

EMERGENCY DEPARTMENT NURSES' CLINICAL COMPETENCE AND ITS RELATED FACTORS: A CROSS-SECTIONAL STUDY

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ABSTRACT

OBJECTIVES

This study aimed to assess perceived clinical competence levels of emergency department nurses in Iran and to identify association with the demographic variables.

METHODS

In this cross-sectional study, all 131 employed nurses from emergency departments of four educational hospitals were included in the study using a census method. Data collection tools included a demographic information form and the "Nurse Competence Scale". Data were analyzed using descriptive and analytical statistics.

RESULTS

The mean age of the nurses was 32.41 ± 6.35 years. 14 nurses were male and 117 nurses were female, the average work experience of the nurses was 8.48 ± 5.98 years. The mean score of nurses' clinical competence score of the nurses was 68.68 ± 3.24 out of 100, which was a "good level". Among the subscales of clinical competence, the highest mean score was related to "managing situation" and lowest to "ensuring quality". There was no statistically significant difference of clinical competence by gender, age, and academic degree. However, the level of clinical competence differed significantly depending on work experience.

CONCLUSIONS

The emergency department nurses at Mazandaran University of Medical Sciences, Iran, reported a good level of clinical competence across all categories. Hospital managers' awareness of the level clinical competence of emergency department nurses helps them design educational programs and effective training session to improve the quality of nursing services. Moreover, it is necessary to upgrade nursing education programs at all levels of nursing education in to improve graduating nurses' clinical competences.

KEYWORDS

clinical competence, nurses, emergency department

INTRODUCTION

Emergency department (ED) nurses are at the front line of providing care for patients. They are in charge of the accurate assessment, management, interpretation of clinical data, interventions, and ensuring patient safety. [1] Emergency departments frequently encounter patients who are confronting a potential life-threatening circumstance, and the effectiveness of the healthcare providers' clinical expertise is a significant concern. The capability of nurses to provide emergency care plays a crucial role in ensuring the safety of patients. [2] Emergency nursing care presents a distinctive feature in Iran, which is recognized as one of the countries with the highest incidence of earthquakes worldwide. The prevalence of trauma is a major factor in mortality and disability, with injuries accounting for 14.4% of all deaths. [3] In recent decades, competency has been a major issue for all healthcare providers, and its description and development has been a challenge. [4] Competence is a collection of knowledge, skills, attitudes, values and skills that increase efficiency and effectiveness in professional work environments. [5] Competence refers to one's capacity to carry out a particular professional task with proficiency and productivity. This implies that the caregiver has the ability to apply their skills in a manner that is suitable for the specific area and can meet the needs of the clients. [6] Nursing managers within the healthcare have made significant strides in recognizing clinical competency and promoting it among nurses. [7] Given the need for quality patient care by nurses and the close association between nurse competence and the success of healthcare organizations, the clinical competence of nurses is a priority issue in all healthcare settings. [8] The implementation of competency assessment criteria is expected to result in significant increase in the knowledge and awareness of the nursing staff regarding their level of competency. Such assessments will aid in the identification of any inadequacies in their theoretical knowledge or practical skills. [9] The competencies required of emergency room nurses are unique due to the nature of the emergency room environment. In the emergency room, caregivers are faced with rapidly changing and unexpected situations, critical patients and time pressures. [3] Assessing the competency of practicing nurses is critical to identify areas for professional development and educational needs, and to ensure that nurses' competencies are best utilized in patient care. [10] Developing, maintaining and assessing nursing skills are among the greatest challenges in the

nursing profession. [11] Our knowledge of the status of clinical qualification and level of nursing skills is very low and not many studies have been conducted in this area in Iran. [12] The study results showed that the competence of ED nurses to provide care in critical situations is not at an optimal level and was below average in all competences. [13, 14] However, the results of other research have demonstrated that the clinical competency of nurses is desirable. [9, 12]

Accordingly, this study aimed to assess the perceived level of clinical competence of ED nurses in Iran.

METHODS

RESEARCH DESIGN AND SETTING

The present study was a cross-sectional descriptive study examining the clinical competence of ED nurses from the Mazandaran University of Medical Sciences (MUMS) in Sari, Iran, in 2018.

STUDY POPULATION

The statistical population of this study consisted of all 131 employed ED nurses from four MUMS-affiliated educational government hospitals. The sample was collected using the census method and all employed nurses in the four emergency departments were included in the study. The response rate to the questionnaires was determined to be 100%.

STUDY INSTRUMENT AND DATA COLLECTION

Data collection was performed using a demographic information form and the Nurse Competence Scale (NCS). The demographic information includes questions about age, gender, education level, work experience, and marital status. The NCS was developed based on theory "from beginner to skilled banner". [15] It was provided by Meretoja and colleagues, (2004) and proved to be highly reliable and valid. [10] The instrument measures 73 nursing skills in seven different categories, including: "Helping roles" (7 skills), "Teaching-coaching" (16 skills), and "Diagnostic function" (7 skills), "managing situation" (8 skills), "Therapeutic interventions" (10 skills), "Ensuring quality" (6 skills) and finally the field of "Work role" (19 skills). The questionnaire was completed by the nurses using the self-assessment method and they were asked to give themselves a minimum score of zero and a maximum of one hundred for each skill. In addition, participating nurses were asked to use a 4-point Likert scale to determine the frequency of use of skills related to clinical competence,

including inapplicable, seldom used, occasionally used, and frequently used skills, rated from 0 to 3 respectively. In Iran, NCS was first translated by Bahreyni and Colleagues (2010). Subsequently, the validity of the questionnaire was confirmed based on the opinions of experienced experts and nursing teachers. The reliability of the questionnaire was assessed and the Cronbach's alpha value in the seven domains was determined to be between 0.70 and 0.85, indicating the desired internal consistency of the domains and the high reliability of the tool. The nurses' clinical competency level score was divided into four levels: low (0-25), relatively good (26-50), good (51-75), very good (76-100). [16]

DATA COLLECTION

The first author attended the hospitals affiliated with MUMS to collect data. She received a list of the nurses working in each hospital's Ed from the nursing office. The employed nurses were then contacted during their shift schedule. After explaining the aims of the study, they were asked to participate in the study. They were then handed the questionnaires to fill out and later collected by the first author.

DATA ANALYSIS

Data were analyzed with SPSS software (version 22.0; SPSS Inc., Chicago, IL, USA) using descriptive statistics (mean, standard deviation, frequency, and percentage) and inferential statistics (the independent sample t-test, one-way analysis of variance and spearman correlation coefficient). Spearman's correlation coefficient was used to assess the relationship between clinical competency

subscales and total clinical competency scores. A P-value less than 0.05 was considered statistically significant.

ETHICAL CONSIDERATIONS

The present study was approved by the Ethics Committee of Mazandaran University of Medical Sciences (Ethical code: IR.MAZUMS.REC.1397.91). The study aims were explained to all participants and written informed consent was obtained. Participants were also assured that their information would be treated confidentially.

RESULTS

The ED nurses' mean age was 32.41 ± 6.35 years, with 14 male and 117 female nurses. Their average work experience was 8.48 ± 5.98 years. 93.89% of the nurses had a BSc. degree (n=123). The nurses had an average work experience of 8.48 ± 5.98 years, and 70.99% were married. There was no statistically significant discrepancy observed in the clinical competence assessments of nurses, as per their age, gender, or academic degree. ($P \geq 0.05$, Table 1). However, a significant relationship has been found between general work experience and clinical competence ($r=0.176$, $p=0.044$). The scores of the seven categories of clinical competence were self-assessed by the Ed nurses. As described, the mean scores of categories were, helping role 70.42 ± 3.58 , teaching-coaching 70.58 ± 3.78 , diagnostic function 69.16 ± 4.50 , managing situation 74.63 ± 3.40 , therapeutic intervention 67.54 ± 3.59 , ensuring quality 55.38 ± 7.05 , and work role 73.04 ± 3.31 . This results in an average total score of 68.68 ± 3.24 . The highest mean score of clinical competence related to managing situation and the lowest to ensuring quality.

TABLE 1: DEMOGRAPHIC CHARACTERISTICS OF ED NURSES AND COMPARISON OF CLINICAL COMPETENCE

Demographic variables		Number (%)	Competency level Mean (SD)	t/f	P
Gender	female	117(89.3)	68.29(2.99)	t=-0.473	0.636
	male	14(10.7)	68.72(3.28)		
Age (year)	20-26	34(26.0)	67.53(3.51)	F=3.04	0.051
	27-33	47(35.8)	68.94(2.49)		
	34 \geq	50(38.2)	69.21(3.53)		
Level of education	Associate degree	5(3.8)	67.53(3.51)	F=1.39	0.251
	Bachelor of Science	123(93.9)	68.94(2.49)		

	Master degree	3(2.3)	69.21(3.53)		
Marital status	single	38(29.0)	67.72(3.41)	T=-2.19	0.03
	married	93(71.0)	69.07(3.10)		

The total mean score of nurses' clinical competence was 68.68±3.24 out of 100, which was at a "good" level. Most ED Nurses showed that their frequency of all clinical competences categories were at "good" level. (Table 2)

TABLE 2: ED NURSES' LEVEL OF CLINICAL COMPETENCES AND FREQUENCY OF USING COMPETENCES IN PRACTICE

Categories	Score clinical competence	Frequency of level of competence (%)			
	Mean (±SD)	Low (0-25)	Relatively good (26-50)	Good (51-75)	Very good (76-100)
Helping role	70.42±3.58	0.0	0.0	90.84	9.16
Teaching-coaching	70.58±3.78	0.0	0.0	96.18	3.82
Diagnostic function	69.16±4.50	0.0	0.0	96.95	3.05
Managing situation	74.63±3.40	0.0	0.0	67.93	32.07
Therapeutic intervention	67.54±3.59	0.0	0.0	99.24	0.76
Ensuring quality	55.38±7.05	0.0	16.80	82.44	0.76
Work role	73.04±3.31	0.0	0.0	87.02	12.98
Total of clinical competence	68.68±3.24	0.0	0.0	96.94	3.06

DISCUSSION

In accordance with other research findings by Bahreyni (2010) and Farajis (2019), the number of female nurses (n=117) in this particular sample exceeded their male counterparts (n=14) (5, 16). Most nurses in the study were married. Findings from Kalantary et al.'s (2016) research on ICU nurses competency level in educational hospitals revealed that 73.7% were married. [17] Moreover, in a study, it has been shown that 77% of nurses were married (18), which are consistent with the results of this study. In relation to educational level, the majority of nurses had a bachelor's degree, a finding that aligns with prior research results. [5, 16]

In this study, nurses expressed their highest clinical competence in relation to managing situation, which is inconsistent with the results of the study by Habibzadeh and colleagues (2012), in which the work role area received the highest score. [19] However, it agrees with what the study found in Bahreyni et al.'s research, Meretoja and others as well as Istomina and colleagues. [10, 16, 18] The variation

observed in the research findings might be attributed to dissimilar study populations and contextual settings. Other factors that could impact nurses' competency, such as the hospital setting, level of patient acuity, and staffing levels, may also differ across studies. The ED nurses in the current research study reported a satisfactory level of proficiency in all of the seven clinical competency areas which aligns with the findings of Istomina and colleagues' study. [18] In the Bahreyni and colleagues' (2010) study, only the category of managing situation were rated as "very good". [16] The results are reasonable in educational hospitals where nurses need quick reaction skills due to short patient stays, complex situations, and high-risk patients. The study participants demonstrated a minimal level of proficiency in the area of ensuring quality. Bahreyni et al. (2010) reported the lowest score of this category and the same as in the study of Istomina et al., which are congruent with the findings of the current study. [16] However, another research finding in the study conducted by Bahreyni and colleagues, (2010) and Meretoja et al. (2003) indicate that teaching-coaching category demonstrated the lowest scores. [10, 16] This is in contrast to the present study. The sample size and characteristics of the nurses included in

each study may vary, leading to differences in findings. These inconsistencies make it necessary to conduct further studies on the subject. Based on cross-sectional research, nurses reported being competent at a satisfactory level [16, 20]; with an average qualification falling between 61.15 and 79.54 in seven categories [16], which are in the line with present study results.

The present study found no correlation between demographic characteristics and clinical competence, except for work experience. The current study confirms Takase's (2013) research that states nursing competence and clinical experience are correlated. [21] In line with the present study's findings, there was no significant correlation between the competency of nurses and factors such as gender, age, and education level, as reported by Faraji and others in their 2019 study. [5]

STUDY LIMITATIONS:

The study was conducted in a single Mazandaran University of Medical sciences setting, which may limit the generalizability of the findings to other healthcare settings. Second, the study relied on self-reported data from the nurses, which may be subject to recall bias.

CONCLUSION

The present study revealed that the ED nurses at Mazandaran University of Medical Sciences demonstrated a satisfactory level of clinical competency across all categories. Hospital managers' understanding of the clinical competency of ED nurses can aid in the development of impactful educational programs and training sessions aimed at enhancing the overall quality of nursing care. Offering continuous education and training can assist nurses in keeping themselves abreast of the most recent emergency department methodologies, technologies, and strategies. Various educational activities such as workshops, seminars, conferences, and e-learning courses may be part of these programs. In addition to offering educational activities, hospital managers can also implement a competency-based performance evaluation system for ED nurses. Such a system can identify areas where nurses require improvement and provide targeted training to address those needs. Regular assessments can also help track the progress of the nurses' clinical competence and ensure that they provide high-quality care. It is important to note that training programs and competency evaluations should be tailored to meet the specific needs and challenges of the ED setting. Hospital

managers should work closely with ED nurses to ensure that the training programs and evaluations align with their professional development goals and the needs of the patients they serve. In conclusion, this study highlights the significance of continuous education and training programs for ED nurses. Hospital managers should invest in such programs and evaluations to ensure that nurses have the necessary knowledge and skills to provide high-quality care in the emergency department.

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CONFLICT OF INTEREST:

The authors declare that there is no conflict of interest regarding the publication of this manuscript.

Reference:

1. Aghaie B, Heidari S, Abbasinia M, Abdoli M, Norouzadeh R, Shamali M. Teamwork competence and readiness of emergency nurses in the care of trauma patients: A multicenter cross-sectional study. *International Emergency Nursing*. 2021;59:101073.
2. Vand Tamadoni B, Shahbazi S, Seyedrasooli A, Gilani N, Gholizadeh L. A survey of clinical competence of new nurses working in emergency department in Iran: A descriptive, cross-sectional study. *Nursing Open*. 2020;7(6):1896-901.
3. Hassankhani H, Hasanzadeh F, Powers KA, Zadeh AD, Rajaie R. Clinical skills performed by Iranian emergency nurses: Perceived competency levels and attitudes toward expanding professional roles. *Journal of Emergency Nursing*. 2018;44(2):156-63.
4. Mobasher-Amini K, Rezaei B, Esmailpour-Bandboni M. Nurses' competence and job related factors among nurses in university hospitals: A cross sectional descriptive design. *Advances in Nursing and Midwifery*. 2019;28(3):28-34.
5. Faraji A, Karimi M, Azizi SM, Janatolmakan M, Khatony A. Evaluation of clinical competence and its related factors among ICU nurses in Kermanshah-Iran: A cross-sectional study. *International journal of nursing sciences*. 2019;6(4):421-5.
6. Mills J-A, Middleton JW, Schafer A, Fitzpatrick S, Short S, Cieza A. Proposing a re-conceptualisation of competency framework terminology for health: a

- scoping review. *Human Resources for Health*. 2020;18(1):1-16.
7. Zakeri MA, Bazmandegan G, Ganjeh H, Zakeri M, Mollaahmadi S, Anbariyan A, et al. Is nurses' clinical competence associated with their compassion satisfaction, burnout and secondary traumatic stress? A cross-sectional study. *Nursing Open*. 2021;8(1):354-63.
 8. Zeydi AE, Ghazanfari MJ, Azizi E, Darvishi-Khezri H, Mortazavi H, Osuji J, et al. Clinical competence of Iranian nurses: A systematic review and meta-analysis. *Journal of Education and Health Promotion*. 2022;11.
 9. Karaminia MH, Parchehpafieh S, Maleki S, Amirkhani A. Nurses' clinical competence in psychiatric wards of selected hospital of University of Behzisti & Tavanbakhshi, 2018-2019. *Medical Science Journal of Islamic Azad University-Tehran Medical Branch*. 2020;30(3):332-40.
 10. Meretoja R, Isoaho H, Leino-Kilpi H. Nurse competence scale: development and psychometric testing. *Journal of advanced nursing*. 2004;47(2):124-33.
 11. Smith SA. Nurse competence: A concept analysis. *International journal of nursing knowledge*. 2012;23(3):172-82.
 12. Bahreyni M, Motahhari M, Akabariyan SH, Mirzayi K. Determine the clinical competency of nurses working in hospitals affiliated to Bushehr University of Medical Sciences by self-assessment method. *Quarterly Journal of South Medicine*. 2008;11(1):69-75.
 13. Aliakbari F, Aien F, Bahrami M. Assessment competencies among emergency nurses for responding in disaster situation with Objective Structured Clinical Examination. *Journal of Health Promotion Management*. 2014;3(3):47-57.
 14. Aliakbari F, Aein F. Assessing Isfahan emergency nurse competence in disaster response by using national questionnaire. *Journal of Clinical Nursing and Midwifery*. 2017;6(3):1-10.
 15. Benner P. *From Novice to Expert: Excellence and Power in Clinical Nursing Practice* Prentice-Hall. New Jersey. 2001.
 16. Bahreyni M, Moattari M, Kave MH, Ahmadi FA. Self-assessment of clinical competency of nurses working in one of the educational hospitals of Shiraz University of Medical Sciences. *Quarterly Journal of Jahrom University of Medical Sciences*. 2010;8(1):28-36.
 17. Kalantary S, Kord F, Kazemi S, Rahimian S, Araghianmojarad F, Jalali T. Determination of nurses' clinical competence in critical care ward in Golestan hospital. *J Res Dev Nurs & Midwifer*. 2016;7(1):49-56.
 18. Istomina N, Suominen T, Razbadauskas A, Martinkėnas A, Meretoja R, Leino-Kilpi H. Competence of nurses and factors associated with it. *Medicina*. 2011;47(4):33.
 19. Habibzadeh H, Ghorbanzadeh K, Khalkhali H, Mohamadpor Y. The Relationship Between Nurses' Quality of Work Life and Their Clinical Competency. *Nursing and Midwifery Journal*. 2012;10(3):0-.
 20. Numminen O, Meretoja R, Isoaho H, Leino-Kilpi H. Professional competence of practising nurses. *Journal of clinical nursing*. 2013;22(9-10):1411-23.
 21. Takase M. The relationship between the levels of nurses' competence and the length of their clinical experience: A tentative model for nursing competence development. *Journal of clinical nursing*. 2013;22(9-10):1400-10.