



Original Article

# The investigation of the effectiveness on the educational procedure development for physical therapist assistant in Quang Tri province of Vietnam

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**Abstract.** [Purpose] The purpose of the present study was to investigate the effectiveness on the educational procedure development for physical therapist assistant in Quang Tri province of Vietnam. [Subjects and Methods] The subjects consisted of 10 lecturers for the education of physical therapist assistant in Quang Tri medical college. To compare with satisfaction and educational effectiveness according to the participation of educational procedure, the lecturers conducted the survey research. [Results] In the descriptive values of participant satisfaction in educational procedure, most of the scored were higher than 4. There was no significance in the difference between the satisfaction in educational procedure according to gender and degree. However, there was some significance in class according to major. To investigate the educational effectiveness, 5 domains about knowledge of physical therapist assistant included 4 questions each were evaluated the understanding level before and after the education. In all domains, the understanding level after education was notably higher than before. [Conclusion] The present study was to the satisfaction and effectiveness of the educational procedure for physical therapist assistant reflecting the regional specialty in this area. The development of educational procedure for physical therapist assistant helps to improve the situation where the medical specialists for rehabilitation are insufficient.

**Key words:** Physical therapy, Educational procedure, Quang Tri province of Vietnam

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## INTRODUCTION

According to World Bank, the desired life time for the Japanese was 83.59 years in 2014, Koreans were 82.16, and Vietnamese were 75.63<sup>1)</sup>. This is influenced by socio-economic conditions. If there are difficulties of socio-economic conditions in some country, it is predicted that the desired life time appears low. In addition, it is also affected by industrial and traffic accidents<sup>2)</sup>. Among them, Quang Tri province is one of the poorest areas in Vietnam which was affected by World War II and the Vietnam War. The provincial residents are still suffering from the land degradation and health disorders which was caused by Agent Orange. The gross domestic product per person in Quang Tri province was US\$360 approximately and the

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**Table 1.** The general characteristics of subjects

	Contents	Frequency (number)	Percents (%)
Gender	Male	2	20.00
	Female	8	80.00
Degree	Bachelor	5	50.00
	Master	2	20.00
	Doctor	3	30.00
Major	Medicine	4	40.00
	Nursing	5	50.00
	Physical therapy	1	10.00

poor strata is comprised to 14% of the population which are higher than 11% of Vietnam totally<sup>3</sup>). It is the most vulnerable to drought and flood in the country, thus, there are difficulties in farming. However, the government support policy for financial and medical service is very insufficient<sup>3</sup>).

There are 37,000 people with disabilities including 15,000 damaged Agent Orange<sup>4</sup>). There are 3 rehabilitation hospitals, 4 medical institutions, and several medical centers to manage the non-governmental organization as well as 11 physical therapists in Quang Tri province. Just 11% of patients have the rehabilitative medical coverage, however, 89% are still waiting for the benefits. Thus, more health care personnel and network for rehabilitation are needed in Quang Tri province<sup>5</sup>). The development of educational procedure for physical therapist assistant is very important to supply enough physical therapy service for provincial residents<sup>6</sup>). Moreover, the educational procedure for physical therapist assistant must be executed to improve the medical service and public health in Quang Tri province. Therefore, we would establish and supply the adaptive educational procedure for physical therapist assistant in cooperation with the Korea International Cooperation Agency (KOICA).

In the field of education, the educational procedure is understood to various meaning because of the diversity of the viewpoint for the maximal development of learners. In general, the educational procedure is defined as the selection of a learning goal is for the learner and the organization to study and achieve its learning goal. The reason for the change in the meaning of educational procedure is because of the necessity to modify the learning goal, contents selection, and contents organization depending on the viewpoint for understanding the education. Therefore, it can be said that the curriculum from the point of view of the learner is meaningful in the development of the educational procedure for the physical therapist assistant<sup>7</sup>).

The development and operation of educational procedure for physical therapist assistant in Quang Tri province were implemented in the order of preparation stage→lecturer education stage→educational procedure development stage→class practice stage→teaching practice stage<sup>8</sup>). Accordingly, the curriculum was finally developed through the educational procedure consists of five subject areas as introduction of rehabilitation, basic kinesiology, basic measurement for joint and muscle, physical therapy for international medicine & surgery, and physical therapy for neurology & pediatrics. The developed curriculum is presented as our previous study<sup>5</sup>). This curriculum was applied to 10 lecturers in Quang Tri medical college, the only higher educational institution in Quang Tri province, and then these 10 lecturers will educate students in the college and local residents.

Accordingly, in the present study, we would provide basic data on how to expand and operate the educational procedure for physical therapist assistant in the future by analyzing the effects of the educational procedure that can educate them from the viewpoint of the faculty in Quang Tri medical college. The physical therapy contents the training effectiveness of the curriculum of the physical therapist assistant can be confirmed and the basis of the training model of the physical therapist assistant reflecting the regional specialty can be established. Moreover, the educational procedure for physical therapist assistant can be recognized, which reflects the specialty in Quang Tri province. Therefore, the purpose of this study was to investigate the satisfaction and effectiveness of the educational procedure for physical therapist assistant.

## SUBJECTS AND MEHTODS

The subjects consisted of 10 lecturer for education of physical therapist assistant in Quang Tri Medical College which is located in Dong Ha city, Quang Tri province. This study was also approved by the Institutional Review Board (IRB) of Eulji university of Korea (EU16-21). All study subjects were provided with written informed consent for the survey. The general characteristics of subjects in the present study are described in Table 1.

To compare with satisfaction and educational effectiveness according to the participation of educational procedure, the lecturers for education of physical therapist assistant in Quang Tri medical college conducted the survey research. First, the participant satisfaction in the educational procedure had a total of 31 questions which included 5 domains (educational contents, lecturer, educational outcome, educational environment, and satisfaction in the class). The variables of the satisfaction level according to the participation of the educational procedure are 1 point of 'very low', 2 point of 'low', 3 point of 'normal', 4 point of 'high' and 5 point of 'highly' by Likert 5 point scale.

Moreover, for the investigation of effectiveness according to the participation of educational procedure, 5 domains about

**Table 2.** The evaluation tool of satisfaction in educational procedure

Subfactor of satisfaction in educational procedure	Number of question	Cronbach' $\alpha$
Satisfaction in educational contents	3	0.80
Satisfaction in lecturer	6	0.99
Satisfaction in educational outcome	5	0.87
Satisfaction in educational environment	4	0.80
Satisfaction in lesson	13	0.82
Total	31	0.85

**Table 3.** The evaluation tool of educational effectiveness

Subfactor of educational effectiveness	Number of question	Cronbach' $\alpha$
Understanding about physical therapy	4	0.89
Principles and practice of therapeutic exercise	4	0.85
Understanding about physical therapy for neurology & pediatrics	4	0.98
Understanding and practice about measurement for joint and muscle	4	0.87
Physical therapy for international medicine & surgery	4	0.79
Total	20	0.87

knowledge of physical therapy were evaluated by using the evaluation tool. Each domain consists of 4 questions (total 24 questions) and through this evaluation, the level about physical therapy before and after the education as suggested in previous study<sup>9)</sup> could be better understood. The subfactor and reliability of evaluation tool are presented as [Tables 2 and 3](#).

The statistical analysis of the present study that was used is the SPSS 18.0 package for window version. Firstly, the reliability analysis (Cronbach' $\alpha$ ) was conducted to measure the internal consistency in research question. Secondly, the frequency analysis was conducted to measure the background variable and characteristics of subjects. Thirdly, the descriptive statistics was conducted to measure the satisfaction of the educational procedure for physical therapist assistant. In addition, independent t-test and ANOVA were conducted to measure differences of the satisfaction of the educational procedure according to background variable of subjects. Levene's homoscedasticity assumption was confirmed before the group differences test and the result was that the significance probability was  $p > 0.05$ . Thus, parametric analysis was conducted for each comparison.

## RESULTS

The descriptive values of satisfaction in educational procedure were analyzed as [Table 4](#). In the present results, the mean (standard deviation) of educational satisfaction on the educational contents was 4.33 (0.444). Among them, the mean on 'The education was instructive' question was the highest score of 4.90 (0.316). The mean of satisfaction about the lecturer was 4.86 (0.204) and 'The lecturer followed the set training days and times.' question was the highest score of 5.00 (0.000). The mean of satisfaction about the educational outcome was 4.38 (0.426) and 'I think that I need to expand my academic knowledge to become a lecturer.' question was the highest score of 4.80 (0.422). The mean of educational satisfaction on the educational environment was 4.80 (0.258). The mean on 'I was free to ask questions during the class.' and 'It was not inconvenient to be educated with other participants.' questions had the highest score of 5.00 (0.000). Additionally, the mean of educational satisfaction in the class was 4.48 (0.153). The mean on 'The aim of the lecture was described clearly before beginning.', 'The teaching materials were provided at proper timing', and 'The lecture was conducted according to the lecture plan as a whole.' questions had the highest score of 4.90 (0.316).

Independent t-test and ANOVA were conducted to measure differences of the satisfaction of the educational procedure according to background variable of subjects. In the result of difference on satisfaction in educational procedure according to gender ([Table 5](#)), the score of male was higher than female in educational contents, lecturer, educational outcome, and class, except to educational environment. There was no significance in the difference on satisfaction in educational procedure according to gender. In the result of difference on satisfaction in educational procedure according to degree ([Table 6](#)), satisfaction in educational contents was presented the highest in the group with bachelor degree. In addition, the satisfaction in lecturer, educational outcome, and educational environment were presented the highest in the group of master degree. There was no significance in the difference on satisfaction in educational procedure according to degree. In the result of difference on satisfaction in educational procedure according to major ([Table 7](#)), satisfaction in all domains was presented the highest in the group of physical therapy. There was significance in the difference on satisfaction in class according to major.

To investigate the educational effectiveness, 5 domains about knowledge of physical therapist assistant included 4 questions each were used to evaluate the understanding level before and after the education ([Table 8](#)). In all domains, the understanding level after education were significantly higher than before. In the result of 'Introduction of rehabilitation', the

**Table 4.** The descriptive values of participant satisfaction in educational procedure

Domain	Question	Min	Max	Mean	SD
Educational contents	The educational aim was clear.	2	5	3.60	0.97
	Through the education, my confidence has improved.	4	5	4.50	0.53
	The education was instructive.	4	5	4.90	0.32
	The whole of satisfaction in educational contents.	3.6	5	4.33	0.44
Lecturer	If it was needed, the lecturer applied practical or assist tools during the class.	4	5	4.70	0.48
	The lecturer provided obvious examples.	4	5	4.80	0.42
	The lecturer prepared for the class as a whole.	4	5	4.80	0.42
	The lecturer followed the set training days and times.	5	5	5.00	0.00
	The lecturers were excellent overall.	4	5	4.90	0.32
	The lecturer tried to respect the lecturers and maintain a friendly relationship.	5	5	5.00	0.00
	The whole of satisfaction in educational lecturer.	4.5	5	4.86	0.20
Educational outcome	The background knowledge has help to understand the educational contents.	3	5	4.40	0.70
	Problem-solving ability has improved.	3	5	4.00	0.82
	I think that I need to expand my academic knowledge to become a lecturer.	4	5	4.80	0.42
	It was the chance that communication ability has improved.	4	5	4.60	0.52
	It could be acquired enough knowledge and skill through the education.	4	5	4.10	0.32
The whole of satisfaction in educational outcome.	3.6	5	4.38	0.43	
Educational environment	It was not inconvenient to be educated with other participants.	5	5	5.00	0.00
	The pleasure was greater than the stress caused by education.	4	5	4.60	0.52
	The surrounding environment had a positive effect on learning motivation.	4	5	4.60	0.52
	I was free to ask questions during the class.	5	5	5.00	0.00
The whole of satisfaction in educational environment.	4.5	5	4.80	0.26	
Satisfaction in the class	The overall composition of the lecture was proper.	4	5	4.20	0.42
	The provided materials during the lecture was proper.	4	5	4.00	0.00
	The provided examples during the lecture was proper.	4	5	4.40	0.52
	The overall level of difficulty in the lecture was proper.	3	5	4.20	0.62
	The overall level of lectures compared to my expectations was satisfactory.	4	5	4.40	0.52
	The aim of the lecture was described clearly before beginning.	4	5	4.90	0.32
	The teaching materials were provided at proper timing.	4	5	4.90	0.32
	The teaching materials could be used effective during the lecture and study.	4	5	4.30	0.48
	The applied data during the lecture was proper and useful.	4	5	4.50	0.53
	The lecture was conducted according to the lecture plan as a whole.	4	5	4.90	0.32
	The practice during the lecture was useful and helpful to understand.	4	5	4.80	0.42
	Through this education, it might be able to be a better lecturer.	4	5	4.50	0.53
	I am satisfied the lecture as a whole.	4	5	4.70	0.48
	The whole of satisfaction in the class.	4.36	4.86	4.48	0.15

**Table 5.** The satisfaction in educational procedure according to gender

	Gender	N	Mean	SD	t
Satisfaction in educational contents	Male	2	4.50	0.71	0.57
	Female	8	4.29	0.42	
Satisfaction in lecturer	Male	2	5.00	0.00	1.03
	Female	8	4.83	0.22	
Satisfaction in educational outcome	Male	2	4.70	0.42	1.21
	Female	8	4.30	0.41	
Satisfaction in educational environment	Male	2	4.75	0.35	-0.03
	Female	8	4.81	0.26	
Satisfaction in the class	Male	2	4.64	0.30	1.81
	Female	8	4.44	0.09	

understanding level about ‘Which disorders can be applied physical therapy?’ showed the highest change of  $-1.80$  before and after education, which shows the significant difference. In the result of ‘Basic kinesiology’, the understanding level about ‘What are differences among the passive, active, active assistant, and resistant exercise?’ was the highest change of  $-3.10$ , which was also a significant change statistically. The understanding level about ‘What is the method of evaluation in musculoskeletal system?’ showed the highest change of  $-2.90$  before and after education significantly in the case of ‘Basic measurement for joint and muscle’. In the result of Physical therapy for international medicine & surgery’, the understanding level about ‘What is the method of physical therapy for joint disorder?’ was the highest change of  $-2.90$ , which was

**Table 6.** The satisfaction in educational procedure according to degree

	Degree	N	Mean	SD	t
Satisfaction in educational contents	Bachelor	5	4.53	0.45	2.27
	Master	3	4.33	0.33	
	Doctor	2	3.83	0.24	
Satisfaction in lecturer	Bachelor	5	4.90	0.22	1.32
	Master	3	4.94	0.96	
	Doctor	2	4.66	0.24	
Satisfaction in educational outcome	Bachelor	5	4.44	0.43	2.15
	Master	3	4.60	0.20	
	Doctor	2	3.90	0.42	
Satisfaction in educational environment	Bachelor	5	4.80	0.27	0.04
	Master	3	4.83	0.29	
	Doctor	2	4.75	0.35	
Satisfaction in the class	Bachelor	5	4.52	0.21	0.55
	Master	3	4.40	0.04	
	Doctor	2	4.50	0.10	

**Table 7.** The satisfaction in educational procedure according to major

	Major	N	Mean	SD	t
Satisfaction in educational contents	Medicine	4	4.16	0.43	1.59
	Nursing	5	4.33	0.41	
	Physical therapy	1	5.00	0.00	
Satisfaction in lecturer	Medicine	4	4.91	0.08	0.53
	Nursing	5	4.80	0.27	
	Physical therapy	1	5.00	0.00	
Satisfaction in educational outcome	Medicine	4	4.50	0.26	2.51
	Nursing	5	4.16	0.43	
	Physical therapy	1	5.00	0.00	
Satisfaction in educational environment	Medicine	4	4.87	0.25	0.80
	Nursing	5	4.70	0.27	
	Physical therapy	1	5.00	0.00	
Satisfaction in the class	Medicine	4	4.41	0.06	11.13*
	Nursing	5	4.47	0.11	
	Physical therapy	1	4.85	0.00	

\*p&lt;0.05

significant, statistically. The understanding level about ‘What is the method of physical therapy for children with cognition disorder?’ showed the highest change of  $-2.50$  before and after education significantly in the case of ‘Physical therapy for neurology & pediatrics’.

## DISCUSSION

The present study was to investigate the satisfaction and effectiveness of the educational procedure for physical therapist assistant reflecting the regional specialty in Quang Tri province of Vietnam. The physical therapy contents for patients suffering from Agent Orange defects in the region are reflected in the educational curriculum, and the training effectiveness of the curriculum of the physical therapist assistant can be confirmed and the basis of the training model of the physical therapist assistant reflecting the regional specialty can be established. It is important to consider the cultural and environmental context of each country in order to develop the educational procedure for the physical therapy<sup>10</sup>.

Above all, in the result of satisfaction in educational contents, ‘The education was instructive’ question had the highest score. In the satisfaction about the lecturer, ‘The lecturer followed the set training days and times.’ question was the highest. ‘I think that I need to expand my academic knowledge to become a lecturer.’ question was found to be the highest score in satisfaction about the educational outcome. In the case of satisfaction on the educational environment, ‘I was free to ask questions during the class.’ and ‘It was not inconvenient to be educated with other participants.’ questions had the highest score. ‘The aim of the lecture was described clearly before beginning.’, ‘The teaching materials were provided at proper timing’, and ‘The lecture was conducted according to the lecture plan as a whole.’ questions had the highest score in the satisfaction of the class.

Moreover, in the results of differences in the satisfaction of the educational procedure according to background variable of

**Table 8.** Educational effectiveness according to the participation of educational procedure

		Educational contents	Mean		Paired difference	t
			Before	After		
Introduction of rehabilitation	1-1	What is 'Physical therapy'?	3.00	4.00	-1.30	-2.89*
	1-2	What is the attitude for patients?	3.40	5.00	-1.55	-4.60*
	1-3	Which places have physical therapy among the medical field?	3.00	4.60	-1.62	-6.17*
	1-4	Which disorders can physical therapy be applied?	2.80	4.60	-1.80	-4.63*
Basic kinesiology	2-1	What is 'Physical biomechanics'?	1.50	3.40	-1.90	-5.01*
	2-2	What is 'Therapeutic exercise'?	2.30	4.80	-2.50	-8.13*
	2-3	What are the differences among the passive, active, active assistant, and resistant exercise?	1.90	5.00	-3.10	-7.15*
	2-4	How much range of motions do each joints have?	1.90	4.10	-2.20	-6.73
Basic measurement for joint and muscle	3-1	What is the basic posture in a normal person?	2.60	4.70	-2.10	-9.00*
	3-2	What questions should be asked during a patient's interview?	3.10	4.70	-1.60	-9.79*
	3-3	What is the aim of evaluation on function in patients?	2.50	4.70	-2.20	-8.82*
	3-4	What is the method of evaluation in musculoskeletal system?	1.80	4.70	-2.90	-12.42*
Physical therapy for international medicine & surgery	4-1	Do you know about balance and falling in the older people?	2.60	4.30	-1.70	-6.53
	4-2	What is the most frequent musculoskeletal disorder in order people?	2.60	4.80	-2.20	-11.00*
	4-3	What is the method of physical therapy for fracture and dislocation?	2.00	4.60	-2.60	-7.00*
	4-4	What is the method of physical therapy for joint disorder?	2.00	4.90	-2.90	-16.15*
Physical therapy for neurology & pediatrics	5-1	Do you know about motor development in children?	2.80	4.70	-1.90	-6.86*
	5-2	What is the method of physical therapy for cerebral palsy?	2.10	4.10	-2.00	-9.48*
	5-3	What is the method of physical therapy for children with cognition disorder?	1.70	4.20	-2.50	-9.30*
	5-4	What is neurological disorder?	2.30	4.20	-1.90	-10.58*

\*p&lt;0.05

subjects, there was no significance in the difference on satisfaction in educational procedure according to gender and degree. The satisfaction in all domains of educational procedure according to major, presented the highest in the group of physical therapy.

For the investigation the educational effectiveness, 5 domains about knowledge of physical therapist assistant included 4 questions each were evaluated the understanding level. In all domains, the understanding level after receiving education was higher than before, significantly. In the result of 'Introduction of rehabilitation', the understanding level about 'Which disorders can be applied physical therapy?' showed the highest change. In the result of 'Basic kinesiology', the understanding level about 'What are differences among the passive, active, active assistant, and resistant exercise?' had the highest change. The understanding level about 'What is the method of evaluation in musculoskeletal system?' showed the highest change in the case of 'Basic measurement for joint and muscle'. In the result of Physical therapy for international medicine & surgery', the understanding level about 'What is the method of physical therapy for joint disorder?' had the highest change. The understanding level about 'What is the method of physical therapy for children with cognition disorder?' showed the highest change in the case of 'Physical therapy for neurology & pediatrics'.

Physical therapists can play a complex role as clinicians, educators, administrators, consultants, and researchers in various clinical areas. Due to the need for professional qualifications, it is important to develop a training program that emphasizes the health promotion within the local environment and in the local environment in the development of educational procedure for the physical therapist<sup>11)</sup>. Therefore, the development of educational procedure for physical therapist assistant helps to improve the situation where the medical specialists for rehabilitation are insufficient in Quang Tri province of Vietnam. This might strengthen the capacity of the local physical therapist assistant and enable to provide adequate medical services<sup>12)</sup>.

The limitation of this study was that the verification of effectiveness and satisfaction in educational procedure for the physical therapist assistant has been analysed by 10 lectures. This study was for lecturers' participation in the educational procedure to provide education to students and community residents. After that, the effectiveness and satisfaction of educational procedure for students and community residents are expected to be able to analyze more subjects.

The results of the present study shows that the educational procedure for the physical therapist assistant is needed which is proved to be effective for the positive life of the children and the elderly with disorder due to damage of defoliant agent. By educating professional personnel for rehabilitation, it is an opportunity to raise the credibility of the treatment and increase the attention for physical therapy to the local people. Therefore, it is necessary to strengthen the education of all manpower through this procedure for physical therapist assistant. It can guarantee the quality of the developing medical environment and verify its effectiveness<sup>10)</sup>. Additionally, it will be necessary to study the extent to which the subjects who have completed the educational procedure are performing their duties in the medical field, and to develop the supplementary education in the next research.

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