Clinical education

Nursing competency and educational needs for clinical practice of Korean nurses

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ABSTRACT

The purpose of this study was to investigate the nursing competency and educational needs of nurses on clinical nursing practice in order to provide basic evidences for a developing nursing education program. Participants of this study were 211 nurses working at a general hospital in Seoul, Korea. The data were collected using self-report questionnaires on nursing competencies and educational needs. Collected data were analysed using an SPSS program for frequency, mean, standard deviation, t-test, ANOVA, and Scheffe's post-hoc comparison. The participants' nursing competency was significantly different based on their age, marital condition, level of education, current working department, and clinical experience. Among the subcategories of nursing competency, the ethical nursing competency was found to be the highest, whereas scientific nursing competency was shown the lowest competency. The order of top three educational needs of the participants was emergency nursing, intensive nursing care, and cardiopulmonary resuscitation in that order. To ensure the provision of nursing performances to healthcare service recipients grounded in a higher level of nursing competency, it is important to support nurses via evidence based effective clinical nursing education that is developed for the nurses' educational needs in relation to their clinical experiences.

1. Introduction

We live in a world that demands adaptation to ever-changing healthcare environments and developing technologies. Healthcare service recipients are more likely to express satisfaction with the hospital when they have received quality nursing care. Moreover, the educational qualifications of nurses are associated with the outcomes of hospital patients, which is evidenced by the fact that inappropriate nurse staffing has been an important factor affecting high mortality rate (Aiken et al., 2014). In order to respond to these challenges and developments in nursing, competencies such as knowledge, technology, and ethics must be continuously developed through education (Weeks et al., 2017). Beside the traditional nursing curriculum, various educational contents and teaching/learning methods have been developed and tried to improve nursing competency more effectively such as problem-based learning, team-based learning, action learning, and simulation-based learning have been developed in a bid to improve nursing competency (Choi, 2012). Although the teaching contents and methods differ, nursing education so far has been provided based on the following premise. The body of knowledge that serves as the rationale for nursing practice has patterns, forms, and a structure that serve as

ways of thinking about phenomena, which is essential to understanding these patterns for the teaching and learning of nursing (Carper, 1978).

In Korea, a hospital accreditation system has been adopted and enforced to improve health outcome for service recipients (Hwang and Kim, 2015). To meet this higher level of accreditation, nurses' educational needs have increased to include improvement of their clinical nursing competencies. In Korea, hospitals, academic associations, and universities have provided various types of continuing educations for clinical nurses, which include trainings, workshops, seminars, certification courses and master's/doctorate degree educations (Lee, 2011) to improve nursing competencies. To ensure positive outcomes such as improving nursing competency or learner satisfaction of nursing education, it is important to investigate nurses' educational needs during the development of their education program. Assessing educational needs of the learners enables the development of learner-oriented education, and provides basic evidences to justify the order of priority as well as the range of education to be provided (Kim et al., 2011).

Hennessy-Hicks Training Needs Analysis Questionnaire is internationally designed to assess nurses' educational needs, as it measures a range of clinical, managerial, interpersonal, administrative, and research/audit activities that provides information about current

performance levels, as well as the skill areas most in need of development and the ways in which this development might best be achieved (Hennessy and Hicks, 2011). In Korea, the nurses' continuing educational needs are generally analysed according to the topics or areas of the education such as cancer nursing, emergency nursing care, or understanding the clinical laboratory. To develop and provide effective nursing education, it is necessary to study the learners' general characteristics, educational needs and nursing competency in their clinical nursing performance, all of which are important elements of efficacious education (Lee and Lee, 2014).

Simulation based nursing education has been adopted and applied to improve clinical nursing performances in Korea within a span of two decades (Choi, 2012). Advantages of nursing simulation include providing repetitive educational experiences for learners within a safe education environment. This enables learners to achieve their learning objectives through controlled clinical conditions and reduced levels of anxiety regarding clinical practicum (Choi, 2013). Effects of nursing simulation include increased knowledge, clinical competency, problem solving, critical thinking, communication skills, and clinical decisions (Ackermann et al., 2007). In Korea, nursing simulation has been mainly developed and applied among undergraduate students using high fidelity simulators. Though the demands for simulation training for clinical nurses is increasing, the development of nursing simulation for them is still insufficient (Kim et al., 2013). Recently, there has been a gradual increase in the hospitals providing simulation-based nursing education to improve their nurses' clinical performances for better medical service outcomes as well as to meet the higher level of educational needs and hospital accreditation (Kim and Jang, 2011). Therefore, this study was aimed to investigate nursing competency and educational needs of nurses on clinical nursing practice to provide the basis for developing an effective nursing education program.

2. Method

This was a descriptive research study to identify levels of nursing competency and educational needs for clinical practice in order to provide the basis for developing a simulation-based nursing education program.

2.1. Participants

Participants of this study were nurses working at a general hospital in Seoul, Korea. By means of the convenience sampling, 238 nurses were informed regarding the study objectives and process, which resulted in 211 nurses accepting the proposal to participate in the study and voluntarily signing a consent form as well as filling the questionnaires.

2.2. Data collection

We explained to the head of the nursing department and head nurses of the general hospital regarding the purpose and process of the study. Self-report questionnaires including research instruments were distributed to the 226 participants. We collected and reviewed the questionnaires that the participants filled out, from which incomplete 15 copies of questionnaires were eliminated from the study. In the end, 211 copies of questionnaires were included to the study for analysis.

2.3. Instruments

2.3.1. Nursing competency checklist

Nursing competency checklist was developed by Lee (2001) based on the works of clinical nursing competency development from Jang (2000) and Carper (1978). It consists of four sub-categories of nursing competencies and 13 practice abilities: 1) ethical competency which refers to nursing norms and ethical conventions including ethical value

orientation and cooperation abilities; 2) moral competency which means nurses' personal perceptions in caring including self-confidence, flexibility, and self-control abilities; 3) aesthetic competency meaning nursing as an art that includes patient understanding, patient directivity, clinical judgment and coping, influential, and fostering abilities; and 4) scientific competency meaning nursing skills based on experience including professional development, resource management, and nursing task processing abilities. The scale of measurement has 63 questions measured by a Likert 4-point scale where the higher the score, the higher the nursing competency. The Cronbach's alphas of the checklist were 0.953 in Lee's (2001) study and 0.949 in this study.

2.4. Nursing educational needs checklist

The nursing educational needs checklist was developed by Kim (2001) and consists of 81 questions, and sub items such as nursing theory, basic nursing science, and basic nursing technique, knowledge to understand and interpret clinical examination and results, and professional nursing art. The scale of measurement is a five-point Likert scale: meaning the higher the score, the higher the educational needs for nurses. The Cronbach's alphas of the checklist were 0.928 in Kim's (2001) study and 0.975 in this study.

2.5. Data analysis

The collected data was analysed using the SPSS 18.0 program. Descriptive analyses were used to explore the participants' socio-demographic and education-related characteristics, nursing competency, and educational needs. T-test, ANOVA, and Scheffe's post-hoc comparison were conducted to identify the level of nursing competency and educational needs by socio-demographic and education-related characteristics of the nurses.

2.6. Ethical considerations

This study was conducted after the subject was approved by the Institutional Review Board (IRB). All participants were given detailed explanations of the purpose and contents of the study and voluntarily gave their written consent. Participants were informed that they could withdraw from the research at any time without any disadvantage and that their data would only be used only for the purpose of research. Their data was assigned a code number to thoroughly secure it.

3. Results

Of the 211 participants, 98.6% were women while 1.4% were men; 66.8% were in their 20s, the average age being 30 years old, and 72.5% were unmarried. The proportion of three shifts was 69.7%, and 51.2% were working in the general ward. The overall clinical career of the subjects was as follows: 33.6% were at the proficient stage, 24.2% were at the novice stage, 21.8% were at the competent stage, and average clinical experience was 89.72 months. The clinical experience of the current working department was 37.4% with one to 12months' worth of experience (Table 1).

Of the 65.9% with education experience, 77% had undergone a simulation training experience at the nursing university, and 23% after graduation. Of the 139 participants with experience in simulation training, 92.1% were more than satisfied and 95.7% found it helpful in performing nursing and clinical tasks at the hospital. Of the 211 participants, 87.7% said that they would undertake simulation training if they had the opportunity, and 85.8% said that conducting simulation training in the hospital compared to existing lecture-based training methods would be helpful (Table 2). The four categories of nursing competency rankings were ethical, moral, aesthetic, and scientific. The mean scores of the four nursing competencies were 2.81, 2.70, 2.67, and 2.54, respectively, and the total nursing competency average was

Table 1
General characteristics of the participants (N = 211).

Variables		Frequency (%)
Gender	Female	208 (98.6)
	Male	3 (1.4)
Age (year)	20–29	141 (66.8)
	30–39	34 (16.1)
	40–49	23 (10.9)
	≥50	13 (6.2)
Marital status	Single	153 (72.5)
	Married	58 (27.5)
Educational level	College	107 (50.7)
	University	91 (43.1)
	Graduate school	13 (6.2)
Working type	Daily	27 (12.8)
	Two shifts	37 (17.5)
	Three shifts	147 (69.7)
Department[a]	General ward	108 (51.2)
	ICU, ER	58 (27.5)
	OR/RR	25 (11.8)
	OPD/HDR/others	20 (9.5)
Clinical experience (Total month)	≤12[a]	51 (24.2)
	13–36[b]	43 (20.4)
	37–72[c]	46 (21.8)
	≥73[d]	71 (33.6)

OR: Operation Room, RR: Rehabilitation Room.
OPD: Out Patient Department, HDR: Hemodialysis Room.
[a] ICU: Intensive Care Unit, ER: Emergency Room.

Table 2
Experiences related to Nursing Simulation (N = 211).

Variables		Frequency (%)
Need for simulation training	Required	185 (87.7)
	Not required	26 (12.3)
Expectations of simulation training	Not helpful at all	3 (1.4)
	Somewhat unhelpful	2 (0.9)
	Neither helpful nor unhelpful	25 (11.9)
	Somewhat helpful	104 (49.3)
	Very helpful	77 (36.5)
Experienced simulation training in the past	Yes	139 (65.9)
	No	72 (34.1)
Number of past simulation trainings (n = 139)	During university	107 (77.0)
	External education after graduation	19 (13.7)
	Hospital self-education after graduation	13 (9.3)
Satisfaction in past simulation training (n = 139)	Very Dissatisfied	2 (1.4)
	Somewhat dissatisfied	9 (6.5)
	Neither satisfied nor dissatisfied	47 (33.8)
	Somewhat satisfied	52 (37.4)
	Very satisfied	29 (20.9)
Effectiveness of past Simulation Training (n = 139)	Not helpful at all	1 (0.7)
	Somewhat unhelpful	5 (3.6)
	Neither helpful nor unhelpful	51 (36.7)
	Somewhat helpful	52 (37.4)
	Very helpful	30 (21.6)

2.62 (Table 3).

Table 4 shows the scores of the top 10 items in the 81 questions related to the five categories of the educational needs. The five categories rankings of the educational needs for nurses were classified into basic nursing science, knowledge to understand and interpret clinical examination and results, nursing theory, basic nursing, and the art of professional nursing.

The mean scores of the five categories were 3.93 points for basic nursing science, 3.85 points for knowledge to understand and interpret clinical examination and results, 3.63 points for nursing theory, 3.50 points for basic nursing, and 3.49 points for the art of professional

Table 3
Levels of Nursing competency (N = 211).

Variables	Mean	SD
Ethical competency	**2.81**	**0.42**
Ethical value orientation	2.72	0.47
Cooperation	2.89	0.52
Moral competency	**2.70**	**0.39**
Confidence	2.72	0.42
Self-regulation	2.60	0.54
Flexibility	2.76	0.51
Aesthetic competency	**2.67**	**0.40**
Patient understanding	2.79	0.53
Patient directivity	2.71	0.47
Clinical judgment and coping	2.70	0.57
Influence	2.64	0.48
Fostering	2.51	0.47
Scientific competency	**2.54**	**0.35**
Professional development	2.51	0.37
Resource management	2.57	0.46
Nursing task processing	2.54	0.54
Total	2.62	0.34

Table 4
Top 10 titles of educational needs (N = 211).

Title	Mean	SD	Ranking
Emergency nursing	4.30	0.76	1
Intensive nursing care	4.27	0.76	2
Cardiopulmonary resuscitation	4.18	0.88	3
Knowledge of electrocardiographic exam. and interpretation	4.09	0.86	4
Knowledge of content and interpretation of blood exam.	4.07	0.81	5
Oxygen therapy and mechanical ventilation	4.06	0.85	6
Knowledge on diseases and laboratory tests'	4.02	0.85	7
Knowledge of therapeutic treatment of specific diseases	3.99	0.79	8
Understanding fluid, electrolyte, and fluid therapy	3.99	0.78	8
Understanding acid base balance and arterial blood gas pressure	3.99	0.78	8
Total	3.63	0.51	–

nursing, and the average score of the educational needs was 3.63 points. Of the questions related to the educational needs, emergency nursing was the highest with 4.30 points, followed by ICU nursing with 4.27 points, and CPR with 4.18 points.

Table 5 shows the difference in the nursing competency and the educational needs according to general characteristics of the subjects. Nursing competency in terms of age was statistically significant, and the older the age group, the higher the score of nursing competency (F = 12.332, $p < .001$). The results of Scheffe's post-hoc comparison showed statistical significance in the 20s, 40s, and 50s respectively. There was a statistically significant difference in nursing competency according to marital status (t = −5.703, $p < .001$), and married persons scored higher on nursing competency compared to unmarried persons. Nursing competency according to the final education level showed a statistically significant difference: the higher the education level, the higher the score on nursing competency (F = 10.088, $p < .001$).

The total nursing competency was statistically significant in terms of the total clinical career, and the higher the clinical career, the higher the average nursing competency score (F = 17.658, $p < .001$). There were statistically significant differences between the novice stage, the advanced beginner stage, and the competent stages, and there were statistically significant differences between the novice stage, the advanced beginner and the proficient stage. Educational needs according to general characteristics of the subjects such as age, marital status, final educational level, total clinical career, and clinical experience for current working department were not statistically significant. However other educational needs in terms of current working department were

Table 5
Nursing competency and educational needs according to general characteristics (N = 211).

Variables		Frequency	Nursing competency				Educational needs			
			Mean (SD)	t/F	p	Scheffe	Mean (SD)	t/F	p	Scheffe
Age (year)	< 30[a]	141	2.53 (0.30)	12.332	< .001**	a < cd	3.62 (0.52)	0.396	.756	
	30–39[b]	34	2.75 (0.37)				3.62 (0.53)			
	40–49[c]	23	2.81 (0.37)				3.74 (0.49)			
	≥50[d]	13	2.91 (0.20)				3.58 (0.43)			
Marital status	Single	153	2.54 (0.32)	−5.703	< .001**		3.66 (0.52)	1.283	.201	
	Married	58	2.82 (0.30)				3.56 (0.50)			
Educational level	College[a]	107	2.57 (0.33)	10.008	< .001**	ab < c	3.57 (0.47)	2.791	.064	
	University[b]	91	2.63 (0.31)				3.66 (0.56)			
	Graduate school[c]	13	2.99 (0.34)				3.91 (0.37)			
Department[a]	General ward[a]	108	2060 (0.37)	3.005	0.31	b < d	3.70 (0.51)	3.882	.010*	c < d
	ICU, ER[b]	58	2.58 (0.28)				3.56 (0.52)			
	OR/RR[c]	25	2.65 (0.30)				3.37 (0.50)			
	OPD/HDR/others[d]	20	2.82 (0.28)				3.78 (0.42)			
Clinical experience (Total month)	≤12[a]	51	2.38 (0.27)	17.658	< .001**	a < bc	3.68 (0.56)	1.016	.386	
	13–36[b]	43	2.59 (0.20)			ab < d	3.66 (0.47)			
	37–72[c]	46	2.65 (0.34)				3.52 (0.59)			
	≥73[d]	71	2.79 (0.34)				3.65 (0.44)			

RR: Rehabilitation Room, OPD: Out Patient Department, HDR: Hemodialysis Room.
*p < .05, **p < .001.
[a] ICU: Intensive Care Unit, ER: Emergency Room, OR: Operation Room.

statistically different (F = 3.882, p = .010). The results of Scheffe's post-hoc comparison showed statistical significance according to surgery, recovery room and outpatient department, artificial kidney room, and other departments.

4. Discussion

This study was conducted to inform the development of nursing simulation to improve nursing competency by analysing current nursing competency and the educational needs of nurses working at a general hospital.

This study found that the ethical nursing competency ranked the highest among the nursing competency subcategories, whereas the scientific nursing competency ranked the lowest and below the mean of the total nursing competency. These results are in accordance to previous researches that also ranked ethical nursing competency as the highest competency, and scientific nursing competency as the lowest competency (Kang, 2011; Ha and Choi, 2010). These reports show that nurses' scientific nursing competency is deficient, which indicates the need for developing and providing education aimed at improving nurses' scientific nursing competency. In this study, the nurses' educational needs for basic nursing science were ranked as the highest i the category of educational needs such as nursing theory, fundamental nursing, interpreting clinical laboratory tests, and advanced practice nursing. This is in line with previous studies that there is great educational need for basic nursing science regardless of the hospital size, location, or nursing department (Kwak, 2007; Lee, 2011). This reflects the nurses' needs to adjust themselves to the updated medical knowledge and technology on developing nursing competency and maintaining competitiveness as expert nurses.

'Emergency nursing' and 'Cardiopulmonary resuscitation' which includes 'interpretation of electrocardiogram' ranked the highest, which is in line with previous studies (Bae, 2005; Kim, 2001; Lee, 2011). This result indicates the need for repetitive and continuous education programs aimed at fulfilling the high educational needs of the nurses in general. In addition, the nurses in this study wanted to acquire 'knowledge on diseases and laboratory tests' among the nursing competency of nursing knowledge, which is consistent with a study (Lee, 2011) that echoes nurses' needs to provide professional nursing practice based on underlying principles of medical treatments. In this study, the nurses' educational needs for 'understanding nursing

accidents and related laws and regulations' was higher than it was in previous studies which was inconsistent with the current study. This result may be affected by the hospital accreditation system adopted in Korea since 2011 (Korea Institute for Healthcare Accreditation (2014). Additionally, many hospitals are confronted from the 2nd cycle of the accreditation that draws more interests and emphases on patient safety than before. This transition would be evaluated as positive aspects of Korean nurses, which should be supported by developing and providing adequate education programs.

Of the nurses in this study, 65.9% experienced nursing simulation, 96% of them considered their simulated education to be helpful for their nursing practice, and 87.7% of the participants wanted to have education using nursing simulation. Those results are similar to previous studies that simulated nursing education increases nurses' self-efficacy, reflective thinking, problem-solving and confidence in nursing practice, in addition to improving satisfaction and competency of the nurses (Ackermann et al., 2007; Stefanski and Rossler, 2009). Therefore, simulation-based education would be a helpful method to improve nursing competency that guaranteeing positive effects on decrease of patients' complication, difficulty, resuscitation, length of hospitalization, while increasing patients' satisfaction (Zendejas et al., 2013). Based on the results of this study, it is suggested to develop a curriculum including a nursing simulation for undergraduate students and new nurses regarding transfusion nursing of cirrhotic patients with esophageal varices. In this study, the level of nursing competence according to clinical career was lowest among general ward new nurses, and they were analysed to have high level of educational need in nursing care for critical disease conditions and transfusion therapy among basic nursing.

This study provides basis for developing a clinical nursing education program such as nursing simulation according to the nurses' nursing competence and educational needs. It also informs decision making based on educational need priority, which could apply to newly employed nurses, preceptor nurses, and experienced nurses by tailoring education programs to the nurses' educational needs. Limitations of this study include the use of convenient sampling and the analysis of data from a general hospital, which means that carful interpretation and application of the results is required.

5. Conclusion

To ensure a higher level of nursing competency, it is important to support nurses through evidence based effective clinical nursing education developed according to the nurses' educational needs related to their clinical experiences. It would be beneficial to develop and provide simulated education to nurses who have positive experiences in clinical nursing simulation. To improve nursing competency for hospital accreditation as well as to increase the hospital's competitive power, adequate and continuous organizational support is required.

Conflicts of interest

There is no conflict of interest.

CRediT authorship contribution statement

Sun-Ok Kim: Data curation, Formal analysis, Investigation, Writing-original draft. **Yun-Jung Choi:** Conceptualization, Methodology, Supervision, Validation, Writing-review & editing.

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