Med Surg Nurs J. 2022 August; 11(3):e132816. https://doi.org/10.5812/msnj-132816.

Published online 2023 January 23. **Research Article**

Clinical Competence and Clinical Performance of Nurses: A Cross-sectional Study

Naeimeh Eshraghi Arani [1], Mohsen Adib Hajbaghery [2] and Ismail Azizi Fini [2, *]

[1] Kashan University of Medical Sciences, Kashan, Iran
[2] Trauma Nursing Research Center, Kashan University of Medical Sciences, Kashan, Iran

[*] *Corresponding author*: Trauma Nursing Research Center, Kashan University of Medical Sciences, Kashan, Iran. Email: azizifinies@yahoo.com

Received 2022 November 01; **Accepted** 2023 January 02.

Abstract

Background: In organizational analysis, competence and performance are fundamental issues. To ensure the quality of nursing care, it seems essential to evaluate nurses' clinical competence (CC) and clinical performance (CP) as the largest group of professionals in the healthcare system.
Objectives: This study aimed to examine the CC and CP of nurses and other related factors.
Methods: This cross-sectional study involved 220 nurses from various wards of Shahid Beheshti hospital in Kashan, Iran, in 2020. The samples were randomly selected based on the quota assigned to each section (coin toss). Then, 220 selected nurses filled out the CC questionnaire by self-reporting, and among them, the performance of 50 nurses was observed randomly (tossing a coin) in an entire work shift. The data collection tools included a personal information questionnaire and a checklist for evaluating CC and CP. The data were analyzed using SPSS software (version 16; SPSS Inc., Chicago, IL, USA). Data analysis was carried out using descriptive statistical methods, *t*-tests, analysis of variance, and Spearman and Pearson correlation coefficients. A P-value < 0.05 was considered statistically significant in all tests.
Results: The mean age of the participants was 31.15 ± 6.26 years. Moreover, the participants' mean scores of work experience and work experience in the current ward were 7.57 ± 5.73 and 4.02 ± 3.88 years, respectively. The nurses' mean scores of CC and CP were 80.79 ± 12.09 (out of 100) and 70.30 ± 11.94 (out of 100), respectively. Female subjects had a significantly higher mean score in terms of CC than male subjects. Additionally, married nurses had a higher mean score than single nurses (P < 0.05). Nurses in the critical care wards and emergency wards scored the highest (89.09 ± 12.09) and lowest (76.39 ± 12.65) regarding CC, respectively, which was statistically significant (P < 0.05). Furthermore, nurses with official employment had the highest mean CC score; nevertheless, nurses with designated employment had the lowest mean CC score, which was statistically significant (P < 0.05). According to the correlation test, nurses' CC and CP were also associated with age, marital status, work experience in the current ward, and type of employment (P < 0.05).
Conclusions: The CP and CC of the nurses participating in this study were satisfactory. Regarding the relationship between the CP score with marital status, workplace sector, employment status, age, general work experience, and current work experience, it is suggested to consider the aforementioned variables in programs for the improvement of nurses' CP.

Keywords: Clinical Competence, Clinical Performance, Nursing, Evaluation

1. Background

Healthcare quality is a challenge for health service delivery systems worldwide, including those in Iran (1, 2). Since nurses constitute the most significant professional group in the healthcare system, their clinical performance (CP) can significantly impact the quality of provided care (2). Performance evaluation compares actual performance to the expected performance following objectives or subjective elements (3, 4). The CP refers to how nurses provide nursing care for their patients, including their methods and process. Therefore, CP involves performing duties and responsibilities related to direct patient care that affect treatment, recovery, and patient satisfaction. Any decrease in nurse performance will result in the treatment system being unable to achieve its main objectives (5), leading to a decrease in productivity, costs, and patient satisfaction and an increase in the nursing workforce's needs (6).

Nurses must understand their current situation and comply with the standards by studying their CP from two perspectives, namely determining their level of performance and identifying the factors affecting it. In addition to improving professional activities (7), strengthening re-

Copyright © 2023, Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (http://creativecommons.org/licenses/by-nc/4.0/) which permits copy and redistribute the material just in noncommercial usages, provided the original work is properly cited.

lationships among nurses, determining the best method of education and their educational needs, and increasing their efficiency (8), nurses can improve their professional activities. As a result, they could identify and strengthen positive practices and improve working conditions (9, 10).

Various studies have been conducted to measure the CP of nurses in different areas and wards. Several studies have indicated that nurses are less effective at teaching, communicating, collaborating, conducting clinical research, and resolving conflicts than treating, providing critical care, and coordinating care (1, 11-13).

The results of a study by Toulideh et al. examining the correlation between the type of hospital and the performance of nurses showed that the CP of nurses in teaching hospitals is more unfavorable than in non-teaching hospitals. Additionally, the level of CP of nurses in emergency departments has been lower than in critical care departments (14). The results of a study by Khoeiniha et al. comparing the performance of nurses in critical care units, which was conducted in the form of self-reporting, showed that nurses in critical care units of intensive care units in teaching and non-teaching hospitals of Qazvin, Iran, in the field of clinical examination, have lower CP than in emergency departments (15). According to Alizadeh et al.'s study, nurses in emergency wards perform well in terms of clinical outcomes (16). Moreover, the results of Ghamari Zareh et al.'s study have reported the quality of nurses' CP as 64%, 28%, and 8% as average, poor, and good, respectively (13). The above-mentioned studies were conducted in the form of self-reporting; therefore, the results could be affected by reporting bias.

In the 21st century, the role of nurses has increased significantly (17), making the concept of clinical competence (CC) one of the primary topics in nursing education (18) and an essential component of quality care (19). The CC is the central issue in nursing. The CC is a continuous process of obtaining knowledge, values, attitudes, and skills, such as critical thinking skills, bringing creativity and innovation to nursing practice (20). The CC is considered the use of knowledge, skills, abilities, behaviors, and characteristics to successfully perform important work tasks in the field of nursing (21). One definition of CC is the efficient utilization of technical and communicational skills, knowledge, clinical reasoning, emotions, and values in a clinical environment (22).

Decreasing the level of nurses' competence can lead to patient dissatisfaction, work mistakes, endangering the patient's life and the staff's health, loss of productivity, and incompleteness of a department's activities (21). The CC is the effective use of technology and communication skills, knowledge, clinical reasoning, emotions, and values in the clinical environment (22). Concerning the current high pace of changes in the health monitoring system, the necessity of the provision of safe and cost-effective services, the increase of public information about health and hygiene, the general expectation for quality health services, and the tendency in health providers to recruit skillful workforces, it is essential to pay more attention to the CC of the professions pertinent to health services (23). It is important to note that CC is a necessary condition for the transfer and acceptance of professional responsibility (24) and is one of the performance indicators and performance requirements for providing quality nursing care (25).

Various studies have been conducted to examine the CC of nurses in Iran, and their results are based on the context of the research community and are different. Therefore, the comparison of clinical settings revealed differences in the levels of nurses' CC (19). For example, the results of a study by Bahreini et al. in Shiraz showed that nurses' competence in both the level and frequency of using competencies is excellent in the clinical settings of this hospital (19); nevertheless, another study by Bahreini et al. in Bushehr showed that nurses' CC was unfavorable in education/guidance and quality assurance (26). Additionally, the results of evaluating the CC of nursing personnel in Bojnord showed that the CC of this personnel is in good condition (21).

Various factors also affect CC in any organization. The results of a study showed that CC has a significant relationship with increasing years of service, nurses' gender, and the university where they study (21). According to Ebadi et al.'s study regarding the CC of critical care nursing master's students, female students have higher levels of CC than male students (27).

As a result of the above-mentioned studies, the assessment of competence and performance is essential in ensuring the quality of provided care (19). A significant lack of information exists in this field, and there is a lack of awareness of nursing educational needs, CC, and practical application of care skills in a variety of wards of teaching-therapeutic hospitals (28).

2. Objectives

This study aimed to determine the competence of nurses from their point of view and their CP.

3. Methods

This cross-sectional study was conducted in a teaching hospital in Kashan, Iran, from December to March 2020. The study was conducted in two parts: Self-report and observation. In the first stage, samples were selected based on

the quota assigned to each ward through a table of random numbers to assess nurses' CC. Then, in the second stage, samples were selected to observe the CP of the nurses selected in the first stage according to the quota assigned to each ward, using a table of random numbers.

Based on the results of a similar study (29) and the research community (n = 460, the entire nursing community of the hospital), P = 0.48, d = 0.05, and z = 1.96, 209 individuals were calculated in the formula for calculating the sample size, and 220 subjects were considered with a 5% chance of dropping out.

Considering the difficulty of observing 220 subjects, the researchers tried to select several samples to observe the performance based on the results of a pilot study. An initial pilot study was conducted on eight nurses selected by the convenience sampling method to calculate the sample size based on CP, whose CP mean scores were 64.21 ± 10.27. The sample size was calculated using a formula. Considering z = 1.96, s = 10.27, and d = 3, 46 subjects were estimated to be the necessary sample size, and 50 subjects were considered for further certainty. Pilot study samples were not included in the main sample.

The inclusion criteria were consent to participate in the study, at least a bachelor's degree in nursing, employment in the clinical care field (nurses were not included in the study due to their managerial positions), a minimum of 3 months of work experience (to gain experience), and willingness to participate in the study. A personal information questionnaire containing seven items on gender, age, marital status, ward, employment status, work experience, and work experience in the current ward was used to determine demographic characteristics.

The CC of nurses was measured using a questionnaire prepared by Meretoja et al. based on the theory of "from beginner to expert". Seventy-three items are included in the original version of this questionnaire (30). The questionnaire was previously translated by Bahreini et al. (19), and its content validity and reliability coefficient were evaluated within the range of 0.70 - 0.85. Participants are asked to rate each item on a scale of 0 to 100. Accordingly, overall scores of 25 $\geq$, 26 - 50, 51 - 75, and 76 $\leq$ are regarded as weak, average, sound, and excellent CC, respectively. The CC questionnaire was approved with 25 items and a content validity ratio (CVR) and content validity index (CVI) of 0.86 and 0.98, respectively. To determine the reliability of the questionnaire, 10 nurses (not included in the final sample) completed the questionnaire on two occasions for 2 weeks, and its reliability coefficient was calculated at 0.83 (31).

Observational checklists consisting of 29 items were developed to assess nurses' performance based on their duties and capabilities. In addition to the existing tools, the researchers decided to develop a more comprehensive tool. When the nurse observes the performance, the option "yes" is selected; if the option is not performed, the option "no" is selected. The option "no item" is considered if there is no item. Moreover, 1 point, 0 point, and no point are considered for "yes", "no", and "no item" options, respectively. As a result, the total score is calculated; the numerator is the number of functions the nurse must perform. The nurse receives a score based on her performance. For example, a nurse only completes 15 of the 29 items on the checklist, although 20 items are required. After answering 15 yes questions out of 20, she/he will receive a score of 0.75. The resulting score is then multiplied by 100 to determine the basis for the score of 100. Accordingly, the nurse's performance is evaluated based on the score of this checklist, which ranges from 0 (minimum score) to 100 (maximum score). The corresponding checklist was provided to 10 Faculty of Nursing and Midwifery professors to determine the necessity and clarity of the CVR and CVI. Nine professors confirmed the content validity of the checklist with a CVR and CVI of 0.89. The reliability coefficient was calculated using two observers as sole observers.

For the collection of data related to CC, a self-report questionnaire was provided for the nurses. The researcher first gathered a list of nurses working in clinical wards from the nursing office. According to the ward's quota, a random number table online was used to assign numbers to the names of nurses in each ward based on their quota. Afterward, the selected nurses of each ward were approached, and after explaining the purpose of the study and obtaining written consent from them, they were invited to complete a questionnaire. The nurses were given the CC assessment questionnaire to complete on their own in a quiet and peaceful environment where they had more free time.

To investigate nurses' CP, the first researcher visited internal, surgical, critical care, and emergency wards, observed their activity from the beginning of their shift to the end and evaluated their performance based on an observational checklist. The observation was made indirectly. A few days before data collection began, the observer (first author) was continuously present in each ward during different work shifts to prevent the researcher's presence from affecting the nurses' performance and behavior. This was performed to normalize and reduce the effect of his presence on nurses' actual performance as much as possible.

The Ethics Committee of Kashan University of Medical Sciences approved this study (ethics code: IR.KAUMS.NUHEPM.REC.1397.35). The study participants were provided with explanations about the project's objectives, voluntary participation in the study, no need to enter their names and surnames, the confidentiality

of the information, and its non-impact on occupational status, salary, benefits, and the annual evaluation of the organization. A *t*-test, analysis of variance (ANOVA), Pearson correlations, and Spearman correlations were used to analyze the data using SPSS software (version 16).

4. Results

According to the study results, 80% of the nurses were female, and 74% were married (Table 1). The mean age of the participants in the study was 31.15 ± 6.26 years. Furthermore, the participants' mean scores of work experience in the current ward and work experience were 4.07 ± 3.88 and 7.57 ± 5.73 years, respectively.

The results revealed that the nurses' mean CP score was 70.30 ± 11.94 (Table 2). The ANOVA showed a statistically significant difference between the mean scores of nurses' CP in different wards (P = 0.001). In addition, this study's results indicated a statistically significant difference between the mean nurses' CP scores based on their age and work experience (P = 0.001; Table 1).

According to the Spearman correlation coefficient, there was a significant positive relationship between the mean CP score with marital status, ward type, and employment status (P < 0.05). Additionally, the Pearson correlation coefficient results revealed a positive and significant relationship between the mean CP score with age, work experience, and work experience in the current ward (P = 0.001; Table 3).

As determined by the independent *t*-test, the mean CC scores of female nurses (81.44 ± 11.25) were significantly higher than male nurses (77.13 ± 15.63; P = 0.006). Furthermore, ANOVA showed that the mean scores of nurses with different work experiences differed (P = 0.001); therefore, the mean scores increased significantly with increasing work experience (Table 3).

The Spearman correlation coefficient results revealed a positive and significant relationship between the mean CC score with marital status, ward type, and employment status (P < 0.05). Additionally, the Pearson correlation coefficient results showed a significant relationship between the mean CP score with age, work experience, and work experience within the current ward (P = 0.001; Table 4).

5. Discussion

Nurses received a higher CP score than the average, indicating that nurses received a favorable evaluation. As a result, Shannon et al. (32) and Zaman Zadeh et al. (33) showed that nurses were performing at optimal CP. Furthermore, Ghamari Zareh et al.'s study showed that nurses perform better than other professions in care, treatment, and support (13). As one of the reasons for this result, it can be stated that nurses' sense of responsibility and organizational commitment have led them to pay attention to performing their duties in patient care. According to some studies, nurses are more likely to focus on their clinical activities when they fear they will be reprimanded (2), which might be a factor among the nurses in the hospital under study.

In the present study, a significant difference was observed between the CP scores of nurses in different wards, where nurses in critical care wards and emergency wards scored the highest and lowest, respectively. In this regard, the results of other studies also showed that the CP of emergency department nurses is at a lower level than critical care department nurses (14). The lower CP score of emergency ward nurses is attributed to patients staying in the emergency ward for a short period and to the high turnover of nurses in this ward. Whenever nurses are required to perform tasks outside the scope of their nursing responsibilities, as directed by their managers, they are prevented from focusing on their primary duties (21).

A significant difference was also observed between the mean CP score based on some variables, such as employment status, age, and work experience. No similar study has been conducted in this field, as nurses with trial employment status had the highest performance scores, and those with designated employment status had the lowest. It was found that nurses with trial, definitive, contractual, and designated employment had the best CP. Due to their recent graduation, the nurses appear to lack the skills and confidence necessary for proper clinical practice (21). Meanwhile, nurses are trying to show their best CP with trial employment in the best conditions in terms of preparation and hope to have their permanent position. Following confirmation of employment, the nurses might feel more secure in their jobs, and their motivation to perform their best might decrease somewhat (14).

Furthermore, other studies indicated that nurses' performance scores increased with age and experience. Age, employment status, and work experience affect nurses' CP. Therefore, older nurses typically have more excellent clinical experience and knowledge. The employment status of these nurses is usually more stable. Nurses with more experience are more confident in using their clinical skills and qualifications and perform clinically better.

The results of the present study showed that the CC of the nurses in the present study is in good condition, which is in line with the results of other studies in Iran (26). According to the results of another study, the nurses' scores of CC from their viewpoint were at a good level in surgical, critical, and emergency wards (31). In Goliroshan et al.'s

Table 1. Mean Scores of Clinical Performance according to Demographic Characteristics [a]

Variables	No. (%)	Clinical Performance	P-Value	Tukey's Posthoc Test
Gender			0.524 [b]	-
Male	10 (20)	81.48 ± 12.37		
Female	40 (80)	78.75 ± 11.84		
Age (y)			0.001 [c]	0.001 (< 27 with > 33)
< 27	21 (42)	70.50 ± 11.55		
27 - 33	12 (24)	82.38 ± 12.38		
> 33	17 (34)	87.11 ± 8.29		
Marital status			0.094 [b]	-
Married	37 (74)	80.98 ± 12.59		
Single	13 (26)	74.52 ± 8.57		
Ward			0.001 [c]	0.001 (Cri with Med & Em)
Medical	19 (38)	77.67 ± 13.14		
Surgical	11 (22)	77.08 ± 8.04		
Emergency	8 (16)	69.03 ± 14.49		
Critical care	12 (24)	91.87 ± 2.78		
Employment status			0.001 [c]	0.001 (Des with Tri)
Designated employment	19 (38)	69.34 ± 11.49		
Definitive employment	15 (30)	82.84 ± 11.18		
Trial employment	10 (30)	89.61 ± 6.67		
Contractual employment	6 (20)	82.25 ± 10.16		
History of work experience (y)			0.001 [b]	0.001 (< 2 with 11 - 25)
< 2	17 (34)	70.21 ± 9.70		
2 - 10	17 (34)	82.54 ± 11.93		
11 - 25	16 (32)	85.50 ± 8.21		
History of work experience in the current ward (y)			0.001 [b]	-
< 5	35 (70)	75.84 ± 12.02		
5 ≤	15 (30)	87.35 ± 6.98		

[a] Values are expressed as mean ± SD unless otherwise indicated.
[b] *t*-test.
[c] Analysis of variance.

Table 2. Mean Scores of Clinical Competence and Clinical Performance of Nurses

Variables	n	Mean ± SD	Maximum	Minimum
Clinical competence	220	80.79 ± 12.09	100	36.5
Clinical performance	50	70.30 ± 11.94	95.83	47.82

study in Babol, Iran, the total score for CC was high (34). In the explanation of this finding, it can be said that the good and desirable CC of nurses in this study can be attributed to the presence of good and effective in-service clinical training. However, Jaffari Golestan et al. showed the low clinical activity of novice nurses working in Tehran medical centers, Iran, which is not consistent with the results of the present study (35). In expressing this difference, it might be possible to point to the inefficiency of the university education system, especially in the last year of clinical education, which could not familiarize students with professional tasks in the clinical environment. Additionally, it is possible to point out, based on Banner's theory, that the lack of CC of new nurses can be caused by their limited clin-

Table 3. Mean Scores of Nurses' Clinical Competence According to Demographic Characteristics [a]

Variables	Clinical Competence	P-Value	Tukey's Posthoc Test
Gender		0.006 [b]	-
Male	77.13 ± 15.63		
Female	81.44 ± 11.25		
Age (y)		0.001 [c]	0.001 (< 27 with 27 - 33 & > 33)
< 27	75.72 ± 12.44		
27 - 33	82.51 ± 11.14		
> 33	85.64 ± 10.02		
Marital status		0.036 [b]	-
Married	81.78 ± 11.37		
Single	77.82 ± 12.09		
Ward		0.001 [c]	0.001 (Cri with Med, Surg, & Em)
Medical	79.64 ± 10.77		
Surgical	78.53 ± 12.67		
Emergency	76.39 ± 12.65		
Critical care	89.09 ± 12.09		
Employment status		0.001 [c]	0.001 (Def with Des & Con) and (Des with Tri)
Designated employment	73.92 ± 12.74		
Definitive employment	89.75 ± 9.25		
Trial employment	83.84 ± 9.74		
Contractual employment	78.48 ± 11.91		
History of work experience (y)		0.001 [b]	0.001 (two by two with each other)
< 2	74.41 ± 12.84		
2 - 10	80.62 ± 11.19		
11 - 25	86.34 ± 9.75		
History of work in the current ward (y)		0.001 [b]	-
< 5	76.97 ± 12.75		
5 ≤	84.11 ± 10.47		

[a] Values are expressed as mean ± SD unless otherwise indicated.
[b] *t*-test.
[c] Analysis of variance.

ical experience.

A further finding of the present study was that the mean overall score of the CC of female nurses was significantly higher than the mean score of male nurses, and the mean overall score of CC was higher in married nurses than in single nurses. In this regard, the results of Khorashadizade et al.'s study also showed that there is a significant relationship between the nurses' CC score and the two genders; accordingly, the score of women was higher than men, which is in line with the results of the present study (21). However, the results of other studies did not show a relationship between gender and CC (31). Therefore, the higher mean scores of female nurses can be attributed to the greater number of female nurses participating in the present study. At the same time, considering the reported differences between studies, conducting further studies in this regard can help clarify this issue.

Karami et al.'s study also revealed that married nurses had higher CC scores than single nurses (36). In the studies conducted in Iran, there was no relationship between marital status and nurses' CC (19, 29, 31); nevertheless, in a study by Kim and Kim in Korea, a relationship was observed between CC and marital status (37). It seems that CC is a variable of several factors (19) that might be affected in

Table 4. Correlations Between Demographic Characteristics with Clinical Competence and Clinical Performance of Nurses

Variables	Clinical Performance		Clinical Competence	
	P	r	P	r
Gender [a]	0.374	0.12	0.059	0.12
Age (y) [b]	0.001	0.56	0.001	0.36
Marital status [a]	0.032	0.30	0.035	0.14
Ward [a]	0.009	0.36	0.001	0.22
Employment status [a]	0.001	0.51	0.049	0.13
History of work experience (y) [b]	0.001	0.52	0.001	0.40
History of work experience in the current ward (y) [b]	0.001	0.46	0.001	0.31

[a] Pearson correlation coefficient.
[b] Spearman correlation coefficient.

societies and organizations with different educational approaches, which needs to be investigated more carefully. In this regard, some studies also state that CC and related contextual factors have controversial and sometimes unexpected results (31).

According to Lakanmaa et al., nurses in critical care wards evaluated their competence in caring for patients well, which is consistent with the results of the present study (38). A review study shows a direct correlation between nurses' CC and the ward and hospital where they work (39). It seems that nurses working in critical care wards, due to facing patients with worse conditions and having more power than other wards, while also having clinical skills, seem to have greater self-confidence, which has resulted in assessing their clinical qualifications higher than their peers.

There was a significant difference in the average overall score of CC between nurses with different levels of work experience in the present study. As a result, nurses of different ages significantly differed in average overall CC scores. In particular, nurses with a median age of 27 years or less scored the lowest; nonetheless, nurses with a median age of 34 years or more scored the highest. Additionally, the relation test revealed a direct and significant relationship between the nurses' CC scores and variables, such as general work experience, work experience in the current ward, and age. Previously, a study showed that nurses' age and work experience were significantly correlated with CC scores (31). In some previous studies, researchers have observed a direct relationship between nurses' CC with their age and work experience (37, 40). There is also a significant relationship between work experience and nurses' CC observed in the study of Kim and Kim in Korea (37) and the review study of Rizany et al. (39). In expressing this finding, it can be said that the existence of retraining programs and increasing the individual's experience in the department can be a factor in increasing CC.

5.1. Conclusions

The results of the current study showed that the average score of the CC and CP of the nurses in this study was at a high level. Several variables are effective in increasing CP and CC; therefore, the CC of nurses with any experience in each department should be checked frequently. Managers and health officials in clinical environments should pay attention to the factors that affect nurse performance to maintain nurses' CC and CP at a high level. The improvement of the nurse evaluation system can also assist in maintaining and improving the quality of care and improving the nurses' motivation level in their performance. Among other factors that can improve the CC and then the CP of nurses is the implementation of in-service training programs according to the training needs of nurses in different departments, to which nursing managers should pay attention. It is also suggested to increase the motivation of nurses, improve the CC and CP of clinical nurses' evaluation system, and include the CP score in periodic and annual evaluations of nurses.

5.2. Limitations

One of the limitations of this study was that it was time-consuming to observe the performance of all research samples. Therefore, considering the self-assessment of nurses' CP, it is recommended to conduct further observational studies with a larger sample size.

Footnotes

Authors' Contribution: All authors discussed the results and contributed to the final manuscript.

Conflict of Interests: The authors did not report any conflict of interest.

Ethical Approval: The protocol of this study was approved by the Ethics Committee of Kashan University of Medical Sciences (ethics code: IR.KAUMS.NUHEPM.REC.1397.35).

Funding/Support: This research project did not receive any funding.

Informed Consent: All patients signed an informed consent form.

References

1. Slatten K, Hatlevik O, Fagerstrom L. Validation of a new instrument for self-assessment of nurses' core competencies in palliative care. *Nurs Res Pract*. 2014;**2014**:615498. [PubMed ID: 25132989]. [PubMed Central ID: PMC4124716]. https://doi.org/10.1155/2014/615498.
2. Karimyar Jahromi M. [Nurses' Quality of Performance in Intensive Care Units based on Synergy Model]. *Iran J Nurs*. 2013;**26**(82):74–83. Persian.
3. Whittle R, Shelton J. Outcome from intensive care and measuring performance. *Surgery (Oxford)*. 2015;**33**(4):180–5. https://doi.org/10.1016/j.mpsur.2015.01.012.
4. Giangreco A, Carugati A, Sebastiano A, Tamimi HA. War outside, ceasefire inside: An analysis of the performance appraisal system of a public hospital in a zone of conflict. *Eval Program Plann*. 2012;**35**(1):161–70. [PubMed ID: 21168215]. https://doi.org/10.1016/j.evalprogplan.2010.11.004.
5. Kavoosi Z, Ghaderi AR, Moeenizadeh M. [Psychological Well-Being and Job Performance of Nurses at Different Wards]. *Res Clin Psychol Couns*. 2014;**4**(1):175–94. Persian. https://doi.org/10.22067/ijap.v4i1.37465.
6. Hayajneh YA. *Identification of the influence of organizational variables on hospital staff nurses' job performance [dissertation]*. Iowa City, Iowa: The University of Iowa; 2000.
7. Hosseini M, Sedghi Goyaghaj N, Alamadarloo A, Farzadmehr M, Mousavi A. [The relationship between job burnout and job performance of clinical nurses in Shiraz Shahid Rajaei hospital (thruma) in 2016]. *J Clin Nurs Midwifery*. 2017;**6**(2):59–68. Persian.
8. Khalifehzadeh A, Tavasoli AA, Golshahi J, Sanei H, Mirdehghan A, Payehdar Z, et al. Synergy model in clinical teaching of critical care among MSc students of nursing and patients with cardiovascular diseases. *ARYA Atheroscler J*. 2012;**7**(Special Issue):S106–10.
9. Torabi A, Setodeh S. [Employees' Attitude about the Annual Performance Evaluation of Faculties Affiliated to Ahvaz University of Medical Sciences in 2007, Iran]. *J Health Adm*. 2010;**12**(38):17–22. Persian.
10. Khalifehzadeh A, Karimyar Jahromi M, Yazdannik A. The impact of Synergy Model on nurses' performance and the satisfaction of patients with acute coronary syndrome. *Iran J Nurs Midwifery Res*. 2012;**17**(1):16–20. [PubMed ID: 23492835]. [PubMed Central ID: PMC3590689].
11. Hassan H, Durai R, Marzuki M, Panduragan S, Mat S. The relevance of staff performance evaluation in a pre - existing nursing environment: Everything is New to Everyone. *J Behav Health*. 2013;**2**(1):87–93. https://doi.org/10.5455/jbh.20120621074822.
12. Yuxiu P, Kunaviktikul W, Thungjaroenkul P. Job characteristics and job performance among professional nurses in the university hospitals of people's Republic of China. *CMU J Nat Sci*. 2011;**10**(2):171–80.
13. Ghamari Zareh Z, Anoosheh M, Vanaki Z, Hagi Zadeh E. [Quality of Nurse's Performance and Patients' Satisfaction in Cardiac Care Units]. *Zahedan J Res Med Sci*. 2008;**10**(1). Persian. e92295.
14. Toulideh Z, Sadeghifar J, Nasiripour A, Roshani M. [Relationship between mechanisms of services compensation and job performance among nurses]. *Nurs Midwifery J*. 2016;**14**(3):282–90. Persian.
15. Khoeiniha F, Sheikhi MR, Shokati AM, Mohammad Poor A. [Nurses' clinical performance assessment in critical care units in teaching and non-teaching hospitals in Qazvin city: Based on Synergy Model]. *J Health Promot Manag*. 2016;**5**(3):28–36. Persian.
16. Alizadeh M, Iremlow A, Alizadeh B, Shakibi A, Aliloo L. [A survey to examin the emergency nurses operation & comparing it with international standards in the hospital of urmia medical sciences university]. *Nurs Midwifery J*. 2010;**8**(3):156–61. Persian.
17. Chan CH, Chan TN, Yuen MC, Tung WK. Evaluation of a simulation-based workshop on clinical performance for emergency physicians and nurses. *World J Emerg Med*. 2015;**6**(1):16–22. [PubMed ID: 25802561]. [PubMed Central ID: PMC4369525]. https://doi.org/10.5847/wjem.j.1920-8642.2015.01.003.
18. Sawaengdee K, Kantamaturapoj K, Seneerattanaprayul P, Putthasri W, Suphanchaimat R. Self-assessment of nursing competency among final year nursing students in Thailand: a comparison between public and private nursing institutions. *Adv Med Educ Pract*. 2016;**7**:475–82. [PubMed ID: 27563265]. [PubMed Central ID: PMC4984689]. https://doi.org/10.2147/AMEP.S111026.
19. Bahreini M, Moattari M, Kaveh MH, Ahmadi F. [Self assessment of the clinical competence of nurses in a major educational hospital of Shiraz University of Medical Sciences]. *Pars Jahrom Univ Med Sci*. 2010;**8**(1):28–36. Persian. https://doi.org/10.29252/jmj.8.1.28.
20. Nabizadeh-Gharghozar Z, Alavi NM, Ajorpaz NM. Clinical competence in nursing: A hybrid concept analysis. *Nurse Educ Today*. 2021;**97**:104728. [PubMed ID: 33348301]. https://doi.org/10.1016/j.nedt.2020.104728.
21. Khorashadizade F, Haghighi R, Izadfar A, Javanvash Z, Farahdel M, Gholami A, et al. [Assessment of Nurses' Clinical Competency in Imam Hasan Hospital, Bojnurd, Iran]. *J North Khorasan Univ Med Sci*. 2019;**11**(2):66–72. Persian. https://doi.org/10.52547/nkums.11.2.66.
22. Moskoei S, Mohtashami J, Ghalenoeei M, Nasiri M, Tafreshi MZ. Development and psychometric properties rating scale of "clinical competency evaluation in mental health nurses": Exploratory factor analysis. *Electron Physician*. 2017;**9**(4):4155–61. [PubMed ID: 28607650]. [PubMed Central ID: PMC5459287]. https://doi.org/10.19082/4155.
23. Atmani M, Jasemi Khalyani M, Radfar M, Khalkhali H. [Investigating the Relationship between Perception of Clinical Learning Environment with Clinical Competence in Nursing Students of Urmia University of Medical Sciences in 2019]. *Nurs Midwifery J*. 2021;**19**(6):427–36. Persian. https://doi.org/10.52547/unmf.19.6.427.
24. Soroush F, Zargham-Boroujeni A, Namnabati M. The relationship between nurses' clinical competence and burnout in neonatal intensive care units. *Iran J Nurs Midwifery Res*. 2016;**21**(4):424–9. [PubMed ID: 27563328]. [PubMed Central ID: PMC4979268]. https://doi.org/10.4103/1735-9066.185596.
25. Department of Health UK. *Responsibility and Accountability Moving on from New Ways of Working to a creative, capable workforce Best practice guidance*. 2010. Available from: https://www.scribd.com/document/293902622.
26. Bahreini M, Moatary M, Akaberian S, Mirzaie K. [Determining nurses' clinical competence in hospitals of Bushehr University of Medical Sciences by self assessment method]. *Iran South Med J*. 2008;**11**(1):69–75. Persian.
27. Ebadi A, Tabanejad Z, Pazokian M, Saeed Y. [Clinical Competence among MSc Students of Critical Care Nursing]. *Iran J Med Educ*. 2015;**14**(12):1036–46. Persian.
28. Bahreini M, Moattari M, Kaveh MH, Ahmadi F. [A Comparison of Nurses' Clinical Competences in Two Hospitals Affiliated to Shiraz and Boushehr Universities of Medical Sciences: A Self-Assessment]. *Iran JMed Educ*. 2010;**10**(2):101–10. Persian.
29. Namadi-Vosoughi M, Tazakkori Z, Habibi A, Abotalebi-Daryasari G, Kazemzadeh R. [Assessing Nursing Graduates' Clinical Competency from the Viewpoints of Graduates and Head Nurses]. *J Health Care*. 2014;**16**(1):66–73. Persian.

30. Meretoja R, Isoaho H, Leino-Kilpi H. Nurse competence scale: development and psychometric testing. *J Adv Nurs*. 2004;**47**(2):124–33. [PubMed ID: 15196186]. https://doi.org/10.1111/j.1365-2648.2004.03071.x.
31. Adib Hajbaghery M, Eshraghi Arani N. [Assessing Nurses' Clinical Competence from Their Own Viewpoint and the Viewpoint of Head Nurses: A Descriptive Study]. *Iran J Nurs*. 2018;**31**(111):52–64. Persian. https://doi.org/10.29252/ijn.31.111.52.
32. Shannon SE, Mitchell PH, Cain KC. Patients, nurses, and physicians have differing views of quality of critical care. *J Nurs Scholarsh*. 2002;**34**(2):173–9. [PubMed ID: 12078543]. https://doi.org/10.1111/j.1547-5069.2002.00173.x.
33. Zaman Zadeh V, Moghadasiyan S, Vali Zadeh L, Haghighi Khoshku N. [Comparing the patients and nurses viewpoints about the nursing care quality Offered in educational hospital]. *Nurs Midwifery J*. 2004;**1**(2):4–12. Persian.
34. Goliroshan S, Babanataj R, Aziznejadroshan P. Investigating the Self-Assessment of Clinical Competency of Nurses Working in Babol University of Medical Sciences Hospitals. *World Fam Med J/Middle East J Fam Med*. 2018;**16**(3):274–9. https://doi.org/10.5742/mewfm.2018.93331.
35. Jaffari Golestan N, Vanaki Z, Memarian R. [Organizing "Nursing Mentors Committee": an Effective Strategy for Improving Novice Nurses' Clinical Competency]. *Iran J Med Educ*. 2008;**7**(2):237–47. Persian.
36. Karami A, Farokhzadian J, Foroughameri G. Nurses' professional competency and organizational commitment: Is it important for human resource management? *PLoS One*. 2017;**12**(11). e0187863. [PubMed ID: 29117271]. [PubMed Central ID: PMC5678726]. https://doi.org/10.1371/journal.pone.0187863.
37. Kim MJ, Kim YJ. Variables Affecting Nursing Competency of Clinical Nurses. *Indian J Sci Technol*. 2015;**8**(26):1–9. https://doi.org/10.17485/ijst/2015/v8i26/80758.
38. Lakanmaa RL, Suominen T, Ritmala-Castren M, Vahlberg T, Leino-Kilpi H. Basic Competence of Intensive Care Unit Nurses: Cross-Sectional Survey Study. *Biomed Res Int*. 2015;**2015**:536724. [PubMed ID: 26557676]. [PubMed Central ID: PMC4628747]. https://doi.org/10.1155/2015/536724.
39. Rizany I, Hariyati RTS, Handayani H. Factors that affect the development of nurses' competencies: a systematic review. *Enferm Clin*. 2018;**28**(Suppl 1):154–7. https://doi.org/10.1016/s1130-8621(18)30057-3.
40. Saeki K, Izumi H, Uza M, Murashima S. Factors associated with the professional competencies of public health nurses employed by local government agencies in Japan. *Public Health Nurs*. 2007;**24**(5):449–57. [PubMed ID: 17714229]. https://doi.org/10.1111/j.1525-1446.2007.00655.x.