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The Roles of Critical Care Advanced Practice Nurse

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Purpose. To determine and compare the perception among nurses and doctors of the roles and tasks of critical care advanced practice nurses (APNs) in order to establish standardized and formally agreed role criteria for such critical care APNs.

Method. This study measured and analyzed the necessity of each of the roles and tasks of critical care APNs, as perceived by nurses and doctors, through a survey of 121 participants: 71 nurses in 7 intensive care units (ICUs) at a general hospital in Seoul, and 50 doctors who used ICUs. Data collection utilized a questionnaire of 128 questions in the following fields: direct practice (79), leadership and change agent (17), consultation and collaboration (15), education and counseling (11), and research (6).

Results. Both the nurses' and the doctors' groups confirmed the necessity of critical care APNs, with doctors who frequently used ICUs indicating a particularly strong need. As for the priority of each role of critical care APNs, the nurses considered direct practice to be the most critical, followed by education and counseling, research, consultation and collaboration, and leadership and change agent. The doctors also considered direct practice to be the most critical, followed by education and counseling, consultation and collaboration, research, and leadership and change agent. There was a statistically significant difference between how the two groups regarded all the roles, except for the consultation and collaboration roles. As for the necessity of each role of critical care APNs, the nurses considered research to be the most necessary, followed by education and counseling, consultation and collaboration, leadership and change agent, and direct practice. The doctors, on the other hand, considered education and counseling to be the most necessary, followed by research, consultation and collaboration, leadership and change agent, and direct practice. The responses of the two groups to all the roles, except for education and counseling roles, were significantly different.

Conclusion. Nurses and doctors have different perceptions of the roles and tasks of critical care APNs. Thus, it is necessary for the combined nursing and medical fields to reach an official agreement on a set of criteria to standardize for the roles and tasks of critical care APNs.

Key Words : Critical care APN, Roles

INTRODUCTION

Advance practice nurses (APNs) emerged in the U.S. in the 1970s as a response to the dynamic changes and social needs of that time. In Korea, issues related to APNs started being discussed in the 1990s, and the Korean Nurses Association has since developed several ways of introducing APNs in Korea. As a result, the term "specialized nurses" in Article 56 of Medical Law was changed to "APNs" in 2000 (declared on January 12, 2000), and in 2003, 6 more divisions (Infection Control, Geriatric, Occupational Health, Emergency, Hospice Care, Critical Care APN) were added to the existing

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four divisions of nursing (Family, Public Health, Psychiatric Mental Health, and Anesthesia) to give a total of 10 divisions. In 2004, 22 educational institutions in Korea were given the task of establishing the first graduate programs for APNs, as required by the Ministry of Health and Welfare's Curricula for APNs (The Korean Nurses Association News, 2004).

APNs refers to nurses who had supervised practice during their graduate education and who manifest a high level of expertise in a specific area of advanced nursing practice along with ongoing clinical experience (ANA, 1996). In addition, they must obtain all required certifications to be able to perform treatments and prescriptions independently. They must have the autonomy and competence to perform many interventions in nursing practice more independently than general nurses do, and must take full responsibility for their performance (Kim, 2000).

Since the roles of APNs are regarded as more advanced than those of general nurses, a standardized specification of the scope of advanced practice nursing, clearly and legally distinguished from that of general nursing, is required before APNs can be introduced to the Korean medical field (Kim, 1996). In addition, a curriculum for the adequate preparation of APNs to perform advanced practice must be developed.

In Korea, several general hospitals with a need for APNs have already independently educated some nurses and appointed them as APNs without consent from the nursing or medical field. As a result of discussions regarding the qualifications and roles of APNs, however, only those who have had at least three years of experience in a specialized field of nursing and who have passed a qualification examination after completing an advanced practice nursing program at an accredited institution are qualified to receive a certification from the Minister of Health and Welfare (Medical Law, 2003). Each division of nursing has established higher standards for their advanced nursing practice, and has been trying to define clearly the roles and tasks of APNs through the studies. Various Korean studies on APN roles (Lee, 1996; Lim, Park, & Kim, 1997; Kim, 2003; Kim et al., 2003; Hong, 2004) have used the five APN subroles specified by the American Nurses Association in 1986: practitioner, educator, consultant, researcher, and leader and change agent. However, it is essential that Korea establishes standards distinct from those established by the U.S. since the two countries' medical environments and social systems are different.

As for critical care in Korea, no APNs are active in this area, making it impossible to gain basic information on their roles through a survey. Furthermore, in the absence of many studies on the roles of critical care APNs except Ahn (2000)'s study, data on their roles are limited.

Therefore, the present study was instigated to fill this need by clarifying the roles of critical care APNs and developing a curriculum exclusively for critical care APNs.

OBJECTIVES

This study was conducted with the aim of establishing the roles and tasks of critical care APNs, and of aiding in the development of curriculum that could adequately prepare them for the job. The following two objectives were set:

1. To determine the roles and tasks of critical care APNs as perceived by nurses and doctors.
2. To compare this perception between nurses and doctors.

DEFINITION OF TERMS

1. Critical Care APN

Critical care APN refers to nurses specializing in certain fields and who have clinical experience, special knowledge and skills obtained from graduate or postgraduate educational programs at accredited institutions, and the required certifications (Medical Law, 2003) to be able to perform advanced nursing practice for critically ill patients.

2. Roles

A role is a function one is expected to carry out in relation to a position or status. In this study, the APN role was established through the nurses' and doctors' perceptions of the roles of critical care APNs.

METHODS

1. Research Design

A cross-sectional survey was conducted to find out the necessity of each role and task of critical care APNs, as perceived by nurses and doctors, in order to establish the roles of critical care APNs.

2. Participants

Two hundred nurses and doctors assigned to 7 intensive care units (ICUs: Internal Medicine, General Surgery, Thoracic Surgery, Neurosurgery, Coronary Care, Neurology/Pediatrics, and Neonatal) in a general hospital located in Seoul were surveyed. The nurses included 7 head nurses and 73 CLS I and II nurses, classified according to the clinical ladder system of the hospital. The CLS I and II nurses who were selected as study participants had knowledge of all the nurses' tasks in ICUs. The doctors included 120 randomly selected specialists, residents, and fellows who had used the ICU at least once within the previous year.

CLS I nurses must pass an examination and certain programs, such as basic critical care nursing, neonatal intensive care nursing, and advanced cardiac life support, and must have 3 to 5 years of clinical experience as nurses and preceptors. CLS II nurses must complete a preceptor program and an intermediate critical care program or an APN program, must pass the bi-annual examinations administered by the personnel committees of the hospital, and must have at least 5 years of clinical ex-

Table 1-1. General Characteristics of the Participants (Nurses) (N = 71)

Category		Frequency	Percentage (%)	Mean±S.D.
Unit (Intensive care unit)	Cardiology	6	8.5	
	General Surgery	9	12.7	
	Thoracic Surgery	14	19.7	
	Internal Medicine	9	12.7	
	Neurosurgery	9	12.7	
	Neurology/Pediatrics	12	16.9	
	Infant Care	12	16.9	
Age	25 - 29	37	52.1	30.15±4.30
	30 - 34	25	35.2	
	35 - 40	5	7.0	
	40 and older	4	5.6	
Educational Background	Associate	5	7.0	
	Bachelor's	51	71.8	
	Master's	15	21.1	
Position	Head Nurse	5	7.0	
	CLS I	47	66.2	
	CLS II	19	26.8	
Clinical Experience (Years)	Head Nurse	19.28±2.53		7.71±4.15
	CLS I	5.83±2.00		
	CLS II	9.31±2.47		
Experience in ICUs (Years)	Head Nurse	12.43±5.48		7.04±3.09
	CLS I	5.74±1.97		
	CLS II	8.84±2.15		

Table 1-2. Necessity of Critical Care APNs (Nurses) (N = 71)

Category		Frequency	Percentage (%)
Necessity of Critical Care APN	Very necessary	39	54.9
	Necessary	29	40.8
	No opinion	3	4.2
	Not necessary		
	Never necessary		
Necessity of Critical Care APN at the Current Worksite	Very necessary	32	45.1
	Necessary	35	49.3
	No opinion	4	5.6
	Not necessary		
	Never necessary		
Desire to become an Critical Care APN	Yes	56	78.9
	No	15	21.1

perience as nurses, preceptors, and supervisors.

3. Instrument

The roles of APNs as defined in previous studies and related reports, such as the AACN's Standards for Critical Care APNs and Acute Care Nurse Practitioners, were reviewed for the purpose of drafting the survey questionnaire. The final survey questionnaire was completed after revision from 4 experts who had participated in the critical care APNs' education program. The survey was divided into two parts: (1) general characteristics, and (2) the roles and tasks of critical care APNs. The latter consisted of 128 questions in 5 categories: 79 direct-practice questions, 17 leadership and change agent questions, 15 consultation and collaboration questions, 11 education and counseling questions, and 6 research questions. The necessity of each task was scored as "very necessary(5)", "necessary(4)", "average(3)", "not necessary(2)", and "never necessary(1)".

4. Collection of Data

The survey questionnaires were distributed to 200 participants personally or via e-mail from October 1, 2004 to December 20, 2004, and were completed by the participants at their convenience. Of the 200 chosen participants, 121 (60.5%) returned the completed survey ques-

Table 1-3. Perception of the Necessity of Critical Care APNs Based on Experience, Education, and the Unit in which the Participants works (Nurses) (N = 71)

Category	Question		Very Necessary	Necessary	Average	Not Necessary	Never Necessary	χ^2	P
Experience	Necessity of Critical care APNs	Head Nurse	5 (100.0%)					5.370	0.251
		CLS I	26 (55.3%)	19 (40.4%)	2 (4.3%)				
		CLS II	8 (42.1%)	10 (52.6%)	1 (5.3%)				
	Necessity of Critical care APNs at the Current Worksite	Head Nurse	5 (100.0%)					6.595	0.159
		CLS I	19 (40.4%)	25 (53.2%)	3 (6.4%)				
		CLS II	8 (42.1%)	10 (52.6%)	1 (5.3%)				
Education	Necessity of Critical care APNs	Associate	1 (20.0%)	4 (80.0%)				3.733	0.443
		Bachelor's	30 (58.8%)	19 (37.3%)	2 (3.9%)				
		Master's	8 (53.3%)	6 (40.0%)	1 (6.7%)				
	Necessity of Critical care APNs at the Current Worksite	Associate	1 (20.0%)	4 (80.0%)				2.095	0.718
		Bachelor's	24 (47.1%)	24 (47.1%)	3 (5.8%)				
		Master's	7 (46.7%)	7 (46.7%)	1 (6.6%)				
Unit	Necessity of Critical care APNs	Cardiology	3 (50.0%)	3 (50.0%)				19.49	0.077
		General Surgery	2 (22.2%)	5 (55.6%)	2 (22.2%)				
		Thoracic Surgery	11 (78.6%)	3 (21.4%)					
		Internal Medicine	2 (22.2%)	6 (66.7%)	1 (11.1%)				
		Neurosurgery	6 (66.7%)	3 (33.3%)					
		Neurology /Pediatrics	7 (58.3%)	5 (41.7%)					
		Neonatal	1 (8.3%)	10 (83.3%)	1 (8.3%)				
	Necessity of Critical care APNs at the Current Worksite	Cardiology	3 (50.0%)	3 (50.0%)				24.19	0.019*
		General Surgery	1 (11.1%)	6 (66.7%)	2 (22.2%)				
		Thoracic Surgery	10 (71.0%)	4 (29.0%)					
		Internal Medicine	5(56.0%)	3(33.0%)	1(11.0%)				
		Neurosurgery	6(66.7%)	3(33.3%)					
		Neurology/ Pediatrics	9(75.0%)	3(25.0%)					
		Neonatal	5(41.7%)	7(58.3%)					

* $p < .05$

Table 1-4. Desire to Become Critical care APNs (Nurses) (N = 71)

Category		Yes	No	χ^2	P
Experience	Head Nurse	5 (100.0%)		1.64	0.43
	CLS I	37 (78.7%)	10 (21.3%)		
	CLS II	14 (73.7%)	5 (26.3%)		
Education	Associate	3 (60.0%)	2 (40.0%)	1.62	0.44
	Bachelor's	40 (78.4%)	11 (21.6%)		
	Master's	13 (86.7%)	2 (13.3%)		
Unit	Cardiology	5 (83.3%)	1 (16.7%)	12.70	0.04*
	General Surgery	4 (44.4%)	5 (55.6%)		
	Thoracic Surgery	12 (85.7%)	2 (14.3%)		
	Internal Medicine	5 (55.6%)	4 (44.4%)		
	Neurosurgery	8 (88.9%)	1 (11.1%)		
	Neurology/Pediatrics	11 (91.7%)	1 (8.3%)		
	Neonatal	11 (91.7%)	1 (8.3%)		

* $p < .05$

Table 1-5. General Characteristics of the Participants (Doctors) (N = 50)

Category		Frequency	Percentage (%)	Mean±S.D.
Gender	Female	8	16	
	Male	42	84	
Department of Medicine	Internal Medicine	17	34	
	Surgery (General, Neuro, Thoracic)	16	32	
	Pediatrics	9	18	
	Neurology	5	10	
	Other (ENT, Obstetrics)	3	6	
Age	25 - 29	9	18	42.22±8.44
	30 - 34	4	8	
	35 - 39	5	10	
	40 - 44	15	30	
	45 - 49	10	20	
	50 and older	7	14	
Education	Bachelor's	10	20	
	Master's	3	6	
	Ph. D.	37	74	
Position	Specialist	39	78	
	Fellow	1	2	
	Resident	10	20	
Clinical Experience (Years)	Specialist	18.54±6.04		15.27±8.22
	Fellow	8.92		
	Resident	3.18±0.41		
Use of ICU	Rarely	3	6	
	Sometimes	9	18	
	Often	38	76	
Necessity of Critical care APNs	Very necessary	32	64	
	Necessary	17	34	
	Average	1	2	
	Not necessary			
	Never necessary			
Necessity of Critical care APNs at the Current Worksite	Very necessary	30	60	
	Necessary	15	30	
	Average	3	6	
	Not necessary	2	4	

tionnaire.

5. Data Analysis

Data were analyzed using SPSS (version 10.0). The general characteristics of the participants were analyzed using descriptive statistics. The participants' perception of the necessity of critical care APNs, based on their status, education, and clinical experience, was analyzed by ANOVA. The participants' perception of the necessity of critical care APNs in each unit was analyzed using the χ^2-test. The priority and necessity of the critical care APNs' roles and tasks, as perceived by the participants, was measured by frequency, percentage, mean, and standard deviation. The t-test was used to compare the views of the nurses and doctors.

Table 1-6. Perception of the Necessity of Critical Care APNs Based on the Department in which the Subject works, the Position, and the Use of ICUs (Doctors) (N = 50)

Category			Very Necessary	Necessary	Average	Not Necessary	Never Necessary	χ^2	p
Department of Medicine	Necessity of Critical care APNs	Internal Medicine	11 (64.7%)	5 (29.4%)		1 (5.9%)		6.35	6.351 (0.608)
		Surgery	9 (56.3%)	7 (43.8%)					
		Pediatrics	8 (88.9%)	1 (11/1%)					
		Neurology	3 (60%)	2 (40%)					
		Other	1 (33.3%)	2 (66.7%)					
	Necessity of Critical care APNs at the Current Worksite	Internal Medicine	10 (58.8%)	5 (29.4%)	1 (5.9%)	1 (5.9%)		16.25	16.251 (0.180)
		Surgery	10 (62.5%)	5 (31.3%)	1 (6.3%)				
		Pediatrics	8 (88.9%)		1 (11.1%)				
		Neurology	2 (40.0%)	3 (60.0%)					
		Other		2 (66.7%)		1 (33.3%)			
Position	Necessity of Critical care APNs	Specialist	24 (61.5%)	15 (38.5%)				4.75	0.93
		Fellow/Resident	8 (72.7%)	2 (18.2%)		1 (9.1%)			
	Necessity of Critical care APNs at the Current Worksite	SPECIALIST Internal Medicine	8 (65.1%)	4 (30.8%)	1 (7.7%)			2.79	0.42
		SPECIALIST Surgery	8 (61.5%)	4 (30.8%)	1 (7.7%)				
		SPECIALIST Pediatrics	5 (83.3%)		1 (16.7%)				
		SPECIALIST Neurology	1 (25.0%)	3 (75.0%)					
		SPECIALIST Other		2 (66.7%)		1 (33.3%)			
		RESIDENT Internal Medicine	2 (50.0%)	1 (25.0%)	1 (25.0%)				
		RESIDENT Surgery	2 (66.7%)	1 (33.3%)					
		RESIDENT Pediatrics	3 (100%)						
		RESIDENT Neurology	1 (100%)						
Use of ICU	Necessity of Critical care APNs	Rarely	1 (33.3%)	2 (66.7%)				4.42	0.35
		Sometimes	4 (44.4%)	5 (55.6%)					
		Often	27 (71.1%)	10 (26.3%)		1 (2.6%)			
	Necessity of Acute and Critical care APNs at Current Worksite	Rarely		1(33.3%)	1(33.3%)	1(33.3%)		20.0	0.03*
		Sometimes	3(33.3%)	6(66.7%)					
		Often	27(71.1%)	8(21.1%)	2(5.3%)	1(2.6%)			

* $p < .05$

RESULTS

1. General Characteristics of the Participants

1) Nurses

Table 1-1 shows the general characteristics of the participants. A total of 71 nurses - 5 head nurses, 47 CLS I nurses, and 19 CLS II nurses - completed the questionnaire. Their average age was 30.15±4.30 years, and 52.1% were aged 25 to 29 years. Their average clinical experience was 7.71±4.15 years, and their average length of experience in ICUs was 7.04±3.09 years. In terms of educational background, 71.8% had bachelor's degrees, 21.1% had master's degrees, and 7.0% had associate degrees. The participants were equally distributed in the 7 ICUs.

Regarding the necessity of critical care APNs, 39 respondents (54.9%) replied "very necessary", and 29 (40.8%) "necessary", confirming the strong preference for the necessity of critical care APNs. There were no significant differences based on units, position, experience, and educational background (Tables 1 - 2 and 1 - 3).

Regarding the necessity of critical care APNs in their current workplace, 32 respondents (45.1%) replied "very necessary", and 35 (49.3%) "necessary". There was a significant difference between the responses according to the participants' unit. The participants from thoracic surgery ICUs, in particular, indicated that critical care APNs are very necessary in their unit. There was no significant difference in response based on the position and educational background of the participants (Table 1 - 3).

As for their personal desire to become critical care APNs, 56 respondents (78.9%) indicated that they were and 15 (21.1%) that they were not. There was a significant difference between the participants' responses according to their unit. The nurses in all the units, except in the general surgery and medical ICUs, showed desire to become critical care APNs (Table 1 - 4).

2) Doctors

Table 1 - 5 shows the general characteristics of the participants. They comprised 8 females (16%) and 42 males (84%). There were 39 specialists (78%), 1 fellow (2%), and 10 residents (20%). Their average age was 42.22?8.44 years, and 30.0% were aged 40 to 44 years. The average length of clinical experience was 15.27±

Table 1-7. Priority of Each Role of Critical care APNs

Category	Nurses	Doctors	t	p
	Mean±S.D	Mean±S.D		
Direct Practice	41.51±13.62	54.63±17.65	4.587	0.000*
Education and Counseling	21.91± 8.39	15.98±8.65	- 3.748	0.000*
Research	14.85± 5.87	10.88 ±5.96	- 3.589	0.000*
Consultation and Collaboration	12.40± 5.45	11.24±7.43	- 0.987	0.326
Leadership and Change agent	9.84± 4.52	7.90±4.72	- 2.251	0.026*

* p < .05

Table 1-8. Comparison of the Priority of Each Role in Each Group

Category	Nurses					Doctors			
	Head Nurse (N = 5)	CLS I (N = 45)	CLS II (N = 19)	F	p	Specialist (N = 39)	Fellow/Resident (N = 11)	F	p
Direct Practice	49.00±5.48	41.11±14.14	39.66±13.65	0.94	0.40	56.08±17.12	49.74±19.35	1.04	0.30
Education and Counseling	22.00±4.47	19.93±7.83	26.88±9.30	4.90	0.01*	16.89±8.76	12.92±7.82	1.34	0.18
Research	13.00±4.47	16.00±5.90	12.86±5.84	2.25	0.11	11.36±6.08	9.29±5.48	1.00	0.31
Consultation and Collaboration	10.00±3.54	12.87±5.63	12.06±5.29	0.69	0.51	9.05±4.54	18.38±10.41	-2.88	0.01*
Leadership and Change agent	6.00±2.24	10.80±4.60	8.80±4.35	3.46	0.04*	7.36±4.54	9.65±5.06	-1.42	0.16

* p < .05

8.22 years and 37 of them had a Ph.D. (74%), 10 a bachelor's degree (20%), and 3 a Master's degree (6%). Among the 8 medical departments represented, the majority of the participants belonged to the department of internal medicine (Table 1 - 5).

Regarding their use of ICUs, 38 (76%) replied "often". Regarding the necessity of critical care APNs, 32 (64.0%) replied "very necessary", and 17 (34.0%) "necessary", confirming the strong preference for the necessity of critical care APNs. There was no difference in the participants' responses based on the department to which they belonged and their position, but those who used the ICUs more often tended to rate critical care APNs as more necessary than did those who used the units less often (Table 1 - 6).

3) Priority of Each role

The roles of critical care APNs were presented to the participants in five categories: direct practice, education and counseling, research, consultation and collaboration, and leadership and change agent. They were then asked to rate the priority of each role of critical care APNs based on their expectations. The results are shown in Table 1 - 7.

Although there was a slight difference between the nurses' responses, they generally considered direct practice the most critical, followed by education and counseling, research, consultation and collaboration, and leadership and change agent. The doctors also considered direct practice the most critical, but they considered consultation and collaboration more critical than research. While both groups considered direct practice the most critical, the doctors (54.6±17.7%) considered this role to be more critical than the nurses (41.5±13.6%) did, to a statistically significant extent. The nurses ranked education and counseling, research, consultation and collaboration, and leadership and change agent higher than the doctors did, and to a statistically significant extent in all categories except consultation and collaboration. Table 1-8 presents the comparison results of the priority of each role in each group.

2. Necessity of Each Role

Table 2 - 1 compares the nurses' perception of the necessity of each role with that of the doctors.

1) Direct Practice

On the necessity of critical care APNs' direct practice, the average assigned rating was 3.82±0.46 by the nurses and 3.39±0.52 by the doctors. The difference between these average ratings given by the two groups was statistically significant. Among the 79 tasks falling under direct practice, 37 (46.8%) were given a rating of necessity of 4.0 or higher ("necessary" or higher) by the nurses, compared to 17 (21.5%) by the doctors. Both groups considered tasks related to assessing, diagnosing, and planning critically ill patients to be more necessary, while direct intervening tasks were considered the least necessary.

The nurses gave high ratings to "plan treatment and nursing based on diagnoses (4.70)", "participate in a cardiac life-support team (4.66)", and "monitor the conditions of critically ill patients continuously (4.65)", but lower ratings to "Insert PICC (peripheral inserted central catheter) (2.73)" and "perform lumbar puncture (2.76)".

The doctors gave scores of 4.0 or higher to "monitor the conditions of critically ill patients continuously (4.58)", "participate in a CPR team (4.32)", and "check and eliminate factors that threaten the safety of critically ill patients (4.32)", but lower ratings to "insert chest tube as ordered by doctors (2.08)", "perform lumbar puncture (2.16)", "insert central venous catheters (2.20)", "insert umbilical catheters (2.22)", and "perform intubations (2.26)".

2) Education and Counseling

The necessity of education and counseling was given

Table 2-1. Comparison of the Necessity of Each Role in Each Group

Category	Nurses	Doctors	t	p
Direct Practice	3.82±0.46	3.39±0.52	- 4.74	0.000
Education and Counseling	4.27±0.59	4.11±0.59	- 1.457	0.148
Research	4.36±0.74	3.92±0.66	- 3.366	0.001
Consultation and Collaboration	4.17±0.57	3.88 ±0.59	- 2.687	0.008
Leadership and Change agent	4.22±0.64	3.86±0.63	- 3.064	0.003

* $p < .05$

an average rating of 4.27±0.59 by the nurses and 4.11 ±0.59 by the doctors, but the difference was not statistically significant. Among the 11 tasks falling under the role of education and counseling, 10 (90.9%) were chosen as necessary tasks by the nurses and 8 (72.7%) by the doctors. The nurses gave the highest rating to "provide nurses with information regarding nursing (4.61)" but the lowest to "educate communities (3.31)". The doctors gave high ratings to "develop training programs for nurses (4.40)", "develop training materials for nurses (4.36)", and "provide preliminary and in- service education for nurses (4.32)", but the lowest rating to "educate communities (3.40)".

3) Research

The necessity of research was given an average rating of 4.36±0.74 by the nurses and 3.92±0.66 by the doctors. The difference between the average ratings given by the two groups was statistically significant. The nurses gave ratings of 4.0 or higher to all the 6 tasks falling under the research role, while the doctors also gave these 6 tasks high ratings of between 3.9 and 4.0.

4) Consultation and Collaboration

The necessity of consultation and collaboration was rated significantly higher by the nurses (4.17±0.57) than by the doctors (3.88±0.59). The nurses gave ratings of 4.0 or higher to all the 15 tasks of the consultation and collaboration roles (86.9%), except "consult other institutions for critically ill patients, as needed (3.87)" and "perform community activities in my field of expertise (3.68)". The nurses gave the highest ratings to "provide advice on the standards of nursing (4.46)" and "consult patients with problems, and solve their problems (4.44)".

The doctors, on the other hand, gave ratings of 4.0 or higher to 6 (40%) roles. They gave the highest ratings to "participate in and collaborate with treatment programs (4.08)", "provide advice regarding special treatments and examinations for general nurses (4.04)", "provide advice on patients' support groups (4.04)", and "provide advice on the standards of nursing (4.04)". The doctors gave low ratings to "plan and lead multidisciplinary conferences regarding patient care (3.58)", "consult other institutions for critically ill patients, as needed (3.58)", and "perform community activities in my field of expertise (3.60)".

There was a statistically significant difference between the responses of the two groups to 10 of the 15 tasks, including "seek advice from other experts", "provide advice to other health care providers", "plan and lead multidisciplinary conferences regarding patient care", "participate in case conferences and advocate the patients" and "provide advice regarding the establishment and execution of policies on critical care nursing". The nurses gave higher ratings to all of these 10 tasks than the doctors did.

5) Leadership and Change agent

The necessity of leadership and change agent was rated significantly higher by the nurses (4.22±0.64) than by the doctors (3.86±0.63). The nurses gave ratings of 4.0 or higher to 13 out of 17 tasks (76.5%). They gave the highest ratings to "perform case management (4.68)", and the lowest to "participate in evaluating nursing staffs (3.77)" and "participate in evaluating medical staffs (3.80)".

The doctors gave ratings of 4.0 or higher to 5 roles (29.4%). They gave the highest ratings to "develop standards for critical care nursing (4.12)" and "participate in evaluating nursing practice in critical care (4.12)", and the lowest to "participate in evaluating medical staffs (3.36)" and "participate in establishing public health and medical policies (3.54)".

The ratings of the nurses for "perform case management", "become role models as specialists", "have periodical meetings with doctors and APNs", "participate in self-development for professionalism", and "participate in publicity activities to promote critical care nursing" were significantly higher than those of the doctors.

DISCUSSION

1. Necessity of Critical care APNs

In the study results, 95.7% of the nurses and 98% of the doctors considered critical care APNs to be necessary. This finding is in agreement with that of a previous study which found that both doctors and nurses considered the need for clinical APNs to be urgent (Lee and Lee, 1995). Considering that APNs provide high-quality care, reduce the cost, and increase the satisfaction of patients and other health care providers, critical care APNs are particularly needed for critically ill patients, due to their requirements of inclusive caring for survival and recovery.

The study results also confirmed that doctors in every

department and position agree with the need for critical care APNs. Furthermore, the doctors who frequently use ICUs have the highest desire for critical care APNs in their current departments, as did the nurses in thoracic-surgery ICU, presumably because the thoracic surgery unit has more specialty areas than other units do, and therefore needs staff with special skills to be able to treat their patients. We therefore suggest that it would be best to supply future critical care APNs initially to these units.

2. Priority of Each Role

The roles of critical care APNs were divided into five categories: direct practice, education and counseling, research, consultation and collaboration, and leadership and change agent. The doctors and nurses considered direct practice to be the most critical among all the roles of critical care APNs. This result coincides with that of a previous study (Kim, 2003), which aimed to clarify the roles of oncology APNs and which found that APNs should focus on the practitioner role first of all. A similar finding was also made by two other studies which compared the priority of the 5 roles of clinical APNs (Lee, 1995; Lim et al., 1997).

The nurses' responses to "education and counseling" and "leadership and change agent" differed significantly according to the nurses' position. The head nurses considered "leadership and change agent" to be less critical than did the CLS I and II nurses, while the CLS II nurses considered "education and counseling" to be more critical than did the head nurses and CLS II nurses. This finding was explained in previous studies (Lim et al., 1997; McMillan et al., 1999) on the basis that the "leadership and change agent" role of APNs may overlap with the head nurses' administrative role and may therefore cause conflicts. The doctors were divided into specialists and fellow/residents, and while the responses of the two subgroups differed, it was not to a statistically significant extent. When the responses of the nurses and doctors were compared, both groups considered direct practice to be the most critical role of critical care APNs, and the ratings of the doctors on direct practice were higher than those of the nurses. These results coincided with the results of previous studies (Lim et al., 1997; Kim, 2003). Direct practice is perceived as the most critical role of critical care APNs, presumably because the medical field is in need of APNs whose in-depth knowledge of, skills in, and utilization of the latest technologies can enable them to provide high-quality care to patients.

3. Necessity of the Tasks in Each Role

Both the nurses and doctors gave an average rating for necessity of below 4.0 to direct practice. The nurses, however, gave a rating of 4.0 or higher to more tasks than did the doctors, and seemed to expect critical care APNs to perform more tasks than did the doctors. The doctors gave ratings of "not necessary" (1 task) and "average" (17 tasks) to 18 tasks (including "analyze data to diagnose actual and potential health problems", "participate in daily routines", "explain patients' conditions, treatment procedures, and plans to the patients and their families", "interpret lab results", "read electrocardiogram", "control oxygen supply", and "control ventilators as ordered"), whereas the nurses gave scores of 4.0 or higher to all of these 18 tasks. Both groups ascribed a high necessity to those tasks related to assessing, diagnosing, and planning treatments for critically ill patients, and a low necessity to those tasks that are currently carried out by doctors (e.g., minimally invasive surgery). Those tasks to which the doctors ascribed a low necessity received ratings of 4.0 or higher from the head nurses but below 4.0 from the CLS I and II nurses; this difference was statistically significant. This means that participants with different clinical experiences have different expectations of APNs, and that head nurses expect APNs to perform roles that are more extensive. Direct practice is perceived as the key role of APNs (Hamric, Spross, & Hanson, 2005), and APNs are expected to be knowledgeable and skilled in using advanced techniques?including psychotherapy, family therapy, music therapy, crisis intervention, pain management, wound management, advanced physical examination, prescription, pharmacological/surgical intervention, and patient evaluation (Glass, 1993; Davis, 1994)?which enable nurse to care for patients with complex problems and which support general nurses as contributive clinicians (Kim, 1996).

APNs' role as an educator is most frequently considered. According to ANA (1989), the various educator roles of APNs are consulting and educating professional medical staffs, participating in students' clinical workshops as part of the program in nursing schools, and taking responsibility for developing training courses for clinical nurses. In this study, the roles of education and counseling received an average rating of above 4.0 from both groups in terms of necessity, and were shown to be

among the most critical roles of critical care APNs. There was a statistically significant difference between the responses of the two groups to "educate other health care providers": the nurses indicated that this is necessary, whereas the doctors gave it a low rating. Considering that APNs may be involved in the education of patients, families, nurses and nursing students, as well as other health care providers (Kim, 1996), such difference must be negotiated when establishing the roles of critical care APNs. In addition, both groups ascribed a low necessity to "educate communities", presumably because critical care APNs are expected to focus on critically ill patients. In the future, however, critical care APNs will be expected to provide communities with health-related knowledge.

The research roles of critical care APNs were rated lowly by the doctors but highly by the nurses. The nurses ascribed the highest necessity to the research roles of critical care APNs, which coincides with the result of Ahn's (2000) studies. The role with the highest necessity (4.58 ± 0.60) overall, "apply research findings to practices", received a response of "very necessary (5.0)" from the nurses. This shows that critical care APNs are expected to conduct research in their practice. The APNs' role as researcher is expected to be the slowest to develop, but over the long term is essential for the scientific development of the nursing practice (Scott, 1999).

For the consultation roles of critical care APNs, the nurses gave them an average necessity (above 4.0), whereas the doctors gave them only an average rating of below 4.0. Both groups gave ratings of 4.0 or higher to "participate in and cooperate with treatment programs", including the head nurses who considered it "very necessary", because the APNs who are presently in various fields are mostly engaged in operating treatment programs. Considering that successful performance in a consultant role depends strongly on the support of the administrator and on the acceptance of other staff, patients, and their families (Scott, 1999), the critical care APNs' roles as consultants should be negotiated.

The critical care APNs' leadership and change agent roles include standardizing nursing activities, budgeting for a higher quality of care, participating in committees, providing high-quality nursing care to patients and communities, and enhancing the professionalism of the nursing practice (Scott, 1999). According to Hong (2004), these roles are APNs' peculiar roles because APNs often carry out most of the tasks in this leadership and change agent role. In this study, the necessity rating assigned by the nurses to leadership and change agent roles was significantly high, therefore confirming that the nurses consider these roles to be included within the roles of critical care APNs.

In addition, the priority of each role did not match the necessity of each role, presumably due to the absence of any active critical care APNs in Korea, which limited the participants of this questionnaire to merely exploring their own abstract concepts of the APN roles. For example, both groups ascribed the highest priority and the lowest necessity to "direct practice" because tasks such as "insert chest tube as ordered by the doctor", "perform lumbar puncture", "insert central venous catheters", "insert umbilical catheters", and "perform intubations" are already being carried out by doctors, and therefore do not need to be carried out by other professionals. In other words, although the direct practice roles of critical care APNs are perceived to be the most critical among their various roles, the actual tasks in this direct practice are not common in Korea's medical institutions. The finding also showed that the roles to be carried out by critical care APNs are expected by both nurses and doctors to be slightly broader than are those carried out by general nurses. Furthermore, that the two groups' expectations of critical care APNs did not coincide with the true practice of nurse practitioners in the U.S. Thus, the boundaries of the tasks of critical care APNs need to be specifically clarified through negotiations between nurses and doctors.

CONCLUSION

This study was conducted to determine and analyze what nurses and doctors perceive are the roles and tasks of critical care APNs, to establish the latter's role boundaries, and to utilize the results in developing future curricula for their education. This study comprised a questionnaire survey of 71 nurses in 7 ICUs of a general hospital in Korea and 50 doctors who use ICUs.

The following are the results of this study:

1. Critical care APNs were considered necessary by 95.7% of the nurses and 98% of the doctors. The nurses' perception of this necessity did not differ based on the unit to which they belonged or their position, experience, and educational background. Among the doctors, however, those who frequently worked in ICUs assigned

a significantly greater need to critical care APNs than those doctors who did not. Meanwhile, nurses thought there is a need for critical care APNs in the thoracic surgery ICU.

2. The roles of critical care APNs were classified into 5 categories - direct practice, education and counseling, research, consultation and collaboration, and leadership and change agent - and each role's priority was examined. The nurses considered direct practice to be the most critical, followed by education and counseling, research, consultation and collaboration, and leadership and change agent. The doctors also considered direct practice to be the most critical, followed by education and counseling, consultation and collaboration, research, and leadership and change agent. Although both groups considered the direct practice roles of critical care APNs to be the most critical, the doctors' priority of these roles was significantly higher than that of the nurses. For all the roles except consultation and collaboration, the difference between the two groups' responses was statistically significant.

3. The nurses rated the roles of critical care APNs in the following order of necessity: research (4.36)> education and counseling (4.27)> consultation and collaboration (4.22)> leadership and change agent (4.17)> direct practice (3.82). The doctors, on the other hand, rated them accordingly: education and counseling (4.11)> research (3.92)> consultation and collaboration (3.88)> leadership and change agent (3.86)> direct practice (3.39). The two groups' responses to all the roles, except the education and counseling roles, were significantly different. The nurses rated all the roles, except the direct practice roles, as necessary (4.0 or higher), whereas the doctors only rated the education and counseling roles as necessary.

4. The nurses assigned ratings of 4.0 or higher to 37 (46.8%) among the 79 direct practice tasks, compared to 17 (21.5%) by the doctors. Among the 11 education and counseling tasks of APNs, the nurses picked 10 (90.9%) while the doctors picked 8 (72.7%). Both the nurses and the doctors gave ratings of 3.9 - 4.0 to all the 6 tasks. A necessity rating of 4.0 or higher was assigned to 13 (86.7%) of the 15 consultation and collaboration tasks by the nurses and to 6 (40%) by the doctors, and to 13 (76.5%) of the 17 leadership and change agent tasks by the nurses and to 5 (29.4%) by the doctors.

In conclusion, the study results confirmed the different perceptions held by nurses and doctors regarding the roles and tasks of critical care APNs. It is therefore considered vital for the nursing and medical fields to reach an official agreement to establish standardized roles for critical care APNs.

References

Ahn, K. H. (2000). T*he performance and perceptions of ICU nurses concerning the roles of critical care nurse specialists*. Master Thesis, Yonsei University.

American Nurses Association. (1989). *The role of the clinical nurse specialist*. Kansas City: ANA

American Nurses Association. (1996). *Nursing's social policy statement.* Washington, DC: Author.

Davis, E. A. (1994). Factors influencing the implementation of the CNS role in a private practice. *Clin Nurse Spec*, *8*, 42-46.

Glass, B. C. (1993). The role of the nurse in advanced practice in bereavement care. *Clin Nurse Spec*, 7, 62-66.

Hamric, A.B., Spross, J.A., & Hanson, C.M. (2005). *Advanced practice nursing: An integrative approach (3rd ed.)*. Philadelphia: Saunders.

Hong, J. H. (2004). The role of oncology advanced practice nurses in Korea. *Master Thesis*. Seoul National University.

Kim, K. J. (2000). Advanced practice nursing; the first step for improvement in job satisfaction and social status. *Taehan Kanho*, *39*(1), 17-19.

Kim, M. Y. (2003). The role behaviors of oncology nurse specialist. *Master Thesis*. Seoul National University.

Kim, S. S. (1996), The role and future of the medical-surgical clinical nurse specialist. *Taehan Kanho*, *35*(4), 6-11.

Kim, Y. H., Kwon, I. G., Hwang, K. J., Kim, H. S., Lee, B. S., Lee, H. S., & Choi, W. J. (2003). A survey on the role and present state of advanced practice nurses in Korea. *Clin Nurs Res*, *9*(1), 55-75.

Korean Nurses Association. (1993). A forum for improvement in the system of advanced practice nursing; the results of survey (summary). 81-95.

Korean Nurse Association News. (2004.1.8). Bulletin on education of advanced practice nurses Lee, S. O., & Lee, W. C. (1995). The perception of medical doctors and nurses on the clinical nurse specialist system. *Journal of Korean Academy of Nursing Administration, 1*(2), 372-387.

Lee, S. Y. (1996). A study of role establishment of the clinical nurse specialist. *Master Thesis*, Yonsei University.

Lim, K. C., Park, K. O., & Kim, B. J. (1997). A investigative study of role expedition on the clinical nurse specialist. *Journal of Korean Academy of Nursing Administration*, *3*(1), 65-82.

McMillan, S.C., Heusinkveld, K.B., Spray, J.A., & Murphy, C.M. (1999). Revising the blueprint for the AOCN examination using a role delineation study for advanced practice nursing. *Oncol Nurs Forum*, *26*(3), 529-537.

Scott, R. A. (1999). A description of the roles, activities, and skills of clinical nurse specialists in the United States. *Clin Nurse Spec, 13*, 183-190.