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Original Article

Basic clinical skills of nursing students: a comparison between nursing students', nursing graduates' and lecturers' viewpoints

Seyed Abbas Hoseini, Jalil Islamian**, Soheila Bakhtiari****

Abstract

BACKGROUND: Nursing is a skill oriented discipline. In clinical training, learning process is mainly related to performance. Moreover, developing skills is one of the main goals of clinical training, because it is through frequent practice that one can develop a skill. This study aimed to determine the frequency of practicing basic skills during nursing students' traineeship.

METHODS: This was a cross-sectional descriptive analytic study, using two questionnaires, one for students taking a traineeship course and the other for graduated students and professors.

RESULTS: From among seventeen skills studied in this research, the following have not met the expectation of professors and graduated students: subcutaneous injection, blood transfusion, urinary catheterization, nasogastric tube insertion, lavage and enema with the average frequency of 0.06, 1.49, 0.79, 0.80, 0.08 and 0.17, respectively. There was a significant difference between professors' and graduated students' opinions about the frequency of performing skills of muscular injection, serum preparation with ordinary infusion set and micro-infusion set, blood transfusion, dressing, Intake/Output control, oxygen therapy, airway suctioning, gavage, and lavage procedures.

CONCLUSION: It seems that nurses do not have enough opportunities to practice some of the basic skills and the reason is that during their traineeships in wards the incidence of a need for these skills are few, and usually interns, residents and nursing-students perform these skills together. This should be considered in curriculum planning.

KEY WORDS: Clinical nursing skill, basic nursing skills, nursing student.

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Clinical training is an important educational content.[1] Shuber believes that clinical training gives the students opportunities to turn their theoretical knowledge to practical by learning a variety of mental and psychomotor skills.[2] In fact, clinical training is the basis of developing and providing efficient, skillful, and knowledgeable human resources for the society.[3] Learning process in clinical training depends on performance. Learning in practice is different from learning in a classroom. In practical education, learning happens through frequently performing skills.[4] Moreover, acquisition of skills is directly related to nursing performance to answer the patients' needs.[5] Therefore, since nursing is a skill oriented domain and nursing care requires performance of clinical skills, nurses should be master in the skills related to nursing interventions.[6] In fact, clinical skills are the basis and backbone of nursing career,[3] and developing skills is one of the major goals of clinical training.[2]

First year nurses, although have acquired the basic knowledge of how to do skills, are not sure about their abilities to perform the skills independently. In other words, they have the knowledge, but not the experience and frequent

* MSc, Department of Fundamental Nursing, School of Nursing and Midwifery, Isfahan University of Medical Sciences, Isfahan, Iran.
** MSc, Department of Health Nursing, School of Nursing and Midwifery, Isfahan University of Medical Sciences, Isfahan, Iran.
*** MSc, Department of Operating Room Nursing, School of Nursing and Midwifery, Isfahan University of Medical Sciences, Isfahan, Iran.
Correspondence to: Seyed Abbas Hoseini, MSc
E-mail: a_hoseini@nm.mui.ac.ir
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practice can increase their efficiency and make them good at performing the skills.[3] The results of many studies show that newly graduated nurses lack clinical skills, even though they have sufficient theoretical knowledge, and their entrance to the career is a risk for the society especially for patients.[7] Therefore, nursing schools make constant effort to improve their educational program and increase the capabilities of their graduates.[8]

A study by Nasiriani et al in Shahid Saduqi faculty of nursing and midwifery in Yazd (2003) showed that the graduates' clinical skills level in assessment and taking care of patients suffering from common internal disease and surgeries was average and their skills in pain assessment and pain management was poor.[3] Salimi (2003) in the same school showed that the clinical skills of fourth year students of nursing in neurosurgical Intensive Care Unit and dialysis were desirable, but their skills in cardiac care unit (CCU) was less than those two wards.[9] Sharifi also in Ahwaz University of Medical Sciences in a study showed that a considerable number of students in the last semester of nursing had a few practice of clinical skills.[1]

Amini (2003) in Tabriz University of Medical Sciences showed that the mean score of skills before, during and after natural delivery increased after educational intervention. Therefore, it was concluted that practicing performance of skills in clinical skill education increased the perceived self-efficiency of medical science students in performing their required skills, which can increase their skills in encountering with patients.[10] Mozaffari (2002) evaluated the performance of 4th year nursing students in CCU and found that the scores of all participants were lower than 70% and their scores in diagnosis and control of arrhythmia was not higher than 50% and in general, the skills of both case and control groups were lower than acceptable level.[11]

Considering studies in this field, clinical training is currently one of the major challenges of nursing education and the main problem in this regard is graduates lack of skills. This has been one of the main concerns of the nursing faculty education for years and there have been lots of efforts including establishing the committee of clinical improvement, preparation of necessary skill booklet for the clinical traineeships (called Pass booklet) and establishing clinical education workshops. However, it is a long way to the desirable situation. And it is always useful to have an understanding of the desirable situation for planning purposes. This study aimed to determine the clinical basic skills of nursing students and compare the opinions of graduates and nursing lecturers to those of nursing students' in the faculty of nursing and midwifery in Isfahan University of Medical Sciences in the educational year of 2006-7.

Methods

This was a cross-sectional descriptive analytic study. The study population included all the undergraduate students of nursing studying in the first semester of the educational year of 2006-7, students who graduated in the same semester, and also all the faculty members of the school of nursing and midwifery of Isfahan. Sampling was done by census method and included all the population. Entry criteria included willingness to participate in the study, having no previous experiences in procedures except for the current education and having pass score in traineeships course. For ethical reasons, students' data were collected in the wards and during their free time so that it would not interfere with their education or working schedule. The study area included all the wards of internal, surgery, intensive-care and children of the medical centers administered by the Isfahan University of Medical Sciences and school of nursing and midwifery.

Data were collected by two questionnaires which validities were proved by professors of nursing school. The first questionnaire consisted of two parts. Part one included educational semester, sex, ward and number of internship days. Second part included 17 basic procedures including subcutaneous injection, intramuscular injection, intra-dermal injection, serum preparation with ordinary infusion set and micro-infusion set, drawing blood, vascular

access with Angiocath device, blood transfusion, dressing, Intake/Output (I/O) control and recording, oxygen therapy, air way suctioning, urinary catheterization, nasogastric tube insertion, gavage, lavage and enema.

The second questionnaire also had two parts. First part included age, sex, teaching experience and academic rank of the professors and the second part included 17 basic procedures mentioned above, and the frequency of each procedure's practice by students which considered sufficient by the respondent.

The first questionnaire was completed by students, right after the end of their traineeship course in each ward and they pointed the number of basic clinical skills they performed in the related ward. Then the mean frequency of skill performance in each ward was calculated and added to make the total mean frequency of each skill during nursing education of students.

The second questionnaire was completed by the faculty members of the nursing school (lecturers) and also graduates of that semester that referred to the academic office for settling their accounts and the sufficient frequency of performing each procedure was determined from their points of view. Then, findings of the two groups of faculty members and graduates were compared with the mean frequency of performing each skill. Data were analyzed using descriptive statistics including mean, standard deviation and t-test by SPSS software.

Results

Tables 1, 2 and 3 show the mean frequency of performing skills by students, from the faculty members' viewpoints and from the graduates' viewpoints, respectively. The most frequent performance during traineeships was serum preparation with micro-infusion set and each student averagely had performed it more than 104 times. The lowest frequency of performing skill was intra-dermal injection (with a mean of 0.06). Dressing skill had the highest rank in faculty members' viewpoint (11.74) and the lowest rank went to enema (3.95), while the most necessary skill from the graduates' viewpoints was vascular access with Angiocath device (12.03) and the least and the least necessary one was gavage (2.34). Also, comparing the mean performance of subcutaneous injection showed a significant relation between what students do in their traineeships and the viewpoints of faculty members and graduates. This means that students perform this skill too many times more than sufficient from the viewpoints of faculty members and graduates.

Regarding intramuscular injection, the results showed a significant relation between the frequency of performance by students and the graduates' viewpoints; but the difference between the frequency of performance by students and the sufficient frequency in the faculty members' viewpoints was not significant ($p = 0.07$). However, faculty members believe that the frequency of performing intramuscular injection in traineeships is sufficient, even though the little difference between the sufficient frequency in their viewpoints and what happens in traineeships made the difference insignificant.

Table 1. The mean of performing skills in traineeships by students

Skill	The mean frequency
Subcutaneous injection	23.02
Intramuscular injection	12.35
Intra-dermal injection	0.06
Serum preparation with ordinary infusion set	100.02
Serum preparation with micro-infusion set	104.52
Drawing blood	47.49
Vascular access with Angiocath device	32.41
Blood transfusion	1.49
Dressing	45.79
I/O record and control	41.85
Oxygen therapy	28.69
Air way suctioning	29.71
Urinary catheterization	0.76
Nasogastric tube insertion	0.80
Gavage	20.84
Lavage	0.08
Enema	0.17

Table 2. The mean of sufficient frequency of performing skills from the faculty members' viewpoints

Skill	Mean frequency of practicing (SD)
Subcutaneous injection	4.89(1.82)
Intramuscular injection	9.89(5.55)
Intra-dermal injection	5.53(2.91)
Serum preparation with ordinary infusion set	6.63(4.31)
Serum preparation with micro-infusion set	7.00(4.42)
Drawing blood	10.11(6.63)
Vascular access with Angiocath device	11.11(5.60)
Blood transfusion	5.74(3)
Dressing	11.74(8.05)
I/O record and control	6.32(4.52)
Oxygen therapy	5.63(2.24)
Air way suctioning	9.16(4.46)
Urinary catheterization	6.47(3.70)
Nasogastric tube insertion	6.58(4.57)
Gavage	4.58(2.19)
Lavage	4.21(1.87)
Enema	3.95(1.90)

From the viewpoints of the faculty members, dressing and vascular access need more practice.

Table 3. The mean of sufficient frequency of performing skills from the graduates' viewpoints

Skill	Mean frequency of practicing (SD)
Subcutaneous injection	4.24(3.03)
Intramuscular injection	5.03(3.44)
Intra-dermal injection	4.28(2.91)
Serum preparation with ordinary infusion set	2.93(2)
Serum preparation with micro-infusion set	3.21(2.66)
Drawing blood	10.69(14.69)
Vascular access with Angiocath device	12.03(9.42)
Blood transfusion	3.90(2.24)
Dressing	5.59(4.62)
I/O record and control	3.55(2.65)
Oxygen therapy	3.52(3.43)
Air way suctioning	5.24(3.53)
Urinary catheterization	4.34(4.11)
Nasogastric tube insertion	5.24(5.47)
Gavage	2.34(1.49)
Lavage	2.38(1.54)
Enema	2.93(2.15)

From the graduates' viewpoints, vascular access and drawing blood need more practice.

The mean of viewpoints among faculty members' and graduates' regarding subcutaneous injection were 5.53 and 4.28, respectively; and the mean frequency of performing this skill during traineeships was 0.06 and the difference was significant.

Comparing the mean of performing serum preparation with usual set and micro-fusion set also showed a significant relation between the viewpoints of faculty members (mean 100.02) and graduates (mean 104.52) with the performance frequency in traineeships. Also, the mean of drawing blood and vascular access with Angiocath device showed a significant relation between the viewpoints of faculty members and graduates and the practice of students during traineeships, which was much more than what faculty members and graduates believed as sufficient.

The difference between the mean of two groups' viewpoints regarding blood transfusion and the mean frequency of students' practice was significant and there was a considerable difference between students' practice and view points of faculty and graduates.

The results of dressing skill showed a significant relation between the viewpoints of faculty members and graduates and students' practice during traineeships and the mean frequency of performing this skill in wards (45.79) was beyond the sufficient amount from the viewpoints of faculty members (mean of 11.74) and graduates (mean of 5.59).

I/O control, oxygen therapy, and air way suctioning results were the same as dressing results.

The mean of performance of urinary catheterization by students was 0.76 and had a big difference with faculty viewpoints (6.47) and graduates (4.34).

In the case of nasogastric tube insertion, the results of comparing means were significant. While students practiced this skill just with the mean of 0.8, the mean of sufficient practice from faculty viewpoints and graduates' viewpoints was 6.58 and 5.24, respectively.

Also, the results showed that students practice the gavage skill much more than sufficient according to the faculty members' and graduates' viewpoints.

Lavage and enema skills means comparison showed a significant relation between the students practice and the faculty members' and graduates' viewpoints.

The viewpoints of faculty members and graduates about the sufficient frequency of performing skills were also compared, even though it was not the main goal of the study. The results of this comparison showed that there was no significant difference between the viewpoints of faculty members and graduates about subcutaneous injection and intra-dermal injection, but the difference between the viewpoints of two groups about intramuscular injection was significant (mean for faculty members was 9.89 and for graduates was 5.03).

Comparing the viewpoints of faculty and graduates on serum preparation by ordinary set and micro-infusion set showed a significant difference in both skills and the sufficient frequency for practicing in the viewpoints of faculty was much more than graduates.

Comparing the viewpoints of faculty and graduates on drawing blood ($p = 0.879$) and vascular access by Angiocath device ($p = 0.701$) showed no significant difference between two groups, but their viewpoints on blood transfusion was significantly different and the sufficient frequency for practicing mentioned by faculty members was much more than graduates.

Comparing the viewpoints of faculty members and graduates on dressing showed a significant difference and the mean of faculty members' viewpoint was 11.74 and more than twice of graduates'. Likewise, comparison between two groups' viewpoints on I/O record and control, oxygen therapy and air way suctioning
($p = 0.022$, 0.01, 0.001, respectively) showed significant difference.

Comparison between two groups' viewpoints on urinary catheterization showed no significant relation ($p = 0.076$). Also in nasogastric tube insertion there was no significant difference between the viewpoints of two groups ($p = 0.383$), but in both these skills faculty members believed in a little more practice than graduates. In gavage and lavage the comparison between two groups' viewpoints was significant ($p = 0.001$) and the faculty believed in much more practice than graduates. Finally, comparison between two groups in enema showed a significant difference ($p = 0.101$).

Discussion

This study showed that the students' practice of following skills during traineeships is sufficient according to the faculty members' and graduates' viewpoints: subcutaneous injection, intramuscular injection, serum preparation with ordinary infusion set and micro-infusion set, drawing blood, vascular access with Angiocath device, dressing, I/O record and control, oxygen therapy, air way suctioning and gavage. Except for intramuscular injection skill, the results showed significant relation between students' practice of these skills and the sufficient frequency for practicing from the faculty members' and graduates' viewpoints. However, in intra-dermal injection, blood transfusion, urinary catheterization, nasogastric tube insertion, lavage and enema the mean of students' practice was significantly lower than what faculty members and graduates expected. Sharifi in a study found that a considerable number of students in the last semester of nursing study had little practice of clinical skills.[1] Nasiriani and Farnia (2003) showed that nursing graduates' clinical skills in assessing and taking care of patients with common internal and surgery diseases was average and in pain assessment and management was poor.[3] Salimi (2003) also found that fourth year nursing students' clinical skills in neurosurgical intensive care unit (ICU) and dialysis were desirable, but their skills in critical care unit (CCU) was less than those two wards.[9]

It seems that nursing students' practice of those skills that have little indication in hospitalized patients or those skills that are usually interns' responsibility in hospitals, do not meet the expectations of faculty members and graduates. For example, intra-dermal injection has indication for allergic tests and is rarely performed clinically; therefore, nursing students have little chance to practice it. Blood

transfusion also is not necessary in wards. Urinary catheterization is often performed by interns in educational wards and there is little chance of practice for nursing students. In addition, this skill is usually performed by urology residents due to possible disorders of urethra. Also, when trainees and trainers are from different sex, these procedure is performed by nursing personnel or other educational groups and the nursing students have no chance to practice it. Nasogastric tube insertion also doesn't come up that often or happens when nursing students are not in the ward (during evening or night shifts). Lavage is usually performed in emergency poisoned cases and during evening and night shifts. It is the same in the case of enema and this procedure happens mostly during a time when the nursing students are not in the wards (during night shifts to prepare the patients for surgery and diagnosis operations).

Also, necessary practice of all skills except drawing blood and vascular access with Angiocath device in faculty members' viewpoints is higher than graduates'. In addition, the difference between faculty members' and graduates' viewpoints on some skills such as intramuscular injection, serum preparation with ordinary infusion set and micro-infusion set, blood transfusion, dressing, I/O record and control, oxygen therapy, air way suctioning, gavage and lavage was significant. For example, the importance of intramuscular injection and its risks, especially determining the right site for injection and the professionals' emphasis on injection in the ventrogluteal site has been the main concern of faculty members, while it seems that graduates prefer to follow the easier traditional method of injecting in dorsogluteal site, which is usual in clinical practice.

The difference between two groups' viewpoints in serum preparation with ordinary infusion set and micro-infusion set can be explained with the graduates finding these two skills simple and ignoring some basic concerns such as precise aseptic procedures, using labels, etc. Moreover, the findings show that from the graduates' viewpoints, serum preparation with ordinary infusion set needs more practice than with micro-infusion set. This can be explained by the complexity of serum preparation with micro-infusion set comparing to ordinary set. Students might consider using micro-infusion set once they already have acquainted with ordinary set.

The significant difference between two groups' viewpoints regarding transfusion shows the great importance of this skill, because neglecting some details in the procedure of this skill can lead to the death of patients. Therefore, the faculty members recommend much higher practice of this skill compared to the graduates who might pay less attention to the possible outcomes. Dressing has also various kinds and situations, which have not been considered by graduates. About the I/O control and record, oxygen therapy, air way suctioning, gavage and lavage, which has a significant difference in the viewpoints of two groups, it can be explained by the faculty members' emphasis on the correct performance, although it is usually a different situation in clinical practice that students may need less practice of similar skills as the graduates suggested.

The authors declare that have no conflict of interest in this study and they have surveyed under the research ethics.

Conclusion

It seems that the cause of insufficient practice of some skills by students is that these skills are not in the traineeships wards or doesn't happen during the traineeships hours, or these skills are performed by interns of medical students in common with nursing students. This situation needs the attention of curriculum designers. Also, it seems that the difference between faculty members' and graduates' ideas on the sufficient practice is due to the faculty members' deeper and precise look at the correct way of performing skills. Based on the findings of this study, some curriculum changes is suggested in cases which is possible to change the time or place of traineeships, to give more chances to students to practice specific skills. Also, for those skills which are performed by interns of medical students, make sure that all students

have equal opportunities to practice them. In addition, the sufficient amount of practicing skills based on faculty members' ideas should be included in the necessary education of nursing schools.

Finally the Authors declare that have no conflict of interest in this study and they have surveyed under the research ethics.

References

1. Sharifi N. Clinical skills of the last semester students of nursing in Ahvaz University of Medical Sciences and the effective factors. Iranian Journal of Medical Education 2003; 10(Suppl 1): 83. (Persian).
2. Rahimi M. Students' experiences of hidden curriculum in Isfahan faculty of nursing and midwifery. [MSc thesis]. Isfahan: School of Nursing and Midwifery, Isfahan University of Medical Sciences; 2001. (Persian).
3. Nasiriani Kh, Farnia F. Effectiveness of clinical training in achieving clinical internal and surgery skills: nursing graduates point of view. Iranian Journal of Medical Education 2003; 10(Suppl 1): 78-9. (Persian).
4. Atash Sokhan G. A comparative study of effective factors on clinical training: faculty members' and students' point of view. [MSc Thesis]. Isfahan: School of Nursing and Midwifery, Isfahan University of Medical Sciences; 2004. (Persian).
5. Goldsmith M, Stewartb L, Fergusonc L. Peer learning partnership: An innovative strategy to enhance skill acquisition in nursing students. Nurse Education Today 2006; 26(2): 123-30.
6. Linton M. Introduction to medical surgical nursing. 3rd ed. Philadelphia: WB Saunders; 2003.
7. Cherry B, Jacob S. Contemporary nursing: issue, trends and management. 3rd ed. Philadelphia: Mosby; 2005.
8. Bahrami T, Sedaqat S, Khazni S, Fakharzadeh L. Evaluating the graduates' clinical skills in Abadan nursing school. Iranian Journal of Medical Education 2003; 10(Suppl 1): 79-80. (Persian).
9. Salimi T, Karimi H, Shahbazi L, Dehghanpur MH, Hafezie A, Parandeh K, et al. Clinical skills of fourth year students of nursing in ICUs. Journal of Shahid Saduqi University of Medical Sciences in Yazd 2005; 13(2): 60-6. (Persian).
10. Amini A, Hasanzadeh Salmasi S, Shaqaqi A, Safai N, Sedaqat K. The effectiveness of educating necessary clinical skills for delivery on the clinical preparation of medical students in Tabriz University of Medical Sciences. Iranian Journal of Medical Education 2005; 5(1): 7-12. (Persian).
11. Mozaffari M. A study of fourth year nursing students' performance in CCUs. Journal of Ilam University of Medical Sciences and Health Services 2004; 12(42-43): 45-52. (Persian).