The Comparative Study of Clinical Competence of Emergency Nurses Using Self-Assessment and Evaluation Methods by Head Nurses

CURRENT STATUS: POSTED

Motahareh Musavi Ghahfarokhi
Abadan faculty of medical sciences

✉ motahare_musavi_ghahfarokhi@yahoo.com Corresponding Author
ORCiD: https://orcid.org/0000-0003-2751-3394

Elina Mehrafruz
Medical University of Dezful

Arman Radmehr
Medical University of Dezful

Maryam Kiarsi
Medical University of Dezful

Marziyeh Beigom Bigdeli Shamloo
Medical University of Dezful

DOI:
10.21203/rs.2.18005/v1

SUBJECT AREAS
Nursing

KEYWORDS
Clinical competency, Self-assessment, Emergency nurses, Head nurses
Abstract
Background: Clinical competency is the ability of nurses in playing a professional role in a clinical environment specially emergency department as the quality of the services provided. The present study aimed to compare the clinical competence of the emergency nurses using self-assessment and evaluation methods by head nurses.

Method: The study was designed in a descriptive-analytical way, collecting self-assessment questionnaire and evaluation methods by head nurse’s data. 70 nurses working in Emergency Departments of 3 Hospitals were selected and studied for 3 months based on entry requirements to the census. The instrument was a clinical competency questionnaire with questions in 7 functional fields and 63 skills. The data obtained from descriptive and inferential statistics were analyzed by SPSS-16.

Result: The viewpoints of nurses and head nurses on the clinical competencies of nurses were assessed at a moderate level in the majority of domains. Nurses defined their clinical competencies at a significantly higher level compared to the head nurses (P<0.05).

Conclusion: The periodic assessment of emergency nurses as a critical part and the turning point of the hospital can guide the managers and nursing managers to pay attention to professional competence and promote continuing education programs for improving their competencies in this section.

Introduction
The health and treatment section, as the most important area of human health, is directly related to human health and is responsible for the maintenance and the promotion of health in the human society [1]. The nurse as the largest provider of health services includes 70% of the health and treatment team [2]. Nursing is a professional activity due to the multiplicity and complexity of the role, which requires a sense of responsibility, tact, accuracy, and much consciousness. Any lack or inadequacy of training in this group will certainly have a significant impact on the quality and quantity of health services, and ultimately on the health of individuals and the community. Therefore, the ultimate goal of nursing education is to educate competent and qualified nurses having the necessary
knowledge and skills to provide nursing care with quality, preservation, and promotion of community health [3].

Nursing competency is a complex integration of knowledge including professional judgment, skills, values and attitude. It is an intelligent practical skill set that integrates or combines different factors and issues in complex ways, specific to each circumstance [3]. Various factors such as rapid change in health monitoring systems, the need for providing safe and affordable services, enhancing the awareness of the community about health issues and consequently increasing the level of expectations in the society for receiving high-quality services, along with the desire of organizations of health service provider based on the use of efficient and skilled personnel resulted in paying special attention to the adaptability and clinical competence of people working in health-related professions [4]. Professional qualifications should include five characteristics: 1) nursing knowledge 2) nursing specialty 3) motivation 4) personality traits 5) self-concept [5]. Based on Heshmati Nabavi and Vanaki’s (2012) and Memarian’s (2006) studies, the role of nursing professors and educators in theoretical teaching, the way of using these materials in the clinical environment, clinical experience, professional growth, and the quality assurance of nursing care are among the factors which play an influential role in nursing professionalism [6]. Therefore, it is important to ensure the clinical competence of nurses. From the management point of view, development of competencies enables management to be demystified as an ability and a natural talent, also it helps nurses to understand and master new situations at work, take responsibility and be recognized for their actions [7]. Self-assessment used extensively in educational program that have adopted a problem-based, self-directed approach. Professionals such as nurses require self-regulation to maintain their professional competence. Nurses need to develop self-assessment skills to determine their level of knowledge and identify knowledge gaps, to remain current and safe in practice [8]. On one hand, Head nurses are competent people and technically competent who need management skills because they are working in close contact with patients and health care groups. So they are responsible for assessing and supervising the providers of direct patient care and they are the closest manager to the organization’s goals and objectives [9]. In a study on 7,500 nursing graduates, among whom 75.5%
were RN nurses, Hickey (2010) suggested that one-fifth of them had problems in performing their clinical tasks, and 52% of RN nurses reported that they failed to do their work in the real-world clinical environment [9]. In Iran, Vosoughi et al. (2014) compared the results of self-assessment of the professional competence for beginner nurses with the assessment by head nurses and indicated that the average of all professional qualification scores in the self-assessment was higher than that of the head nurses except for care measures and professional development and progress [10]. Bahraini (2010) considered the role of the environment as one of the indicators affecting clinical competence, emphasized the difference between the degree of clinical competence and the frequency of using skills in different departments and hospitals [11]. The study of Hassankhani et al. (2018) indicated that nurses in the emergency department have a lower perceived level of competence for performed skills within the domains of effective management of rapidly changing situations and administering and monitoring therapeutic interventions [12]. The quality of the services provided in the emergency department is important in the official evaluation of the hospital, and the evaluation of other parts of the hospital depends on the acquisition of the necessary point in the emergency unit [13].

**Aim:** The present study aimed to investigate the clinical competence of emergency nurses by self-assessment and assessment by head nurses in educational Hospitals related to Dezful of medical sciences university in 2017, regarding the emphasis of other countries on the necessity of evaluating nurses’ clinical competency and few studies on nurses’ assessment in the emergency department. Two methods of self-assessment and evaluation-performed by the head nurse are compared in this study, in addition to determining the clinical competence of emergency nurses with a standard and pre-made tool as a questionnaire. The results of the study provided a more systematic and comprehensive assessment of the skills and required competencies, as well as the educational needs of nurses in emergency units.

**Method**
**aim, design and setting of the study**
This descriptive study was conducted to compare the clinical competence of emergency nurses by using two methods of self-assessment and assessment by the head nurse in the emergency
department of hospitals affiliated to Dezful University of Medical Sciences. The research environment was the emergency departments of hospitals including Dezful Ganjouyan hospital, Karun Gatond hospital, and Nezam-Mafi hospital.

Sample size and sampling procedure:
The statistical population included all nurses working in Emergency departments of hospitals affiliated to Dezful University of Medical Sciences, which were studied for 3 months from July to September 2017. Generally, 70 nurses were selected by census method based on entrance conditions after explaining the goals of the study, obtaining informed consent, and ensuring the confidentiality of personal information, from 90 nurses working in each of the three emergency departments of affiliated hospitals. The entry requirements for the study were as follows: 1) having the written consent to participate in the study, 2) employment in the emergency department as formally, contractual, conventional, project, corporative, and 3) having bachelor and master in nursing.

Study Instrument
The data collection tool was a two-part questionnaire. The first part was related to demographic information such as age, gender, degree, marital status, field of study, type of employment, work experience in general, work experience in emergency department, general average, type of university, passing education courses). The second part of the questionnaire was a nurse competence scale (NCS) which assessed the level of nurses’ clinical competency and the use of clinical skills in 7 general areas and 63 skills. These seven areas include the fields of patient support and assistance (4 skills), education and guidance (14 skills), diagnostic actions (7 skills), managerial abilities (8 skills), therapeutic measures (10 skills), quality assurance (4 skills), and occupational and organizational tasks (16 skills). This scale is based on the beginner to skilled Benner (2002) theory provided by Meretoja et al. (2004) and has high validity and reliability and easy to use. The reliability of this tool was estimated by Meretoja et al. (2004) with Cronbach’s alpha between 0.79 to 0.99. Its internal consistency was reported between 0.79 and 0.91 in the study [14,15]. The reliability of the translated questionnaire, which was used in the study of Bahraini et al. (2011), was reported between 0.70 to 0.85 with a pilot study in seven areas, which was in a good level [11]. We used a reduced
form of the questionnaire that was valid and reliable in study of Roohani et al (2016). In mentioned study, The questionnaire was distributed to 11 members of the Nursing Faculty and reduced to 63 items, which confirmed its content validity. The tool reliability was calculated by using Cronbach’s alpha [16]. Likewise, the questionnaires were distributed among 30 nurses, which the reliability was calculated 0.96 for this questionnaire. The level of clinical competence is assessed based on the score which nurses and head nurses gave to them (between zero and 100). Then, nurses’ clinical competence was ranked in four levels including low (0-24.99), relatively good (25-49.99), good (50-74.99), and excellent (75-100)

Data collection
First, we made contact with each hospital medical and nursing directors to grant a permission with a copy of approved ethical clearance letter obtained from Dezful of Medical Sciences University Ethics Committee. After accepting our request, we coordinated with head nurses to prepare a list of permanent nurses staff in their department. Nurses from all emergency departments in each hospital who fulfill the inclusion criteria were included in the study. In the next step, two supervisors from nursing faculty with degree of MS.c in nursing, held an introduction meeting for participants to discuss with them, explain the study objectives, assure the confidentiality of information, obtain personal satisfaction, and describe how to complete the questionnaires in each of three work shifts in the morning, evening, and night. As the questionnaires were distributed among the nurses with the help of an assistance, the questionnaires with names were sent to head nurses. The participants were given one week’s opportunity to return the questionnaires. Further, two weeks were considered to return the questionnaire in case of leave, sick leave, problem, and busy. If the questionnaire was not returned after a specified period, the sample was removed from the study by mentioning the cause.

Data analysis
The data were collected using SPSS software version 16. Additionally, the descriptive statistics including frequency, mean, and standard deviation were used to describe the demographic characteristics of the people and evaluate the clinical competencies. Furthermore, the inferential test including independent t-test was used to compare clinical competency by self-assessment and
assessment by the head nurse.

Results

Sociodemographic characteristics of nurses

The statistical population of the study was as follows: 78.6% (n=55) were female nurses, 67.1% (n=47) were nurses under 30 years old, 51.4% (n=36) were single, 88.6% (n=62) had Bachelor’s degree, 71.4% (n=50) has an average of 16-18, 58.6% (n=41) had a work experience of less than 5 years, 74.3% (n=52) had a work experience of more than 5 years in an emergency department, 50% (n=35) worked partly, and the total nurses population of the emergency department of Ganjouyan hospital was 33 nurses (47.1%). These factors are the most frequent in the statistical population of the study.

Table 1. The assessment level of nurses’ clinical competency using self-assessment and assessment by head nurses

| Clinical competencies areas | Nurses self-assessment | Assessment by head nurses |
|----------------------------|-------------------------|---------------------------|
| Patient support and assistance | Weak | Frequency | % | Frequency | % |
|                             | 17 | 24.3 | 31 | 44.3 |
|                             | Medium | 50 | 71.4 | 36 | 51.4 |
|                             | Good | 3 | 4.3 | 3 | 4.3 |
| Education and guidance | Weak | 8 | 11.4 | 5 | 7.1 |
|                             | Medium | 49 | 70.0 | 57 | 81.4 |
|                             | Good | 13 | 18.6 | 8 | 11.4 |
| Diagnostic measures | Weak | 1 | 1.4 | 3 | 4.3 |
|                             | Medium | 29 | 41.4 | 41 | 58.6 |
|                             | Good | 40 | 57.1 | 26 | 37.1 |
| Managerial abilities | Weak | 1 | 1.4 | 2 | 2.9 |
|                             | Medium | 30 | 42.9 | 40 | 57.1 |
|                             | Good | 39 | 55.7 | 28 | 40.0 |
| Therapeutic measures | Weak | 2 | 2.9 | 5 | 7.1 |
|                             | Medium | 48 | 68.6 | 51 | 72.9 |
|                             | Good | 20 | 28.6 | 14 | 20.0 |
| Quality assurance | Weak | 32 | 45.7 | 27 | 38.6 |
|                             | Medium | 35 | 50.0 | 42 | 60.0 |
|                             | Good | 3 | 4.3 | 1 | 1.48 |
| Occupational tasks | Weak | 9 | 12.9 | 12 | 17.1 |
|                             | Medium | 51 | 72.9 | 51 | 72.9 |
|                             | Good | 10 | 14.3 | 7 | 10.0 |
| Total clinic competencies | Weak | 2 | 2.9 | 3 | 4.3 |
|                             | Medium | 58 | 82.9 | 62 | 88.6 |
|                             | Good | 10 | 14.3 | 5 | 7.1 |
* The Excellent row was removed due to zero in order to reduce the size of the table

Clinical competence of nurses

In the present study, nurses assessed their clinical competence at moderate, good, and poor level by 82.9% (n = 58), 14.3% (n=10), and 2.9% (n=2), respectively. In the assessment method performed by head nurses, 88.6% (n=62) of head nurses assessed nurses competence at a moderate level, 7.1% (n=5) at a good level, and 4.3% (n=3) at a poor level (Table 1). In addition, 72.9% (n=51) of nurses in the field of occupational tasks, 71.4% (n=50) in the field of patient support and assistance, and 70.0% (n=49) in the field of education and guidance were assessed at a moderate level. However, 57.1% (n=40) and 55.7% (n=39) were assessed at a good level in the field of diagnostic measures and managerial abilities, respectively. On the other hand, 45.7% (n=32) of nurses were evaluated in a poor level in the field of quality assurance. From the head nurses viewpoints, 81.4% (n = 57) of nurses were assessed in a moderate level in the field of education and guidance, 37% (n=26) were assessed in a good level in the field of diagnostic measures, and 44.3% (n=31) were assessed in a poor level in the field of patient support and assistance.

Comparison of nurses’ clinical competency by using two methods of self-assessment and assessment by head nurses

The average scores of clinical competencies were 116.85±26.52 and 107.48±24.60 from the nurses and head nurses’ point of view, respectively. This difference was statistically significant (p<0.03) based on the independent t-test (Table 2). In order to compare nurses' clinical competency by using two methods of self-assessment and assessment by head nurses, there was a statistically insignificant difference between the scores average of education and guidance, therapeutic measures, and quality assurance fields, which is not statistically significant (P<0.05). However, this difference was statistically significant in the fields of patient support and assistance, diagnostic measures, managerial abilities, and occupational tasks. Consequently, nurses working in Emergency departments of Dezful, Shoosh, and Gatond hospitals assessed their clinical competencies in a significant higher level, compared to the assessment of head nurses, in the self-assessment method.
in all fields of patient support and assistance, diagnostic measures, managerial abilities, and occupational tasks (Table 2).

Table 2. The comparison of the mean score of nurses clinical competency with two methods of self-assessment and assessment performed by head nurses in emergency departments of hospitals affiliated to Dezful University of Medical Sciences

| Competency area                      | Nurses       | Head nurses | Sig.  |
|--------------------------------------|--------------|-------------|-------|
| Patient support and assistance       | 7.70 ± 1.89  | 6.39 ± 2.14 | 0.016 |
| Education and guidance               | 25.14 ± 7.13 | 23.57 ± 5.83| 0.43  |
| Diagnostic measures                  | 14.25 ± 3.40 | 11.66 ± 3.38| 0.08  |
| Managerial abilities                 | 16.55 ± 3.90 | 12.60 ± 3.26| 0.001 |
| Therapeutic measures                 | 18.30 ± 4.81 | 15.96 ± 4.39| 0.12  |
| Quality assurance                    | 6.04 ± 2.59  | 6.30 ± 1.72 | 0.69  |
| Occupational tasks                   | 28.85 ± 8.11 | 22.66 ± 6.70| 0.046 |
| Total clinic competencies            | 116.85 ± 26.52| 99.18 ± 21.98| 0.001 |

Based on the Pearson correlation test results on age, education level, and work experience in the emergency department, as well as investigating the relationship between the clinical competence of nurses with demographic characteristics in the self-assessment method, a significant relationship was observed at 0.05 significance level, indicating direct relationship between the clinical competence of nurses with age, level of education, and work experience in the emergency department. However, no significant relationship was observed between clinical competence and other components such as gender, marital status, average, clinical experience, and employment status (Table 3).

Table 3. The relationship between clinical competence of nurses with demographic characteristics in self-assessment method
Discussion
The present study aimed to compare the nurses’ clinical competency with self-assessment and assessment performed by head nurses in emergency departments of hospitals affiliated to Dezful University of Medical Sciences. The results indicated that nurses of emergency departments assessed their clinical competence at a higher level significantly, compared to the assessment performed by the head nurses in the fields of patient support and assistance, diagnostic measures, managerial abilities, and occupational tasks. The results of some studies suggested that people are more interested in the values of self-driven organization and consider higher scores for themselves when assessing their performance. In other words, the self-assessment score is different and often higher than that of the assessment of officials and head nurses. Hence, the present study is not excluded from this rule, and nurses have overestimated their clinical competency rating with respect to head nurses. In the study of Mahdavi Saeb et al. (2016), nurses assigned higher scores to their clinical competencies [16]. However, the clinical competency of nurses was assessed at a moderate level in both self-assessment and assessment performed by head nurses in this study. Generally, most nurses assessed their clinical competence in a good level in the field of diagnostic measures and managerial abilities at a moderate level in the field of support and assistance, education and guidance, therapeutic measures, and occupational tasks, and in a poor level in the field of quality assurance. Meretoja and Koponen (2012) found that the nurses in the emergency department had a higher
clinical competence than that of the other departments, by comparing the clinical competence of nurses in different departments [17]. Similarly, Salonen et al. (2007) suggested that nurses working in the emergency department rated themselves as more capable in terms of managerial and diagnostic measures [18]. In addition, the same trend was achieved in managerial ability in the study of Mahdavi Saeb et al. (2016) [16]. The causes of higher managerial skills and abilities in diagnostic measures include factors such as work environment, the referral of ill and high-risk patients, the short duration of hospitalization and the occurrence of complex and unpredictable situations, rapid response, situational decision-making, and the use of problem-solving skills in critical situations could result in improving managerial capability and diagnostic measure among the nurses in the emergency department [19]. The lowest obtained score was related to the assessment of the quality assurance field in both methods. These findings were similar to the results of studies conducted by Meretoja et al. (2003) [20]. Thus, it is necessary to train how to use new research findings in the clinical setting and its improvement among the nurses working in the emergency department since this area is related to the four expertise related to the use of clinical research, the assessment of patient care, the use of research findings in nursing care, and the ability to identify the areas related to care which need to be upgraded and evaluated. In addition, there is a downward trend in the use of this skill in emergency nurses, due to the lack of nurses’ knowledge about the meaning of quality assurance and its related nursing skills, as well as the lack of competent and skilled people in this field [21]. From the head nurses perspective, the highest clinical competence is related to the managerial ability, while the lowest competency is related to support and assistance and quality assurance [18]. These results are consistent with the results of Mahdavi Saeb’s study (2016) in terms of managerial ability while they were inconsistent with the results of the case study of Vosoughi et al (2015), in which the management area of nurses was evaluated in a poor level [10,16]. This contradiction in the study may be due to the low level of nurses ‘experience and novice nurses from the head nurses perspective. On the other hand, head nurses assessed the field of support and assistance in a poor level, compared to nurses, although there was the highest level of agreement in the views of nurses and head nurses regarding this field in the study of Mahdavi Saeb et al. (2016) and Bahrain et al.
By describing patient assistance for adaptation, Meretojah (2004) considered the area of assistance tasks as one of the nursing skills, which is very important in assessing the competence of nurses and is partly overlapped with helping the patient and companions to make appropriate decisions [15]. Little experience in the emergency department, the younger age of the majority of nurses, and insufficient experience in dealing with the patient are among the reasons for lower competency from the head nurses perspective. Further, the low level of nurses’ competence from the head nurses’ viewpoint in terms of using research findings to communicate with patients, as well as improving and developing the culture of treatment in the relevant section, especially, the field of support and assistance to the patient can be related to the weakness of the skill in applying clinical research and the lack of proper familiarization of nurses with patient-related cultures. Consequently, the weakness in this area of clinical competence indicate the need for in-service training and appropriate educational workshops on critical decision making in critical situations for nurses in the emergency department.

Limitation

Some limitation of the study can be related to low reliability in self-evaluation methods, particularly in the case of respondents whose level of competence is low. There is also a greater likelihood that those who feel the least competent, refrain from taking part, or that they award themselves a higher score because the results may affect their opportunity of future employment as well as their level of commitment and accountability in the workplace, the level of perceived support, addressing their desires and needs by head nurses and nurse managers are other limitations and factors affecting the results of this study.

Conclusion

In the present study, the clinical competencies of nurses were evaluated at a moderate level in most areas based on nurses’ and head nurses’ viewpoints and nurses rated higher their clinical competencies compared to head nurses. Based on the results, using more than one method and simultaneously applying multiple methods in an assessment will present more accurate results about the nurses’ clinical competencies. However, the self-assessment leads to more awareness and
attention by the nurses about their own clinical competencies. In addition, the assessment by head nurses makes nurses more aware of the weakness and strength of their performance in different areas of clinical competence from the head-nurses’ viewpoints. Hence, they will try to improve their weaknesses in their professional competencies.

List Of Abbreviations
NCS: nurse competence scale

Declarations
Acknowledgments
I would like to thank all the colleagues and assistances who helped us in conducting the present study, especially Mr. Masoud Bahreini and Ms. Mahin Rouhani.

Funding: There are not any funding

Availability of data and materials
The datasets used and/or analysed during the current study are available from the authors on reasonable request.

Authors’ contributions
MMGh, planned and designed the study. EM, AR, MK and MBBSh implemented sampling and intervention. MMGh, performed data analysis. MMGh, drafted the manuscript and all authors (EM, AR, MK and MBBSh) participated in discussions on definitions of working hours and interpretation of data, provided critical comments and have read and approved the final manuscript, as well as agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Ethics approval and consent to participate
This study was approved by the Ethics Committee affiliated to Dezful University of Medical Sciences (Ethics Code: IR.DUMS.REC1396.5). In this study, researchers were committed to ethical issues of obtaining informed written consent from the participation prior to data collection, respect for voluntary participation and inform the participants about the purpose of the study.

Consent for publication
Not application

Competing interests
The authors declare that they have no competing interests
References

1. Toloei M, Faghihzadeh S, Sadooghi Asl A. The nurses’ motivating factors in relation to patient training. Journal of hayat 2006;12(2):43-51.

2. Fukada M. Nursing Competency: Definition, Structure and Development. Yonago acta medica 2018; 61(1): 1-7.

3. Farokhzadian J, Nayeri ND, Borhani F, Zare, MR. Nurse leaders' Attitudes, Self-Efficacy and training Needs for Implementing Evidence-Based Practice: Is It Time for a Change toward Safe Care?. Br J Med Med Res 2015; 7(8): 662–671.doi: 10.9734/BJMMR/2015/16487.

4. Karami A, Farokhzadian J, Foroughameri G. Nurses’ professional competency and organizational commitment: Is it important for human resource management?. PLoS One. 2017; 12(11): 1-15.

5. Heshmati nabavi F, Vanaki Z. Effective Clinical Teachers: A Qualitative Study. Nursing Research 2009;4(12):39-53.

6. Sade PM, Peres AM. Development of nursing management competencies: guidelines for continuous education services. Revista da Escola de Enfermagem da USP 2015;49(6):988-94.

7. Baxter P, Norman G. Self-assessment or self deception? A lack of association between nursing students’ self-assessment and performance. Journal of advanced nursing 2011;67(11):2406-13.

8. Kantanen K, Kaunonen M., Helminen M., Suominen T. Leadership and management competencies of head nurses and directors of nursing in Finnish in social and health care. Tampub. 2017;22(3): 228-244.

9. Hickey MT. Baccalaureate nursing graduates' perceptions of their clinical instructional experiences and preparation for practice. Journal of Professional
Nursing 2010;26(1):35-41.

10. Namadi-Vosoughi M, Tazakkori Z, Habibi A Abotalebi-Daryasari GH, Kazemzadeh R. Assessing Nursing Graduates Clinical Competency from the Viewpoints of Graduates and Head Nurses. Journal of Health and Care 2014;16(1,2):66-73.

11. Bahreini M, Shahamat S, Hayatdavoudi P, Mirzaei M. Comparison of the clinical competence of nurses working in two university hospitals in Iran. Nursing & health sciences 2011;13(3):282-8.

12. Hassankhani H, Hasanzadeh F, Powers K A, Dadash Zadeh A, Rajaie R. Clinical Skills Performed By Iranian Emergency Nurses: Perceived Competency Levels and Attitudes Toward Expanding Professional Roles. J Emerg Nurs. 2018;44(2), 156-163. doi:10.1016/j.jen.2017.06.007

13. Coiera, E. (2006). Communication Systems in Healthcare. Clin Biochem Rev, 27(2), 89-98.

14. Benner P. Excellence and power in clinical nursing practice: from nursing theorists and their work. Philadelphia: Mosby Co; 2002.

15. Meretoja R, Leino-Kilpi H, Kaira AM. Comparison of nurse competence in different hospital work environments. Journal of nursing management. 2004;12(5):329-36.

16. Mahdavi saeb F, Ruhani, M, Hanifi N, Kamali K. Comparison of critical care nurses' clinical competency using self-assessment method and assessment by head nurses, Zanjan 2014. Preventive Care in Nursing & Midwifery Journal 2016;6(1):72-82.

17. Meretoja R, Koponen L. A systematic model to compare nurses' optimal and actual competencies in the clinical setting. Journal of advanced nursing 2012;68(2):414-22.

18. Salonen A H, Kaunonen M, Meretoja R, Tarkka MT. Competence profiles of recently registered nurses working in intensive and emergency settings. Journal of Nursing Management 2007;15(8):792-800.
19. Mirlashari J, Qommi R, Nariman S, Bahrani N, Begjani J. (2016). Clinical Competence and Its Related Factors of Nurses in Neonatal Intensive Care Units. J Caring Sci. 2016; 5(4): 317-324.

20. Meretoja R, Leino Kilpi H. Comparison of competence assessments made by nurse managers and practising nurses. Journal of nursing management. 2003; 11(6): 404-409.

21. Ramirez, E., Schumann, L., Agan, D., Hoyt, K. S., Wilbeck, J., Tyler, D., & Evans, D. D. (2018). Beyond competencies: Practice standards for emergency nurse practitioners-A model for specialty care clinicians, educators, and employers. J Am Assoc Nurse Pract, 30(10), 570-578. doi:10.1097/JXX.0000000000000139

Supplementary Files
This is a list of supplementary files associated with this preprint. Click to download.
edited title page.docx