

Present Condition Analysis of Physician Assistant in Korea

Yong Hwa Eom¹, Gilbert Young Jin Kim¹,
Sang Seol Jung¹, Kil Yeon Lee²,
Sung-Bum Kang³, Ja Seong Bae¹,
Hoon Hur⁴, Yong-Seong Jang⁵,
Hyuk-Joon Lee⁶, Dong-Sup Yoon⁷,
Wonshik Han⁷, and In Kyu Lee¹

¹Department of Surgery, The Catholic University of Korea College of Medicine, Seoul; ²Department of Surgery, Kyung Hee University School of Medicine, Seoul; ³Department of Surgery, Seoul National University College of Medicine, Seoul National University Bundang Hospital, Seongnam; ⁴Department of Surgery, Ajou University School of Medicine, Suwon; ⁵Dr. Jang's Surgical Clinic, Seoul; ⁶Department of Surgery and Cancer Research Institute, Seoul National University College of Medicine, Seoul; ⁷Department of Surgery, Gangnam Severance Hospital, Yonsei University Health System, Seoul, Korea

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Address for Correspondence:

In Kyu Lee, MD

Department of Surgery, St. Mary's Hospital, The Catholic University of Korea College of Medicine, 10 63 (yuksam)-ro, Yeongdeungpo-gu, Seoul 150-713, Korea
Tel: +82-2-3779-2235, Fax: +82-2-786-0802
E-mail: cmcgslee@catholic.ac.kr

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This study intended to identify the need for the legalization and development of a systematic program for physician assistants (PAs) by understanding the actual state of PA operation in hospitals. In 114 hospitals assigned as resident training hospitals for surgery, a survey was conducted on the personnel working as PAs in those hospitals; the survey included general personal information, working conditions, training time, and satisfaction. A total of 192 PAs in surgery at 35 hospitals responded to the survey. The types of PAs are Surgical Assistant, Clinical Physician Assistant, Wound Ostomy Care Nurse, Coordinator, and Clinical Research Coordinator. Types of work PAs performed are surgical assistance, wound dressing, educating patients, overlooking consultation, doing paper works, writing operation records, and confirming examination results which were ordered. The satisfaction level for the position which PAs hold were 29.1% and satisfaction level which doctors see towards PA was 15%. The role and the job descriptions of PAs are not clear cut, there are many discrepancies among hospitals we studied. As a result, legalization and the implementation of standardized role of PAs will lead to increase level of satisfactions in the work force and the quality of work which PAs perform will be greater.

Key Words: Physician Assistants; General Surgery

INTRODUCTION

Recently in the field of medicine, an increasing number of departments that have a shortage of resident trainees have been using physician assistants (PAs) to prescribe already set prescription and to assist during operations and perform some medical procedures. The PA system has been introduced in other countries for different purposes. In other countries such as the United States, the background of the establishment of the PA position was as an alternative plan for the health care of residents in farming and fishing villages, where the availability of medical services is restricted.

Since, the first PA graduated from Duke University in 1965, currently more than 79,000 PA graduates have been trained and educated in the field of medicine (1). However, in Korea, some hospitals without any legalization, began to use some nurses or nurse assistants to assist physicians and play the role of a PA as stated above.

While Nurse practitioner (NP) and nurse system has a systematic educational course and defined regulations followed by liabilities and duties, the PA system operating in Korea did not abide by the law arrangement resulting from a distorted medical system and has no actual structure, including regulations and training courses. In addition, the PAs are used as alternative personnel for doctors in university hospitals and in some general hospitals or clinics, although there are no concrete data regarding the last two examples.

In 2010, a government survey recognized a large number of uncertified PAs in the workforce. The survey indicated urgent need to educate, train and certify the PAs in the Department of Surgery.

Since the Department of Surgery has the greatest overall need for PAs, analyzing and recognizing the current status and situation of the PA is important. Therefore, the present survey was designed to study followings: general overview of current PAs in the workforce, working conditions, hours of training, level of sat-

isfaction and the standardization of the job description for a PA.

MATERIALS AND METHODS

Survey method

Questionnaires were sent via email to the head of each department and to PAs at 114 recognized surgical training hospitals in the format of an Excel file. The emails were sent twice. A total of 35 hospitals (30 university-affiliated hospitals and 5 general hospitals) replied. Within this result, 32 department chairs and 192 general surgery PAs replied.

Survey contents

The following questions were asked to the department chairs: current status of PAs, responsibility and supervision of the PAs, education, role, freedom to work independently, working hours, the need for the legalization of the PA system, and satisfaction with the work of the PAs in the eyes of the surgeons and residents.

The following questions were asked to PAs: current level at work with any qualification, salary, role and responsibilities, education, freedom to work independently, working hours, satisfaction, relationship with co-workers, and the desire to keep current PA system.

Statistical analysis and definition

Chi-square tests and t-tests were used to compare the percentages and means, respectively. The differences between the groups were considered statistically significant if the *P* value was less than 0.05. The statistical analyses were performed using SPSS 12.0 for Windows (Microsoft, Chicago, IL, USA).

PAs were defined as Surgical Assistant (SA), Clinical PA, Wound Ostomy Care Nurse (WOCN), Coordinator, and Clinical Research Coordinator (CRC). SAs are PAs who were involved with surgical work where as clinical PAs were those involve clinical aspect of work in their workforce.

Ethics statement

The study proposal was approved by the institutional review board of The Catholic University of Korea, Yeouido St. Mary's Hospital (SC12QISI0068). Written consents were announced to those who were involved in this survey that informed consent was waived by the board.

RESULTS

Status of PAs

A total of 192 PAs from 35 hospitals and department chairs from 32 hospitals replied. The first PA started to work in 1997, and the number of PAs has been rapidly increasing since 2007. Currently, there are 399 PAs and 89 SAs. Overall, 32 hospitals have PAs in the Department of General Surgery, 22 in Chest Surgery, 11

in Obstetric and Gynecology, 9 in Orthopedic Surgery, 8 in Neurosurgery, 6 in Internal Medicine, 4 in Plastic Surgery, 3 in Anesthesiology, 2 each in Pediatric, Urology and Ophthalmology, and 1 each in the trauma center and Otorhinolaryngology. From vacant training spots for surgical trainees, only 57.6% of the General Surgery residents fulfilled the program.

General overview (Table 1, 2)

The male to female ratio of PAs was 1:3.92, with a mean age of 31.4 yr. The duration of previous clinical work experience was 6.2 yr, with an 1.7 yr of experience was set aside for the job of Registered nurse (RN). The majority (98.4%) had a background as nurses, whereas only 2 (1.1%) and 1 PAs had been paramedics and military medical personnel, respectively. Most of our surveys were completed in the environment of university-affiliated hospitals; thus, there may be different results when our survey group is expanded into general and local medium-sized hospitals. With respect to the education level, 52.7% of the PAs had a bachelor's degree, and 11.7% obtained a master's degree. The PAs were involved in the following areas: SA 42.9%, clinical PA 42.3%, WOCN 9.5%, coordinator 3.2%, and CRC 2.1%. 66.5% and 28.7% of the PAs were under the departments of nursing and medical care, respectively. Overall, 80.3% of the PAs were full-time employees, and their salary was 93.5% of that of an average nurse, with 23.3% receiving a special allowance.

A further investigation of 81 SAs and 80 clinical PAs revealed that the male to female ratio was 43.2% male, with 3.8% male clinical PAs ($P < 0.001$). The education levels of the SAs were a specialized diploma for 56.8%, bachelor's degree for 42.0%, and master's degree for 1.2%, whereas the education levels of the clinical PAs were a specialized diploma for 21.2%, bachelor's degree for 58.8%, and master's degree for 20.0%; thus, the clinical PAs tended to have a higher education level ($P < 0.001$). In addition, the satisfaction level was lower in the SA group compared with that of the clinical PA group. The age, years of experience, and working days per week were slightly higher in the SA group ($P < 0.05$). However, the clinical PAs had shorter working hours than the SAs (9.3 vs 9.7 hr; $P = 0.042$).

Analysis of work (Table 2, 3)

The duties that the most of PAs performed were assisting with operations, which was the highest at 23.4%, followed by dressing at 11.5%. In addition, they provided counseling during admission, wrote admission, progress, and operation reports, and checked tested laboratory results. Some PAs prescribed tests, drugs and clinical pathway (CP) prescriptions. The types of work that involved more independence and freedom of choice were dressing, participation in the rounds, checking results, educating the OPD patients and writing admission note of patients, which altogether accounted for more than 50%. Further investigations of the SAs and clinical PAs revealed that the duties per-

Table 1. General overview of physician assistants

Variables	Frequency (%)			P value
	Total	Surgical assistant (n = 81)	Clinical physician assistant (n = 80)	
Gender (n = 192)				< 0.001
Male	39 (20.3)	35 (43.2)	3 (3.8)	
Female	153 (79.7)	46 (56.8)	77 (96.2)	
Education level (n = 188)				< 0.001
Diploma	67 (35.6)	46 (56.8)	17 (21.2)	
Bachelors	99 (52.7)	34 (42.0)	47 (58.8)	
Masters	22 (11.7)	1 (1.2)	16 (20)	
Background (n = 188)				0.221
Nurse	185 (98.4)	78 (96.3)	80 (100)	
Lab technicians	0			
Paramedics	2 (1.1)	2 (2.5)		
Others	1 (0.5)	1 (1.2)		
Work status (n = 188)				0.230
Full time	151 (80.3)	62 (76.5)	68 (85)	
Part time	37 (19.7)	19 (23.5)	12 (15)	
Department (n = 188)				0.910
Medical department	54 (28.7)	25 (30.9)	23 (28.8)	
Nursing department	125 (66.5)	52 (64.2)	52 (65.0)	
Other	9 (4.8)	4 (4.9)	5 (6.2)	
Type of PA (n = 189)				
CRC	4 (2.1)			
SA	81 (42.9)			
WOCN	18 (9.5)			
Coordinator	6 (3.2)			
Clinical PA	80 (42.3)			
Special allowance (n = 189)				0.893
Yes	44 (23.3)	21 (25.9)	20 (25)	
No	145 (76.7)	60 (74.1)	60 (75)	
Supervisor (n = 186)		n = 80		
Specialist	109 (58.6)	54 (67.5)	39 (48.8)	
Fellow	8 (4.3)		5 (6.2)	
Resident	29 (15.6)	6 (7.5)	21 (26.2)	
Head nurse	4 (2.2)	3 (3.8)		
Other	9 (4.8)	2 (2.5)	7 (8.8)	
Non specialized doctor	25 (13.4)	14 (17.5)	8 (10)	
Doctor and nurse	2 (1.1)	1 (1.2)		
Relationship between education and works (n = 141)		n = 69	n = 58	
Very high	34 (24.1)	14 (20.3)	14 (24.1)	
High	66 (46.8)	33 (47.8)	27 (46.6)	
Average	34 (24.1)	19 (27.5)	13 (22.4)	
Low	6 (4.3)	2 (2.9)	4 (6.9)	
Very low	1 (0.7)	1 (1.4)		
On call (n = 192)				0.502
Yes	22 (11.5)	12 (14.8)	9 (11.2)	
No	170 (88.5)	69 (85.2)	71 (88.8)	
Need for legalization (n = 189)		n = 80	n = 79	1.000
Yes	187 (98.9)	79 (97.5)	79 (100)	
No	2 (1.1)	1 (1.2)		
Satisfaction of PA works (n = 189)				0.017
Very unsatisfied	1 (0.7)	1 (1.2)		
Unsatisfied	13 (6.9)	11 (13.6)	1 (1.2)	
Usual	120 (63.5)	47 (58.0)	56 (70)	
Satisfied	55 (29.1)	22 (27.2)	23 (28.8)	
Continuation of PA (n = 183)		n = 78	n = 79	0.436
Yes	137 (74.9)	56 (71.8)	61 (77.2)	
No	46 (25.1)	22 (28.2)	18 (22.8)	

CRC, clinical research coordinator; SA, surgical assistant; WOCN, wound ostomy care nurse; PA, physician assistant.

formed by the SAs included assisting with operations (46.3%), performed surgical procedures (11.1%), and dressing (7.1%). In

contrast, the clinical PAs were involved in dressing (15.8%), writing admission, progress, and operation reports (11.1%), educat-

Table 2. Career and work hours of the physician assistants

Variables	Mean			P value
	Total	Surgical assistant (n=81)	Clinical physician assistant (n=80)	
Age (n = 190, yr)	31.4±4.5	30.0±4.0	32.4±4.4	<0.001
Clinical career (n = 178, yr)	6.2±4.97	4.0±4.4	8.0±4.2	<0.001
PA career (n = 183, yr)	1.7±2.0	1.4±1.9	1.9±2.2	0.113
Grant (n = 191, %)	93.5±12.3	92.1±14.6	95.4±8.8	0.081
Days per week on duty (n = 192, day)	5.1±0.2	5.0±0.1	5.1±0.2	0.030
Daily allowance work hours (n = 192, hr)	9.5±1.3	9.7±1.5	9.3±1.1	0.042
Duty time (n = 192, hr)	0.6±2.2	0.7±2.0	0.7±2.6	0.981

Table 3. Analysis of work

Type of work (n = 191)	Composition ratio of work (%)				Work at their discretion (%)			
	Total	Surgical assistant	Clinical physician assistant	Doctor	Total	Surgical assistant	Clinical physician assistant	Doctor
Assisting operations	23.38	46.3	7.8	26.5	46.40	70.5	29	62.5
Dressing	11.48	7.1	15.8	11.2	67.70	59.7	83.1	62.5
Education and counseling of OPD or admission	9.59	4.6	11.0	6.1	55.00	30.7	74.6	59.4
Writing admission, progress, and operation reports	6.75	2.2	11.1	5.7	37.70	23.6	54.4	28.1
Checking results of exams	5.93	4.1	7.5	5.5	59.60	39.2	87	62.5
Procedures (suturing, etc.)	5.82	11.1	1.9	4.3	39.00	55.8	26.2	34.4
Participation in rounds	5.70	3.0	8.6	8.0	51.20	33.3	74.6	59.4
Participation in conferences	5.68	5.7	6.0	8.0	62.40	58.4	75.0	75.0
Data collection	4.06	2.6	4.6	5.2	34.30	25.7	43.3	43.8
Work regulation	3.29	1.7	4.4	4.3	40.40	28.8	50	40.6
Prescribing laboratory test	3.00	2.2	3.6	3.0	26.30	21.9	28.8	18.8
Other	2.93	0.1	2.6	2.7	12.20	2.9	18.2	6.2
Permission for operation or procedure	2.55	1.3	4.0	2.0	29.30	28.2	38.5	18.8
Meeting attendance	2.45	2.6	2.5	4.3	38.20	35.1	40.9	50.0
Prescribing drugs	2.24	0.9	3.4	2.2	26.70	20.5	31.8	15.6
Physical exams	1.83	1.4	2.3	0.9	25.90	16.7	39.7	18.8
Assisting with clinical exams	1.46	1.0	1.1	2.1	19.90	15.5	19.0	2.05
Prescribing CP	1.24	0.6	1.6	1.3	16.00	11.0	20.3	15.6

CP, Clinical pathway.

ing patients (11.0%), and participating in rounds (8.6%). Compared with the SAs, the clinical PAs were involved in most of the tasks performed by PAs in general. Most of the supervisory doctors felt that the types of work in which the PAs were involved are evenly distributed. In being given the freedom of choice with respect to their duties, the SAs were involved in assisting with operations dressing and participating in conferences; whereas the clinical PAs were involved in dressing, education, participating in conferences and rounds, prescribing drugs, tests, and CP, obtaining permission for operations, writing progress reports, and performing physical examination under physician's supervision.

The mean work hours were 5.1 days per week with 9.5 hr per day. With respect to being on call, 88.5% were not on call. With respect to supervision, 58.6% were supervised by a specialist, 15.6% by a resident, 13.4% by a doctor, and 2.2% by a head nurse who were also under physician's control.

Education of PAs (Table 4)

With respect to training, 66.1% of the PAs did not receive any prior education, and 61.2% did not receive any education even after starting their work. Based on this report, no education is being provided before and after the start of the PAs' practice. When education is given, 13.8% of PAs received 1 day of education prior to their work, whereas 16.5% received 1 day of education after their training started. For those PAs who received 3 months of training, 4.1% were trained prior to their work, and 3.7% after their work.

The education was provided by a department specialist for 34% of the PAs, by a resident 11.8% and by other staff non-specialized doctors 30.1%. The appropriate relationship in between the work of a Physician Assistant and their education is 46.8%. The educational content included the outpatient department (OPD), ward training, surgical training, preoperative preparation, wound management, colostomy management, and participation in conferences and meetings. Small number of PAs

Table 4. Education of physician assistants

Education status	Frequency (%)
Before start of the training period (n = 189)	
None	125 (66.1)
1 day	26 (13.8)
3 days	11 (5.8)
1 week	6 (3.2)
2 weeks	5 (2.6)
1 month	8 (4.2)
3 months	6 (3.1)
1 yr	1 (0.5)
3 yr	1 (0.5)
After start of the training period (n = 188)	
None	115 (61.2)
1 day	31 (16.5)
3 days	22 (11.7)
1 week	11 (5.9)
2 weeks	1 (0.5)
1 month	1 (0.5)
3 months	5 (2.7)
1 yr	1 (0.5)
3 yr	1 (0.5)
Education of the person in charge (n = 153)	
Specialist	52 (34.0)
Fellow	7 (4.6)
Resident	18 (11.8)
Head nurse	6 (3.9)
Other	22 (14.4)
Doctor	46 (30.1)
Doctor and head nurse	2 (1.3)
Relationship between education and work (n = 141)	
Very high	34 (24.1)
High	66 (46.8)
Average	34 (24.1)
Low	6 (4.3)
Very low	1 (0.7)

received some intern work and anatomy and physiology education. After the start of the PA work, education was provided through participation in conferences and meetings, and many PAs want to receive practical, specific and relevant continuous education.

Satisfaction level of PAs and Surgeons regarding PA system

The satisfaction levels of PAs were not very high, with only 29.1% being satisfied. In addition, 74.9% agree that this PA system should be continued, and 98.9% agree that the PA system needs to be legalized. When there were more than 3 areas rated as satisfactory, 63.3% were happy with the freedom at work, 18.4% with the lack of rotation, and 18.4% with the accompanying sense of accomplishment and having a job worth doing. The reasons for dissatisfaction were an ambiguous job description, conflicts with the medical doctors, other nurses and other departments, and a lack of knowledge regarding the PA system. The reasons for continuing the PA works were as follow; satisfaction with the role (28.7%), the vision (11.5%), the specialization (25.3%), and being permanent job (34.5%).

The satisfaction levels of the doctors toward PAs were: 15%

satisfied, 56.2% average, 25% dissatisfied, and 3.1% very dissatisfied. The 3 reasons for the highest satisfaction were the filling or replacement of unfilled position by residents, increases in the satisfaction of customers or patients, the decreased work load, the ability to focus on surgery, standardization of the operations, and highly experienced. Overall, 89.7% of the doctors felt the need for the legalization of the PA system.

As for the residents satisfaction level regarding PAs: 3.1% were satisfied, 62.5% average, 31% dissatisfied, and 3.1% very dissatisfied. The 3 most satisfactory reasons were a decreased work load, absence of miscellaneous work, ability to focus and concentrate on clinical training and ability to study more.

DISCUSSION

In Korea, due to high mental and physical loads, low expected income and high risk bearing, the number of residents who applied to the Departments of Thoracic Surgery, Gynecology, and General Surgery has decreased seriously. Therefore there are many difficulties in care of patients (2). Accordingly, these circumstances have inspired the following efforts by the Korean Surgical Society and the government: regular capacity adjustment of residents, provision of a training subsidy for residents, adjustment of health insurance charges, smoothing out the differentials of the resident qualitative grade securing rate and hospital selection, and utilizing PAs for alternative personnel. In contrast, in the United States, the PA was established as an alternative plan to provide health care to the residents in farming and fishing villages, where the approach to medical services is limited (3).

At present, nurse specialists are being utilized in large hospitals located in municipal regions due to reasons similar to the medical circumstances in Korea. In the United States, however, the term PA refers to assistant personnel for doctors acting within a medical model and is distinguished from NP in both name and legal responsibility (4). A difference between an NP and a PA is that while the NP plays a role in patient cure and care, the PA only plays a role in the cure. The role of the NP mainly includes taking the patient's medical history, performing a physical examination, medical prescription, and providing a supportive role in the operating room (4).

The United States has more than 50 thousand NPs at present since the NP system was first introduced in the 1960s and currently has more than 134 educational programs. In addition, the PA system is used in India, the Netherlands, the United Kingdom and Canada (5). In the United Kingdom, in which the PA system has not yet been established, a systematic educational program was initiated early by a joining of the PA training in the United States with the UK PMS practice in 2003. The PAs in the UK differ from the NPs in the United States in that they cannot prescribe medicines (4).

This survey was performed only in some university hospitals, and the actual situation in small and medium sized hospitals was not evaluated. Because the survey was given to several types of PAs in the Department of Surgery, there were some limitations with respect to representing the whole field of PAs. In addition, there were some problems involving the personnel and the time to study the entire field of PAs, such as PAs having multiple names (e.g. SA and clinical nurse specialist). Thus, because the term 'PA' was not established, there were some difficulties in objective classification.

As shown in these results, in Korea, many PAs actually perform the work of doctors under supervision, but the absence of a systematic educational course and sufficient training time causes a significant problem because they perform works which are accompanied by important liabilities, such as prescribing medicines. In addition to this, legal support of their activity is required.

Even if an insufficient number of residents is unavoidable in some departments, another problem may be caused by the introduction of a system of PAs without a systematic educational system. In addition, the creation of an informal system employing a doctor with several PAs, which has been established in some hospitals, will apparently initiate a vicious circle and cause a decline in the quality of some departments. In particular, the fact that the PAs are managed practically under the department of nursing in each hospital and not under the medical association may cause serious social problems in the future.

Therefore, correcting the wrong circumstances that the use of PAs is unavoidable should be set forth beforehand, and a sufficient review and establishment of an educational system for the legalization of the PA system and an exact description of their duties should be performed.

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