Research Journal of Medical Sciences 10 (4): 406-411, 2016
ISSN: 1815-9346

Clinical and Professional Competence of Practicing Nurses in Intensive and Critical Care Units

[1]Alireza Ghahrisarabi, [2]Ali Asghar Shouryabi,[3]Sima Zohari Anboohi,
[4]Malihe Nasiri and [3]Maryam Rassouli
[1]Department of Anesthesia and Operating Room, Faculty Nursing and Midwifery,
Nursing and Midwifery College,
[2]Nursing and Midwifery College, Shahid Beheshti University of Medical Sciences, Tahran, Iran
[3]Facult of Nursing and Midwifery, Nursing and Midwifery College,
[4]Department of Biostatistics, Faculty of Paramedical,
Shahid Beheshti University of Medical Sciences, Tahran, Iran

Abstract: The need for providing nursing cares in complicated situations specifically in the intensive and critical care units, shows the nurses'sclinical and professional competence importance in such units. Based on it, the present study was performed to determine the ratio of the nurses's clinical and professional competence in the Intensive and Critical Care Units. In this cross-sectional study, to hundred and eighty nine nurses of Intensive and Critical Care Units from nine hospitals in ShahidBeheshti University of Medical Sciences were selected by census. The tools for data gathering were a demographic questionnaire and The Intensive and Critical Care Nursing Competence PersianScale-Version 1 is a self assessment test that consists of 144 items and four domains which are knowledge base, skill base, attitudesand valuesbase and experience base, that is divided into clinical competence and professional competence. Original version of the scale was translated from English to Persian language using Wild method and psychometric properties was tested. The SPSS-PC (V. 21) was used to analyze the data.For determine deferent indices of descriptive statistics were usedFrequency statistics, mean, mode, Standard deviation, in order to determining a significant difference between the means was used ANOVA and to determine the relationship between variables was used Pearson correlation coefficient. Meaningfulness level was considered $\alpha = 0.05$. The results indicated that the most casesof the nurses were female, married, holder of Bachelor'sdegree, Formal employment, the age range 31-38, shift rotation, work experience average 11.2 year, an average of 7.6 years of experience in Intensive and Critical Care Nursing. The results of study, showed the nurses's clinical and professional competence were 25% good and 75% excellent. Between underlying factors such as age, nurses's work experience and experience in Critical Care Nursing with clinical competence and professional nurses was a significant positive relationship. But between the clinical and professional competencein between women and men, there was no significant difference. The results revealed that the highest percentage of the studied units in four aspects (knowledge, skill, attitude and value, experience) was at excelent. According to nurses specifically in intensive care units and based on this study finding are recommended that the clinical and professional competence of the nurses be assessed annually and results be used for incentive programs, nurses rating and staffing deployment.

Key words: Competency, clinical competency, professional competency, nurse, intensive care

INTRODUCTION

Intensive Care Unit is one of the vital and essential departments in hospitals that admit patients in severe condition (Karimyar, 2013) as well as patients with acute ailment (Lakanmaa *et al*., 2014a) and injured patients, facing risk of death (Karimyar, 2013). They are attended to by expert physicians and qualified nurses under the best available condition with the newest technologies and best available equipment. Due to the rapid growth of science and technology, today Intensive Care Units have become as specialized and Complex placesand stressful work environment. Nurses which are the largest group of service provider in health systems (Adib and Ahmadi, 2003; Negarandeh and Khosravinezhad, 2013) are the largest professional group in the intensive care units (Lakanmaa *et al*., 2014a, b).

Due to the complexity increasing of health care, care providing to critical patients by nurses needs to special expertise. Changes in the properties of health care centers,

Corresponding Author: Alireza Ghahrisarabi, Department of Anesthesia and Operating Room, Faculty Nursing and Midwifery Nursing and Midwifery College, Shahid Beheshti University of Medical Sciences, Tahran, Iran

advancement of technology and use of new methods of care in intensive care units (Ramezani *et al*., 2010), change in technology and operation (Negarandeh and Khosravinezhad, 2013), understanding of patients , age of society , the process of incurable diseases and changes in cultural and moral factors have increased The Clinical complexity and importance of nurses.

Competence in nursing has strong relations with reduction in medical errors, nosocomial infections, mortality, postoperative complications and unplanned extubation (Lakanmaa *et al*., 2014b), safe performance, quality of care, patients' satisfactio, especially in intensive care units (Negarandeh and Khosravinezhad, 2013). Nurses are encouraged to increase their level of skills, information retrieval, critical thinking and self-learning by determining their level of competence. Competence is a reflection of the knowledge, critical thinking, interpersonal and technical skills that professional people brings to any professional practice situation (Applin *et al*., 2011).

Assessment of clinical competence has very important role in managing caregiver processes, provide optimal care, access to care goals, recognize of areas that need to be improved, determine nurses' educational needs and care safety (Meretoja and Kilpi, 2003). It isas far as the core of quality assurance systems, workforce planning and human resource managementand is considered the key responsibilities of the nurse managers in clinical environments (Bahreini *et al*., 2010). Clinical Competency is complex and ambiguous concept (Ghalje and Ghaljae, 2008) and is difficultto study as a special attribute to judge the adequacy or ability of individuals or modes of an activity (Applin *et al*., 2011). From 1999 so far (yet), nurses's clinical competence evaluationis consideredas a basic issue in this field (Girot, 2000).

Across the international nursing community, it is accepted that good knowledge, skills and competence of nurses are vital to ensure the quality of patients' care (Fulbrook *et al*., 2012) and is an urgent need for competence assessment in health care and need for work development. Intensive care nursing is a nursing specialty that has its own nature andrequires special competence. Theoretically, basic competence is divided into clinical competence in direct patient care and professional competence related to the profession in general. Furthermore, clinical competence is divided into three categories: principles of nursing care, clinical guidelines and nursing interventions. Professional competence is divided into four categories: ethical activity and familiarity with health care laws, decision-making and work development and collaboration.The nature of intensive care nursing is continuously evolving which is why competence in this field needs to be assessed constantly (Lakanmaa *et al*., 2014a, b).

Furthermore, the growing nursing workforce shortage also sets demands on competence assessment in clinical practice (Cowan *et al*., 2008; Salonen *et al*., 2007). Benner believes selfassessment is best approach in clinical competence evaluation method (Namadi *et al*., 2014) self-assessment allows to nurses considertheir clinical practice in work environment and act forit's improve and also a more active role playsin their learning process and continuous learning facilitate through the rethinking process (Hannigan, 2001). A review of studiesin the field of nurse's clinical competence evaluation indicates the increasing attention of researchers to this topic and use different tools and methodsfor assess their clinical competence level (Campbell and Mackay, 2001).

Meretoja and Kilpi (2003) used from the self-assessment method to assessnurse's clinical competence of 593 registered nurses in different university hospital work environments in Finland. In this study nurses evaluated their overall level of competence as good. Between age and length of work experience with overall level of competence, were positive correlation (Meretoja *et al*., 2004). In another study of the Meretoja and Kilpi (2003) to investigate the comparison of competence by nurse managers and 118 practicing nurses in a hospital in Finland. Managers evaluated the overall level of competence higher than the nurses themselves. There was a high correlation between the evaluation of managers and nurses.

Numminen *et al*. (2013) in study assessed professional competence of 2083 practicing nurses in a major university hospital in Finland. The overall level of competence of nurses was good. The quality of action correlated positively with the frequency of action. Age and particularly work experience were positively correlated with the level of competence. In study of Unkuri *et al*. (2014), graduating nursing students evaluated, their level of clinical competence by self-assessment. Overall competence was good level (Unkuri *et al*., 2014). In this regard, Lakanmaa *et al*. 2014a) assessed basic competence of 139 graduating nursing students in Finland, 69% of students reported their basic competence good. In this study, experience field for graduating nursing students was removed (Lakanmaa *et al*., 2014b).

Salonen *et al*. (2007) surveyed of 235 registered nursesclinical competence working in intensive and emergency settings in Finland. Nurses' evaluated competence level ranged from moderate to good by selfassessment. In this study is mentioned the lack of research in the field of clinical competence in various

clinical environments. They reported statistically significant relationship between the level of competence with age, length of work experience and the frequency of using competencies.

In Iran, Bahreini *et al.* (2010) compared 190 nurses clinical competence in hospitals of Boushehr university of Medical Sciences by census method. Results revealed clinical competence was not desirable in "teaching-coaching" and "ensuring quality" which indicates the need for more attention in this field. Bahreini *et al.* (2008) conducted the other study (cross-sectional), as self-assessment of the nurses' clinical competence in a major educational hospital of Shiraz university of medical sciences by the census method. They evaluated clinical competence of 240 registered nurses in different wards of one of the most important hospitals of Shiraz by self-evaluation method. Nurse Competence Scale was used to collecting data. This tool is a 73 item questionnaire organized in to seven competence categories. The level of nurses' clinical competencies investigated through Visual Analogue Scale (0-100) and their clinical skills application via a 4 degree Lickert Scale. The results showed that nurses in cardiac care unit considered their competence level higher than other nerses. Based on the results, 84% of nursing skills were used occasionally or frequently by nurses in this hospital (Bahreini *et al.*, 2010).

Namadi *et al.* 2014 assessed 70 graduate nurses' clinical competence from the graduating nurses and head nurses' view points. Results appeared the mean score of clinical competencies perceived by graduating nurses was significantly higher than those reported by head nurses in all domains, except caring and professional development. It appears that current educational programs provide opportunity to improve graduates' clinical competence but they are not enough (Namadi *et al.*, 2014).

The study's results of Shateri that conducted to determine the level of nurses clinical competence in intensive care units on Tehran University Hospitals, revealed that the competence ratio of 22.8% of nurses working in the ICUs was at weak level, 67% at medium level and 9.8% at the strong level. Note on the above studies have been clinical competence evaluation of graduating nursing students and nurses in hospitals public wards and lack of information felt on this issue among nurses working in intensive care units and the awareness level is low of educational needs, the level of clinical competence and the utilization of knowledge at the clinic, in the intensive care units. Studies in this category haven't been according to the importance of the issue.

Few studies have been in this field in Iran and Attention to the issue of clinical competence is felt increasingly in recent years (Karimyar, 2013). In this context, this study was conducted to determine the level of clinical and professional competence of practitioner nurses in intensive care units of hospitals on Shahid Beheshti University of Medical Sciences 2015-2016, until to investigate the present situation and step in the selection of competent and efficient staff which ultimate to improves the quality of care and other beneficial effects.

MATERIALS AND METHODS

In this cross-sectional study, clinical and professional competence of 430 practitioner nurses in intensive care units was assessed (ICU, CCU, Dialysis) in 10 selected hospitals affiliated to Shahid Beheshti University of Medical Sciences, by census method in 2015-2016. Inclusion criteria included a desire to participate in the project, with at least a bachelor's degree and employment as a nurse in the intensive and critical care units.

The tools for data gathering were the demographic questionnaire include: age, sex, training level , work experience in nursing , work experience in intensive care nursing, marital status, hours average worked per week, work shift and The Intensive and Critical Care Nursing Competence Persian Scale Version 1. This scale by Lakanmaa *et al.* (2014a) was developed and psychometric to assess basic competencies in intensive and critical care nursing.

The Intensive and Critical Care Nursing Competence Scale version-1 (ICCN-CS-1) is a self-assessment test consisting of 144 items and four domains which are knowledge base, skill base, attitudesand valuesbase and experience base. Basic competence is divided into patient-related clinical competence and general professional competence. In addition, basic competence is comprised of knowledge base, skill base, attitude and value base and experience base. Each domain contains 36 items. Each item is on a 5-point Likert score, with 1 = very poor and 5 = very good score. Scores on the scale can be classified as poor competence (= 1, 144-288, Likert 1-2* 144), moderate competence (= 2, 289-432, Likert 2-3* 144), good competence (= 3, 433-567, Likert 3-4* 144) or excellent competence (= 4, 577- 720, Likert 4-5* 144).

Ghahrisarab *et al.* (2015) in another study assessed psychometric properties of the Persian version above-mentioned scale.In that study after electronic communication and approval by the scale developer, the translation and psychometric scale process

commencedaccording to the method suggested by Wild *et al*. 2005. Face and content validity were reviewed qualitatively and was confirmed by 10 experts (members of Shahid Beheshti Faculty ofNursing and Midwifery) and 10practitioner nurses invarious intensive care units. The results of factor analysis, factor loading of items were between0.304 and 0.727 itemswas estimated; only 7 items out of 144 items that were loaded was <due tohigh cronbach's alpha coefficient (0.984-0.986), 4 subscales of original scale was confirmed. For assess of reliability, internal reliability of the total scale was determined by alpha cronbach coefficient 0.98 and 0.93-0.96 or its four subscales. The consistency of the scale with a two week interval was r = 0.86 (Ghahrisarabi *et al*., 2015).

The intensive and critical care nursing competence Persian scale Version 1 was completed by nurses to selfassessment method. Each basic competence item is assessed on a (5-point) Likert scale (1 very poorly to 5 very well). For compliance of ethical considerations, consent forms were distributed to the participants with a page explaining the purpose and the methods of the study and providing assurance regarding the anonymity, voluntary and confidential nature of the response. Final, overall mean score of clinical and professional competence and mean score of clinical and professional competence were determined in each domain.Research data was analyzed using SPSS Statistical Software, Version 21. For determine deferent indices of descriptive statistics, were used frequency statistics, mean, mode, Standard deviation, in order to determining a significant difference between the means was used ANOVA and To determine the relationship between variables was used Pearson correlation coefficient. Meaningfulness level was considered $\alpha = 0.05$.

RESULTS AND DISCUSSION

The total samples were 432 practitioner nurses inintensive care units of which 143 participants did not complete the scale and 289 (67%) participants completed the scale in Table 1. The overall mean of intensive and critical care nursing clinical and professional competence level was 618 and mean of clinical and professional competence were in the domain of knowledge base 152.9, skill base 153.6, attitude and value base 162.2 and experience base 153.6. The highest level of clinical competence and professional was the attitude and value base.In this study, between underlying factors such as age, experience in nursing and experience in critical care nursing with nurses clinical and professional competence was a significant positive relationship ($p<0.05$) But considering the amount of p-value = 0.48 in competence and p-value = 0.88 in professional competence, the mean clinical and professional competence In between women and men was no significant difference.

Table 1: Demographic characteristics of the practitioner nurses

Parameter	Category	No.	Percentage
Sex	Female	244	84.4
	Male	45	16.6
Age	22-30	83	28.7
	31-38	99	34.3
	39-46	82	28.4
	>47	25	8.6
Marital status	Single	93	32.17
	Married	192	66.43
	Widowed or divorced	4	1.37
work experience in nursing	1-5	71	24.56
	6-10	73	25.25
	11-15	57	19.70
	16-20	63	21.8
	21-25	16	5.53
	>26	9	3.11
work experiencein theintensive care nursing	1-5	136	47.00
	6-10	66	22.83
	11-15	56	19.37
	16-20	29	10.00
	21-25	1	0.34
	>26	1	0.34
Education level	Graduate	257	89.00
	Postgraduate	32	11.00
	PHD	0	0.00
work shift	Morning	37	12.80
	Evening	1	0.34
	Rotation	251	86.90
Overtime average worked per month	<20	1	0.340
	20-40	51	17.70
	41-60	216	74.70
	61-80	14	4.80
	81-100	6	2.00
	>100	1	0.34

The main objective of this study was to determine the clinical and professional competence of practitioner nurses in intensive care units of hospitals affiliated with Shahid Beheshti University of Medical Sciences.Results showed nurses evaluated their clinical and professional competence excellent. McGarvey *et al*. (2000) in their study, reported high levels of clinical competence of practitioner nurses in intensive care units was reasonable compared to other wards. Nurses in intensive and critical units selected often from experienced nurses and have higher abilities because of the specialized, more accurate monitoring, patient-centered care and more facilities (Bahreini *et al*., 2010).

The mean level of nurses 'clinical and professional competence was 618 and standard deviation 40. In this study, nurses had more competence in attitude and value base and the least amount related to knowledge base. This can be caused by the lack of clinical training in the wards and in-service training. The study's results of

Lakanmaa *et al.* (2014b) on basic competence of graduating nursing students showed, 69% of students evaluated, their basic competence good.

Whereas the study's results of Jafari *et al.* (2008) revealed novice nurses' clinical competence was in a primary level and was not optimal situation in one of Tehran's hospitals. Low levels of novice nurses' clinical competencemay be due to non-compliance in nursing curriculum with nursing professional operation in clinical environments or inefficient university education system. But based on Benner comments, less than the novice nurses' clinical competence, can be due few clinical experience of them (Meretoja *et al.*, 2004).

Bahreini *et al.* (2010) evaluated nurses' clinical competence in Clinical different wardrs of a Hospital in Shiraz University of Medical Sciences, by self-assessment method. ResultsShowed between underlying factors such as age, overall work experience and work experience in current ward with clinical competence is no significant relationship, but nurseshad high level competence.

In another study by Bahreini *et al.* (2010) was determined nurses' clinical competence in hospitals of Bushehr University of Medical Sciences by self assessment method. Results showed that nurses's competence was good and the skills utilization frequency had a positive correlation with the clinical competence. Nursing competence level and skills utilization frequency was different in wards and other hospitals.

Aliakbari *et al.* (2014) surveyed emergency nursing competenceto care providing in critical situations with using Objective Structured Clinical Examination (OSCE). They concluded nursing competence level in skills performing was low to moderatebut individual factors such as knowledge, work ethic, responsibility and external factors such as management and in service training can be involved in differences. Qualitative research seemsnecessary to discover the causes and related factors.

Present study findings revealed between underlying factors such as age, work experience in nursing, nursing experience in critical care with clinical and professional competence level was a positive relationship.Results of other studies expressed a positive relationship and significant between these factors and clinical competence level (Salonen *et al.*, 2007; Meretoja *et al.*, 2004). Of the research limitations can be mentioned to Nurses weren't hoping that the research findings to be used in decision-making, so were not interested to scales complete and may effect on accuracy results. However, the researcher believes nurses's self-assessment can createmotivation for thinking and rethinking in nursing care providing. Because of the cross-sectional evaluation, results have less generalizability for policy. Researcher offer nurses' clinical and professional competence evaluationperformed formally and annually and results to be usedto incentive programs, nurses rating and nurses employment in intensive care units.

CONCLUSION

This study has been endeavors to clarify influencing factors onclinical and professional competence by assessing clinical and professional competence in knowledge, skill, attitude and value and experience. Results showed practitioner nurses in hospitals affiliation ShahidBeheshti University of Medical Sciences had high level of clinical and professional competence. This result is consistent with results of previous researches on self-evaluation clinical competence of nurses and nursing students. Of course, nursing educators and nursing managers awareness from nurses clinical and professional competence level provide valuable information for continuing education programs design and ultimately, staff correct distribution in the intensive care units and improving nursing care quality.

Results of this study are nurses assessment of their clinical and professional competence and in this respect may be doubts about the accuracy of the findings. People may have inferiority or grandiosity in their evaluation. However, the results of some studies reveal accuracy of self-assessment finding. Researcher with awareness of this limit, offernurses' clinical and Professional competence evaluations by other colleagues or Objective Structured Clinical Examinations (OSCE) method and Compare their results with self-assessment.

ACKNOWLEDGEMENTS

The present study is a research project approved in Shahid Beheshti University of Medical Sciences (Tehran Iran). Hereby, we express our appreciation to ShahidBeheshti Nursing and Midwifery School officials and also practitioner nurses in wards of intensive and critical units of Hospitals affiliated Shahid Beheshti University of Medical Sciences.

REFERENCES

Adib, H.B.M. and F. Ahmadi, 2003. Clinical decision-making: A way to professional empowerment in nursing. Iran. J. Med. Educ., 3: 3-13.

Aliakbari, F., F. Aein and M. Bahrami, 2014. Assessment competencies among emergency nurses for responding in disaster situation with objective structured clinical examination. J. Health Promotion Manage., 3: 1-12.

Applin, H., B. Williams, R. Day and K. Buro, 2011. A comparison of competencies between problem-based learning and non-problem-based graduate nurses. Nurse Educ., 31: 129-134.

Bahreini, M., M. Moattari, M.H. Kaveh and F. Ahmadi, 2010. Self assessment of the clinical competence of nurses in a major educational hospital of Shiraz University of Medical Sciences. J. Jahrom Univ. Med. Sci., 8: 28-36.

Campbell, B. and G. Mackay, 2001. Continuing competence: An Ontario nursing regulatory program that supports nurses and employers. Nurs. Administration Q., 25: 22-30.

Cowan, D.T., D.J.W. Barnett, I.J. Norman and T. Murrells, 2008. Measuring nursing competence: Development of a self-assessment tool for general nurses across Europe. Int. J. Nurs. Stud., 45: 902-913.

Fulbrook, P., J.W. Albarran, B. Baktoft and B. Sidebottom, 2012. A survey of European intensive care nurses knowledge levels. Int. J. Nurs. Stud., 49: 191-200.

Ghahrisarabi, A.S.A., A.S. Zohari, M. Nasiri and M. Rassouli, 2015. Psychometric Properties of Persian Version of the Intensive and Critical Care Nursing Competence Scale, Version -1(ICCN.-CS.-1). Shahid Beheshti University of Medical Sciences, Tehran, Iran.

Ghalje, M. and F. Ghaljae, 2008. Association between clinical competency and patient's satisfaction from nursing care. J. Shahid Beheshti School Nurs. Midwifery, Vol. 18,

Girot, E.A., 2000. Assessment of graduates and diplomates in practice in the UK-Are we measuring the same level of competence?. J. Clin. Nurs., 9: 330-337.

Hannigan, B., 2001. A discussion of the strengths and weaknesses of reflection in nursing practice and education. J. Clin. Nurs., 10: 278-283.

Jafari, G.N., Z. Vanaki and R. Memarian, 2008. Organizing nursing mentors committee: An effective strategy for improving novice nurses clinical competency. Iran. J. Med. Educ., 7: 237-246.

Karimyar, J.M., 2013. Nurses quality of performance in intensive care units based on synergy model. Iran J. Nurs., 26: 74-83.

Lakanmaa, R.L., T. Suominen, J. Perttila, M.R. Castren and T. Vahlberg *et al*., 2014a. Graduating nursing students basic competence in intensive and critical care nursing. J. Clin. Nurs., 23: 645-653.

Lakanmaa, R.L., T. Suominen, J. Perttila, M.R. Castren and T. Vahlberg *et al*., 2014b. Basic competence in intensive and critical care nursing: Development and psychometric testing of a competence scale. J. Clin. Nurs., 23: 799-810.

McGarvey, H.E., M.G. Chambers and J.R. Boore, 2000. Development and definition of the role of the operating department nurse: A review. J. Adv. Nurs., 32: 1092-1100.

Meretoja, R. and H.L. Kilpi, 2003. Comparison of competence assessments made by nurse managers and practising nurses. J. Nurs. Manage., 11: 404-409.

Meretoja, R., H. Isoaho and H.L. Kilpi, 2004. Nurse competence scale: Development and psychometric testing. J. Adv. Nurs., 47: 124-133.

Namadi, V.M., Z. Tazakkori, A. Habibi, G.H.A. Daryasari and R. Kazemzadeh, 2014. Assessing nursing graduates clinical competency from the viewpoints of graduates and head nurses. J. Health Care, 16: 66-73.

Negarandeh, R.P.R.S. and M. Khosravinezhad, 2013. Utilization effect of nurses services with clinicall competency on safety and patients satisfaction in an emergency department. J. Nurs. Midwifery Coll. Tehran Univ. Med. Sci., 19: 51-62.

Numminen, O., R. Meretoja, H. Isoaho and H.L. Kilpi, 2013. Professional competence of practising nurses. J. Clin. Nurs., 22: 1411-1423.

Ramezani, B.F.N.N.A., Y.Z. Parsa, F. Taleghani, 2010. Mental arguments understanding and nurses decision criteria in intensive care units: Qualitative research. Nurs. Midwifery Coll. Res. J. Shahid Beheshti Univ. Med. Sci., 20: 9-11.

Salonen, A.H., M. Kaunonen, R. Meretoja and M.T. Tarkka, 2007. Competence profiles of recently registered nurses working in intensive and emergency settings. J. Nurs. Manage., 15: 792-800.

Unkuri, S.K., R. Meretoja, J. Katajisto, M. Saarikoski and L. Salminen *et al*., 2014. Self-assessed level of competence of graduating nursing students and factors related to it. Nurse Educ. Today, 34: 795-801.