: 10.1111/1751-486X.12101. [PubMed: 24548502].
- Tarsis HH. Impact of nursing education on clinical practice. *Nurs J India*. 2014;**105**(1):8-10. [PubMed: 25158530].
- Reid-Searl K, Happell B, Burke KJ, Gaskin CJ. Nursing students and the supervision of medication administration. *Collegian*. 2013;**20**(2):109-14. doi: 10.1016/j.colegn.2012.04.003.
- Reid-Searl K, Moxham L, Walker S, Happell B. Supervising medication administration by undergraduate nursing students: influencing factors. *J Clin Nurs*. 2010;**19**(5-6):775-84. doi: 10.1111/j.1365-2702.2009.03074.x. [PubMed: 20500321].
- Sulosaari V, Kajander S, Huupli M, Huupponen R, Leino-Kilpi H. Nurse students' medication competence—an integrative review of the associated factors. *Nurse Educ Today*. 2012;**32**(4):399-405. doi: 10.1016/j.nedt.2011.05.016. [PubMed: 21652125].
- Khodaei A, Ganjei S, Mansourian M. Factors affecting learning and development of clinical skills in pharmacology course: nursing students' viewpoints, Tabriz university of medical sciences, Iran. *Strid Develop Med Educat*. 2016;**13**(2):182-91.
- Sulosaari V, Huupponen R, Huupli M, Puukka P, Torniainen K, Leino-Kilpi H. Factors associated with nursing students' medication competence at the beginning and end of their education. *BMC Med Educ*. 2015;**15**:223. doi: 10.1186/s12909-015-0513-0. [PubMed: 26683623]. [PubMed Central: PMC4683869].
- Helminen K, Tossavainen K, Turunen H. Assessing clinical practice of student nurses: Views of teachers, mentors and students. *Nurse Educ Today*. 2014;**34**(8):1161-6. doi: 10.1016/j.nedt.2014.04.007. [PubMed: 24874072].
- Ghamari Zare Z, Purfarzad Z, Ghorbani M, Zamani M. Factors affecting learning of pharmaceutical care in clinical education: Arak nursing students' perspectives. *Iran J Med Educat*. 2012;**12**(4):265-73.
- Brown J, Stevens J, Kermod S. Supporting student nurse professionalisation: the role of the clinical teacher. *Nurse Educ Today*. 2012;**32**(5):606-10. doi: 10.1016/j.nedt.2011.08.007. [PubMed: 21907468].
- Reid TP, Hinderer KA, Jarosinski JM, Mister BJ, Seldomridge LA. Expert clinician to clinical teacher: developing a faculty academy and mentoring initiative. *Nurse Educ Pract*. 2013;**13**(4):288-93. doi: 10.1016/j.nepr.2013.03.022. [PubMed: 23615037].
- Gustafsson M, Kullen Engstrom A, Ohlsson U, Sundler AJ, Bisholt B. Nurse teacher models in clinical education from the perspective of student nurses—A mixed method study. *Nurse Educ Today*. 2015;**35**(12):1289-94. doi: 10.1016/j.nedt.2015.03.008. [PubMed: 25846197].
- Alavi M, Abedi HA. Nursing Students' Experiences and Perceptions of Effective Instructor in Clinical Education. *Iran J Med Educat*. 2008;**7**(2):325-34.
- Koch J, Everett B, Phillips J, Davidson PM. Is there a relationship between the diversity characteristics of nursing students and their clinical placement experiences? A literature review. *Collegian*. 2015;**22**(3):307-18. doi: 10.1016/j.colegn.2014.03.007.
- Nasiri A Kaheni S SK. Effective factors on learning of nursing clinical skills from the Viewpoints of clinical instructors and nursing students in Birjand city. *Iran J Med Educat*. 2003.
- Smith KV, Godfrey NS. Being a good nurse and doing the right thing: a qualitative study. *Nurs Ethics*. 2002;**9**(3):301-12. doi: 10.1191/0969733002ne512oa. [PubMed: 12035435].
- Ramazanibadr F, Amini K, Mohammadzadeh A, Mosaeifar M. The factors affecting the clinical learning of the nursing students: A qualitative research. *J Med Edu Dev*. 2011;**4**(6):20-30.
- Yekeh Fakhah L, Manochehri H, Jahandideh B, Talebi Alavi SZ, Azardel N, Falahat Pisheh F. Teachers, nursing and midwifery Students' Viewpoints about effective factors in achieving professional skills in Qazvin university of medical science. *Res Med Educat*. 2013;**5**(1):52-60. doi: 10.18869/acadpub.rme.5.1.52.
- Koch J, Everett B, Phillips J, Davidson PM. Diversity characteristics and the experiences of nursing students during clinical placements: A qualitative study of student, faculty and supervisors' views. *Contemp Nurse*. 2014;**49**:15-26. doi: 10.5172/conu.2014.49.15. [PubMed: 25549740].
- Ramezani T, Dortaj Ravari E. Characteristics of effective teachers and pertinent effective educational factors according to the teachers and students' point of view in schools of nursing, Kerman. *Dev Med Educ*. 2009;**6**(2):139-48.
- Hooven K. Nursing students' qualitative experiences in the medical-surgical clinical learning environment: a cross-cultural integrative review. *J Nurs Educ*. 2015;**54**(8):421-9. doi: 10.3928/01484834-20150717-01. [PubMed: 26230161].
- Wells MI, Dellinger AB. The effect of type of learning environment on perceived learning among graduate nursing students. *Nurs Educat Perspect*. 2011;**32**(6):406-10. doi: 10.5480/1536-5026-32.6.406.
- Nazarin R, Mohammad E. Effective organizational factors on a clinical teacher competency; a qualitative research. *Bimonth Educ Strateg Med Sci*. 2012;**4**(4):165-70.
- Young M, Simpson V, McComb SA, Kirkpatrick JM, La Lopa JM, Bullard KS. Toward creating an optimal acute care clinical learning environment: insights from staff, faculty, and students. *J Nurs Educat*. 2014;**53**(3):S42-5. doi: 10.3928/01484834-20140211-06.
- Williams E, Palmer C. Student nurses in critical care: benefits and challenges of critical care as a learning environment for student nurses. *Nurs Crit Care*. 2014;**19**(6):310-5. doi: 10.1111/nicc.12053. [PubMed: 24131570].
- Cremonini V, Ferri P, Artioli G, Sarli L, Piccioni E, Rubbi I. Nursing students' experiences of and satisfaction with the clinical learning environment: the role of educational models in the simulation laboratory and in clinical practice. *Acta Bio Med Atenei Parmensis*. 2015;**86**(3):194-204.
- Nepal B, Taketomi K, Ito YM, Kohanawa M, Kawabata H, Tanaka M, et al. Nepalese undergraduate nursing students' perceptions of the clinical learning environment, supervision and nurse teachers: A questionnaire survey. *Nurse Educ Today*. 2016;**39**:181-8. doi: 10.1016/j.nedt.2016.01.006. [PubMed: 27006054].
- Heydari A, Yaghoubinia F, Roudsari RL. Supportive relationship: Experiences of Iranian students and teachers concerning student-teacher relationship in clinical nursing education. *Iran J Nurs Midwifery Res*. 2013;**18**(6):467-74. [PubMed: 24554945]. [PubMed Central: PMC3917130].

32. Kelly C. Student's perceptions of effective clinical teaching revisited. *Nurse Educ Today*. 2007;**27**(8):885-92. doi: [10.1016/j.nedt.2006.12.005](https://doi.org/10.1016/j.nedt.2006.12.005). [PubMed: [17321013](https://pubmed.ncbi.nlm.nih.gov/17321013/)].
33. Yaghoobinia F, Heydari A, Latifnejad Roudsari R. Seeking a progressive relationship for learning: A theoretical scheme about the continuity of the student-educator relationship in clinical nursing education. *Jpn J Nurs Sci*. 2014;**11**(1):65-77. doi: [10.1111/jjns.12005](https://doi.org/10.1111/jjns.12005). [PubMed: [24460603](https://pubmed.ncbi.nlm.nih.gov/24460603/)].
34. Heydari A, Yaghoobinia F, Roudsari RL. The multidimensional nature of relationships: the perceptions of Iranian nursing students and educators of the student-educator relationship. *J Nurs Res*. 2016;**24**(1):1-8. doi: [10.1097/jnr.0000000000000091](https://doi.org/10.1097/jnr.0000000000000091). [PubMed: [26133003](https://pubmed.ncbi.nlm.nih.gov/26133003/)].
35. Gillespie M. Student-teacher connection: a place of possibility. *J Adv Nurs*. 2005;**52**(2):211-9. doi: [10.1111/j.1365-2648.2005.03581.x](https://doi.org/10.1111/j.1365-2648.2005.03581.x). [PubMed: [16164482](https://pubmed.ncbi.nlm.nih.gov/16164482/)].
36. Struthers J. An exploration into the role of humour in the nursing student-nurse teacher relationship. *J Adv Nurs*. 1994;**19**(3):486-91. [PubMed: [8014309](https://pubmed.ncbi.nlm.nih.gov/8014309/)].
37. Dimitriadou M, Papastavrou E, Efstathiou G, Theodorou M. Baccalaureate nursing students' perceptions of learning and supervision in the clinical environment. *Nurs Health Sci*. 2015;**17**(2):236-42. doi: [10.1111/nhs.12174](https://doi.org/10.1111/nhs.12174). [PubMed: [25377993](https://pubmed.ncbi.nlm.nih.gov/25377993/)].
38. Shahsavari H, Parsa Yekta Z, Houser ML, Ghiyasvandian S. Perceived clinical constraints in the nurse student-instructor interactions: a qualitative study. *Nurse Educ Pract*. 2013;**13**(6):546-52. doi: [10.1016/j.nepr.2013.05.006](https://doi.org/10.1016/j.nepr.2013.05.006). [PubMed: [23791775](https://pubmed.ncbi.nlm.nih.gov/23791775/)].
39. Arkan B, Ordin Y, Yilmaz D. Undergraduate nursing students' experience related to their clinical learning environment and factors affecting to their clinical learning process. *Nurse Educ Pract*. 2018;**29**:127-32. doi: [10.1016/j.nepr.2017.12.005](https://doi.org/10.1016/j.nepr.2017.12.005). [PubMed: [29274524](https://pubmed.ncbi.nlm.nih.gov/29274524/)].
40. O'Mara L, McDonald J, Gillespie M, Brown H, Miles L. Challenging clinical learning environments: experiences of undergraduate nursing students. *Nurse Educ Pract*. 2014;**14**(2):208-13. doi: [10.1016/j.nepr.2013.08.012](https://doi.org/10.1016/j.nepr.2013.08.012). [PubMed: [24063792](https://pubmed.ncbi.nlm.nih.gov/24063792/)].
41. Dahlke S, Baumbusch J, Affleck F, Kwon JY. The clinical instructor role in nursing education: a structured literature review. *J Nurs Educ*. 2012;**51**(12):692-6. doi: [10.3928/01484834-20121022-01](https://doi.org/10.3928/01484834-20121022-01). [PubMed: [23092120](https://pubmed.ncbi.nlm.nih.gov/23092120/)].
42. Lee-Hsieh J, Chung UL. [Clinical nursing education]. *Hu li za zhi J Nurs*. 2012;**59**(5):5-9. Chinese.
43. Kim HS. Outcomes-based curriculum development and student evaluation in nursing education. *J Korean Acad Nurs*. 2012;**42**(7):917-27. doi: [10.4040/jkan.2012.42.7.917](https://doi.org/10.4040/jkan.2012.42.7.917). [PubMed: [23377587](https://pubmed.ncbi.nlm.nih.gov/23377587/)].
44. Van Sant-Smith D. Supporting the integrative health care curriculum in schools of nursing. *Holist Nurs Pract*. 2014;**28**(5):312-5. doi: [10.1097/HNP.0000000000000042](https://doi.org/10.1097/HNP.0000000000000042). [PubMed: [25099984](https://pubmed.ncbi.nlm.nih.gov/25099984/)].
45. Fernandes JD, Reboucas LC. [A decade of National Curriculum Guidelines for Graduation in Nursing: advances and challenges]. *Rev Bras Enferm*. 2013;**66** Spec:95-101. Portuguese. [PubMed: [24092316](https://pubmed.ncbi.nlm.nih.gov/24092316/)].