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Original Article

Evaluation of the clinical competency level among nurses working in Kermanshah University of Medical Sciences affiliated hospitals

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ABSTRACT

Introduction: Nurses form build up the greatest portion of health care providers and play a central role in maintaining medical care. Determining the clinical competence level of nurses is an important issue in maintaining standards of care, identifying the educational needs and professional development of nurses. Therefore, the aim of this study was to determine the clinical competency level of nurses who work in Kermanshah University of Medical Sciences affiliated hospitals, in 2014.

Methods: This cross sectional study was conducted on 204 nurses working in five educational hospitals affiliated to Kermanshah University of Medical Sciences. Samples were selected based on cluster randomization. The study instruments included demographic information questionnaire and Benner Clinical Competence Questionnaire (CCQ). Data analysis was performed using the SPSS v 16 software.

Results: The mean and standard deviation for age and work experience of the subjects were 33.55 ± 6.17 and 9.31 ± 5.74 years, respectively. The mean and standard deviation of the total clinical competency score was 69.56 ± 10.74. The mean score for helping the patient component was 68.11 ± 14.06, training and guidance component was 69.81 ± 11.63, diagnostic measures component was 70.65 ± 15.5, management skills component was 71.04 ± 12.63, therapeutic measures component was 70.56 ± 12.47, quality assurance was 68.32 ± 14.59, and occupational and organizational tasks component was 70.85 ± 11.81.

Conclusion: The clinical competence of most samples was categorized as good. According to the results of this study, researchers suggest that clinical competency assessment of nurses should be programmed and performed annually.

Introduction

The term competency is originated from the old French and Latin language, which means being suitable, relevant, having adequate ability and quality, or having the capacity to act in a proper manner (1). This concept coincides with the development of the nursing profession during the recent century. The acceptance of nursing as an academic discipline and the supportive findings of various scientific-research led to the inclusion of clinical competency into the field of nursing (2). In 1999, Lenburg identified an operational framework by presenting a conceptual model and ex-

pressed eight key factors for clinical competence (3). Currently, in most developed countries, nurses undergo special evaluations for licensing clinical competence, including National Council Licensure Examination (NCLEX) that demonstrate the importance of this issue (1). Given that nurses are the main compartment of care providers in health care centers and the fact that the desirability and quality of a community health depends largely on the function of this group (4), researchers believe that nurses should have a complex competency combination including knowledge, performance, skills and attitudes to provide high quality service. To this end, different educational approaches have been used

to enhance these practices, including the use of competence-based approach and advanced simulators in nursing schools, to ensure that nurses who could gain the required capabilities would be able to enter the job market (5, 6). Today, the level of clinical competence indicates the educational status of nurses during study and after recruitment (7). Axley states that clinical competence is a necessity for nurses and other health care providers in order to provide safe care, support for community health and increase the credibility of nursing profession (8). Nonetheless, clinical competence is a complex concept that varies according to educational conditions, geographic location, available facilities, and considered disciplines in any country (9). These variations make the definition and explanation of clinical competency confusing (5, 7). Cowan et al. present clinical competence as a general concept that is a combination of knowledge, skills, performance, attitudes and values (5). In Canada, this concept is defined as the ability of a graduated nurse to create permanence and apply knowledge, skills, judgments, and have personal qualities for providing safe care together with maintaining ethical issues(10). Meretoja et al., introduced clinical competency in nurses in three dimensions as the ability of a nurse to act in a particular role, to create a continuum of knowledge, and to apply the obtained knowledge and skills in real life, along with cognitive, emotional and psycho-motor skills along with professional development to reach the final stage of clinical competence (11, 12). Benner relates the difference between nurse specialists and nurses who have not reached the final stage of clinical competence to the difference in their intuitive ability (13) , but the results of other studies in this regards are controversial (14, 15). In Iran, some studies have been conducted on the clinical competence of nurses, most of which were qualitative research, in a grounded theory study in Tehran, Memarian et al. concluded that personal and environmental factors affect clinical competence. Personal factors including experience, knowledge, skills, professional commitment, respect for oneself and others, and environmental factors include effective management, educational system, and technology availability (16). In a qualitative study, Khamiran et al. attributed the process of developing clinical competence to six factors including experience, opportunities, environment, personality traits, motivation and theoretical knowledge (17), and Bahraini et al. (2011) assessed the nurses' clinical competence in two level 1 and 2 hospitals and reported that nurses in level 1 hospital had more clinical competency compared to the nurses who worked in level 2 hospital (18).Considering the importance of clinical competence in nurses and the lack of information in this regard in Iran (18, 19), the present study was conducted to evaluate the clinical compe-

tence and its correlation with demographic characteristics among nurses who work in hospitals affiliated to Kermanshah University of Medical Sciences.

Methods

In this cross sectional study, the research population consisted of all nurses who worked in hospitals affiliated to Kermanshah University of Medical Sciences. Samples from 5 hospitals were selected based on cluster randomization using equal groups. The sample size was calculated using the appropriate equation (20) considering the level 95% confidence interval and 90% power based on correlation coefficient (r) obtained from similar studies (11, 21). The study instruments included demographic information questionnaire and Benner Clinical Competence Questionnaire (CCQ). Demographic information included the characteristics of subjects including age, sex, hospital workplace, educational degree, work experience and current work status. The tool for self-assessment of the Benner Clinical Competence consisted of 73 items in 7 domains, the design and psychomotricity of the instrument were previously performed by Meretoja et al. in 2004 and its psychometric validity was confirmed on a sample of 498 nurses (22, 23). Validity and reliability of the Persian translate of the questionnaire were assessed by Bahraini et al. (2010). The internal consistency of the classes were reported to range between 0.75 and 0.89 (24). This instrument examines the nursing skills in 7 domains, including helping the patient (seven items), training and guidance (sixteen items), diagnostic measures (seven items), management skills (8 items), therapeutic measures (10 items), quality assurance (6 items), and occupational and organizational tasks (18 items). For each skill, a score between 0 and 100 is calculated, each person writing the corresponding number based on his/her skill level. For each class, the mean score of the items was calculated, and the average score of all skills was calculated as the total score. The total score and the average for each skill was recorded for each subject. Each item was rated based on a 4-point Likert Scale (never, rarely, sometimes and always). In this study, the internal consistency of the questionnaire was assessed by calculating the Cronbach's alpha (0.87-0.94 for various classes and 0.97 for the whole instrument). The questionnaire score was categories into poor (score 0-25), moderate (score 25.1-50), good (score 50.1-75) and excellent (score 75.1-100) based on previously reported cut-offs. The study protocol was approved by the Research Center of Kermanshah University of Medical Sciences. Data collection was performed by referring to the workplace of the research samples. After explaining the research goals and assuring the anonymity and confidentiality of the informa-

tion, informed consent was obtained from the subjects. The questionnaires were then completed as self-report by the subjects. The collected data were entered into the SPSS v16 software. Data analysis was performed by using descriptive tests (mean, frequency, and percentage frequency) and analytical tests (Spearman correlation tests). Normality of quantitative variables was checked by Kolmogorov-Smirnov (KS) test. The KS test showed that the clinical competency variable was not normally distributed (P = 0.012), therefore, non-parametric tests were used to examine the relationship between clinical competence and other variables. The significance level of the tests was considered as p<0.05.

Results

From the 213 questionnaires, 9 (4.23%) were incomplete and were excluded. The statistical analysis was performed on 204 subjects (95.77%). Among the study subjects, 143 (70.1%) were female. The mean and standard deviation for age and work experience were 33.55 ± 6.17 and 9.31 ± 5.74 years, respectively. Majority of subjects were between 30 and 39 years old. More than half of the subjects (56.4%) were married, 62.3% were contractual employee, and 88.2% were standard nurses, 85.8% had B.S. degree in nursing. Majority of subjects (49.5%) were working in Imam Reza Hospital (Table 1). The mean and standard deviation of the total clinical competency score was 69.56 ± 10.74. The mean score for each component included was 68.11 ± 14.06 for helping the patient component, 69.81 ± 11.63 for training and guidance component, 70.65 ± 15.5 for diagnostic measures component, 71.04 ± 12.63 for management skills component, 70.56 ± 12.47 for therapeutic measures component, 68.32 ± 14.59 for quality assurance component, and 70.85 ± 11.81 for occupational and organizational tasks component. The clinical competence of most subjects was at a good level (132, 64.7%), and only 30.4 % were categorized as excellent level (Table 1). Regarding the type of clinical competency, no significant difference was observed between categories of gender, marital status, post, and level of education. Nurses who had the job plan had a lower average clinical competency rating compared to other

groups (Table 2). As shown in table 3, the average clinical competence score in management skills and occupational tasks were higher than other factors, but the use of helping skills was higher in relation to the use of these factors. Spearman correlation test showed that there was a positive and significant correlation between clinical competency and age (P=0.003), and work experience (P=0.006) in the current section (Table 4).

Discussion

In this study nearly 64 % of the nurses had good clinical competency level and only 30 % had excellent clinical competency level. In contrast to the findings of our study, in a study by Takase in Japan the level of clinical competency of nurses was reported to be lower than the current study (3.64 from a maximum score of 7). Furthermore, the study reported that the nurses were more competent in ethical domain and the least scored domain was managerial ability (25). In another study conducted by Namadi-Vosoughi et al. in Ardabil-Iran, 76.6 % of nurses had good and excellent clinical competence, but, in contrast to our results, the competence in management and leadership were the least scored level (26). Adib Hajbaghery and Eshraghi Arani implemented a study in Kashan, on 145 nurses and concluded that about two-third of nurses had good and excellent clinical competence (27), however the mean number of clinical competency score was more than the current study (78 vs.69). Other researches also showed controversies in their results, for example, the reported mean clinical competency in Komeili Sani et al. (28) study in Ahwaz was 61.15, and in Naji and Khanian was 70.09 (29). The differences between the different researches may be related to the following reasons, one reason is the applied instrument for evaluating clinical competence. Most of the Iranian researchers, as well as in our study, the Mertoja et al. scale was used (22). This scale has 73 items and its scoring is from 0 to 100, however, in Takase research (25), the Holistic Nursing Competence Scale was used, that has five factors and 36 items with score ranging from 1 to 7. Namadi-Vosoughi et al. (26) used a researcher-made instrument with different factors in comparison to our study. Oth-

Table 1. Clinical competency level of nurses working in the hospital affiliated to Kermanshah University of Medical Sciences

Clinical competency level	Frequency	Percent
Poor (0-25)	0	0.0
Moderate (25.1-50)	10	4.9
Good (50.1-75)	132	64.7
Excellent (75.1-100)	62	30.4
Total	204	100

Table 2. Demographic characteristics of the nurses employed in the hospital affiliated to Kermanshah University of Medical Sciences in 2014

Variables		Number	Percent
	20-29	53	26
	30-39	113	55.4
Age	Above 40	38	18.6
Marital status	Married	115	56.4
	Single	89	43.6
	Work plan	27	13.2
	Official	44	21.6
Employment status	Official test	6	2.9
	A treaty	127	62.3
	Matron	3	1.5
	Supervisor	8	3.9
Current position	Head nurse	13	6.4
	Clinical nurse	180	88.2
Degree of education	BSc	175	85.8
	MSc	29	14.2
	Farabi	23	11.3
	Amam Ali	31	15.2
	Taleghani	25	12.3
Hospital is the place of activity	Imam Reza	101	49.5
	Imam Khomeini	24	11.8

Table 3. Mean and standard deviation of clinical competence and its components of nurses working in the hospitals affiliated to Kermanshah University of Medical Sciences in 2014

Variables	Mean	Standard deviation	Rang
Number of helping	68.11	14.06	31.42-98.57
Training and guiding	69.81	11.63	33.75-97.18
Diagnostic actions	70.47	12.50	20.00-100.00
Managerial ability	71.47	12.63	42.50-98.75
Therapeutic actions	70.56	12.47	20.00-97.50
Quality assurance	68.32	14.59	8.33-98.33
Job and organization duties	70.85	11.81	36.58-97.89
Use of helping skill	63.08	16.78	14.28-99.99
Use of training and guiding skill	59.36	15.89	16.66-95.82
Use of diagnostic actions skills	59.78	19.12	4.76-99.99
Use of therapeutic actions	62.77	17.46	19.99-99.99
Use of quality assurance	56.85	19.04	5.55-99.99
Use of job duties	61.07	14.43	0.00-99.99
Total number of clinical competency	69.56	10.74	38.77-95.41

Table 4. Relationship between demographic variables and clinical competency of the nurses

Variable		Mean rank	Statistical tests
Sex	Male	110.01	Z=1.188, P= 0.235
	Female	99.30	
Education	BSc	101.35	Z= 0.683 , P= 0.495
	MSc	109.43	
Marital status	Married	102.83	K2= 0.564, P= 0.905
	Single	99.73	
	Divorced	111.07	
	Widow	112.25	
Employment status	Work plan	79.76	K2= 8.246, P= 0.041
	Permanent	118.83	
	Official-trial	123.42	
	Contract	100.69	
Current position	Matron	106.33	K2= 4.461 P= 0.216
	Supervisor	143.63	
	Head nurse	110.65	
	Nurse	100.02	
Age			r=0.208, P=0.003
Work history			r=0.191, P=0.006
Work history in current unit			r=0.078, P=0.270

er reasons that may affect nurses' clinical competence include demographic characteristics of the subjects for instance education level, age and work experiences. In this regard, in Takase study (25), the level of education in more than 45% of the nurses was diploma, another study showed that clinical competence of nurses was related to work history and age (30). Adib Hajbaghery and Eshraghi Arani declared that in-service workshops could enhance the clinical competency (27), these declarations were confirmed in a systematic review by Rizany et al., where the effect of work experiences, nursing environment and educational level on competency were remarkable (31). It seems that some factors including quality of workshops were different in various settings, which may determine the variety in clinical competency level of nurses. This effect demands further studies. In this study, the highest score of clinical competence was in terms of management skills, which is very important in the management of nursing services and communication in the workplace and also among staff and patients, while the lowest score was related to use of quality assurance. This finding was in accordance with the findings of Adib Hajbaghery and Eshraghi Arani (27). In contrast to the findings of our study, the head nurses in Namadi-Vosoughi et al. study, declared that the lowest scored competency component was related to managerial ability (26). The differences between the findings of our study and the previous study may be attributed to demographic characteristics of the subjects and type of evaluation, as in Namadi-Vosoughi et al. study (26), subjects were early graduated nurses who were evaluated by head nurses. Regarding the quality assurance, as this managerial concept is approximately a new issue in risk management, it was not included properly in nursing knowledge (32), and therefore, nurses should be taught about the disciplines regarding quality assurance and therefore, there is a need to stablish new standards.

Conclusion

The results of this research showed that the clinical competency of most of nurses was good, and managerial ability component obtained the highest score, therefore, it is suggested the continuing workshops be directed in order to improve clinical competence of nurses, especially about enhancing the use of quality assurance and managerial ability of nurses. Furthermore, it is recommended that further researches be conducted to evaluate the relationship between the clinical competency of nurses and satisfaction of patients, as well as, conducting interventions to improve this fundamental issue in nursing practice.

Ethical disclosure

The study was approved by Research Deputy of Kermanshah University of Medical Sciences, the verbal informed consent was taken from the subjects, and they assured about confidentiality and anonymity of personal information

Author contributions

The designing of the project was conducted by AA and AF, data collection was done by AF and SK. AA contributed in data analyses and AA, AF and SK wrote the paper and the final draft was approved by them.

Conflict of interest

The authors declare there is no conflict of interest

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