Development of education program for physical therapy assistant in Quang Tri province of Vietnam

Jin Won Noh, USCPA, PhD, MA, MPH, MBA\(^1,\ 2\), Sang Hyun Cho, PhD, MD\(^3\), Min Hee Kim, PhD, PT\(^4\)\(a^*\), Eun Joo Kim, PhD\(^5\)\(a^*\)

\(^1\) Department of Healthcare Management, College of Health Science, Eulji University, Republic of Korea
\(^2\) Global Health Unit, Department of Health Sciences, University Medical Centre Groningen, University of Groningen, Netherlands
\(^3\) Department of Physical Therapy, College of Health Science, Yonsei University, Republic of Korea
\(^4\) Department of Physical Therapy, College of Health Science, Eulji University: 553 Sanseongdaero, Sujeong-gu, Seongnam-si, Gyeonggi 641-713, Republic of Korea
\(^5\) Faculty of Liberal Arts, Eulji University: 553 Sanseongdaero, Sujeong-gu, Seongnam-si, Gyeonggi 641-713, Republic of Korea

Abstract. [Purpose] The purpose of the present study was to develop an education program for physical therapy assistants in order to provide high quality physical therapy for the province of Quang Tri in Vietnam. [Subjects and Methods] Subjects consisted of 9 professors in Quang Tri medical college and 1 physical therapist in Quang Tri General hospital. The survey research to lecturer for education of physical therapy assistant in Quang Tri medical college was conducted as pre-analysis of demand for the physical therapy assistant curriculum development. The priority rank of expectation and consciousness were measured in curriculum subjects. [Results] Results of educational expectation of the curriculum total educational expectation were presented as minimum 4 to maximum 5. In the result of educational expectation according to background variable, the differences of educational expectation on scores according to the educational experience were significant. Among the consciousness priority of each curriculum subject, the priority rank of basic kinesiology and physical therapy for international medicine & surgery were 9, the highest first rank frequency. [Conclusion] The curriculum for physical therapy assistant was developed to 5 main subjects including a total of 420 hours (120 hours of theory and 300 hours of practice). Key words: Physical therapy, Education curriculum, Quang Tri province

INTRODUCTION

Despite that the economy is developing steadily, Quang Tri province is still one of the poorest areas in Vietnam which was affected by World War II and the Vietnam War. Its gross domestic product per person was around US$360 and the poor strata is consisted to take up 14% of the population, higher than 11% of total Vietnam. Moreover, it is the most vulnerable provinces in the country for flood and drought. The provincial residents are still suffered from the land degradation and health disorders by damage Agent Orange. Nevertheless, the government support policy for financial and medical service is very insufficient\(^1\). The 37,000 people with disabilities in Quang Tri including 15,000 damaged Agent Orange is treated by only 11 physical therapists\(^2\). Thus, more health care personnel and network for rehabilitation are needed.
To solve these social problems, the Council of People’s Commissars of Quang Tri province established policies to increase up to 90% the approach for treatment for Agent Orange victims and 85% the early detection of children with congenital disabilities. According to these policies, the education for physical therapy has appeared to more important and urgent task. The educational institution for physical therapy assistant is Quang Tri medical college, which is the only place in Quang Tri province. In Quang Tri medical college, the curriculum of physical therapy for enrolled student in the department of medicine and nursing are 2 prerequisites such as introduction to physical therapy (theory 16 hours, practice 8 hours) and community-based rehabilitation (theory 15 hours, practice 12 hours) (Tables 1 and 2). Moreover, the educational course for physical therapy assistant has been operated from 2012 and the recipients are the general public who work in local health center and clinic and which was established by government and volunteering group. It is consisted to 330 hours during 3 months period, presented as Table 3. The will of the government and Quang Tri medical college to educate for professional personnel of physical therapy is strong, however, due to financial deficits and other various limitations, there are difficulties to achieve this goal. For global approach and support to overcome these difficulties, we established the adaptive and reinforced curriculum for physical therapy assistant by Korea International Cooperation Agency (KOICA).

The curriculum includes the educational activities or its related plan and program according to educational purpose for the intent of educational institution. It includes the educational purpose and contents, teaching procedure, learning experience, and factors of education evaluation. In addition, the development of curriculum is focused on the analysis of demand and situation, plan about learning results, procedure organization, selection and preparation of teaching materials, provision of effective teaching, and evaluation. It is also formed the network of interactive system among these factors. It is a comprehensive process and contains the gradual process for planning the educational procedure, enforcement, and evaluation, gradually. Thus, in procedure on development of curriculum, demand analysis should be performed preferentially in the process of plan to educational procedure and enforcement. After setting up the educational purpose and aim which are based on the demand, the educational contents are selected. Afterwards, the teaching materials is selected or adjusted, and the problems are assessed through the evaluation of teaching and learning. These contents are reflected continually and built the cyclical structure.

### Table 1. The curriculum of introduction for physical therapy

| No. | Contents                                                                 | Complete time |
|-----|--------------------------------------------------------------------------|---------------|
| 1   | Introduction of rehabilitation, the role of nurse and maternity nurse for patient care | 2 -           |
| 2   | Introduction of physical therapy and methods of therapy for rehabilitation | 2 -           |
| 3.1 | Physical therapy and rehabilitation for joint disorders                 | 2 2           |
| 3.2 | Physical therapy and rehabilitation for nervous disorders                | 3 2           |
| 3.3 | Physical therapy and rehabilitation for cerebral palsy disorders         | 2 1           |
| 3.4 | Physical therapy and rehabilitation for fracture disorders               | 1 1           |
| 3.5 | Physical therapy and rehabilitation for respiratory disorders            | 2 1           |
| 3.6 | Physical therapy and rehabilitation for patient of before and after operation | 1 1         |
| 3.7 | Physical therapy and rehabilitation for pregnant woman of before and after childbirth | 1 -      |
| Total|                                                                         | 16 8          |

### Table 2. The curriculum of community-based rehabilitation

| No. | Contents                                                                 | Complete time |
|-----|--------------------------------------------------------------------------|---------------|
| 1   | Introduction of rehabilitation and community-based rehabilitation       | 3 -           |
| 2   | General rehabilitation for patient with disabilities                    | 1 1           |
| 3   | Rehabilitation for patient with motor disability                        | 4 4           |
| 4   | Rehabilitation for patient with visual disability                       | 1 1           |
| 5   | Rehabilitation for patient with auditory-speech disability              | 1 1           |
| 6   | Rehabilitation for patient with sensory disability                      | 1 1           |
| 7   | Rehabilitation for patient with epilepsy                                | 1 1           |
| 8   | Rehabilitation for patient with abnormal behavior disability            | 1 1           |
| 9   | Rehabilitation for patient with learning disability                     | 1 1           |
| 10  | Methods for life adaptation                                             | 1 1           |
| Total|                                                                         | 15 12         |
Vendrely and Cater suggested that physical therapist education is made up of required subject including the liberal arts curriculum, basic medical subject, and physical therapy subject, and optional subject including clinical medical subject for acquiring the professional knowledge and therapy technique to establish the firm personality and work ethic\(^5,6\). It should be contained to learn the correct attitude as health and medical service personnel. Moreover, physical therapist education need to include the attitude of lifelong learning for new approach in the rapidly changing medical circumstances\(^7,8\). Therefore, it is very important to develop the proper curriculum for Quang Tri province of Vietnam.

In the present study, we planned to develop the education program for physical therapy assistant to provide high quality physical therapy service and professionalism. Thus, through the scientific and practical education for physical therapy assistant, it would be reinforced their capability as well as improved the quality of life of provincial residents.
SUBJECTS AND METHODS

Subjects are consisted of 9 professors in Quang Tri medical college and 1 physical therapist in Quang Tri General hospital which are 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 the subjects were presented in Table 4.

The survey research to lecturer for education of physical therapy assistant in Quang Tri medical college was conducted as pre-analysis of demand for the physical therapy assistant curriculum development. First of all, it was measured as 4 question to ask the expectation of education using Likert 5-point scale which subject was education beneficiary. Additionally, the priority rank of expectation and consciousness was measured in 5 subjects including introduction of rehabilitation, basic kinesiology, physical therapy for neurology & pediatrics, physical therapy for international medicine & surgery, and basic measurement for joint and muscle. Cronbach’s α value to measure the reliability coefficient of question for the educational expectation was 0.801.

The statistical analysis of the present study was used SPSS 18.0 package for window version. First, the reliability analysis was conducted to measure the internal consistency in research question. Second, the frequency analysis was conducted to measure the background variable and characteristics of subjects. Third, the descriptive statistics was conducted to measure the pre-analysis of expectation for the physical therapy assistant curriculum development. In addition, independent t-test and ANOVA were conducted to measure differences of the educational expectation according to background variable of subjects. The yielder ranking was conducted to measure the consciousness priority of the curriculum subject.

RESULTS

The educational expectation was conducted to analyze the pre-analysis of expectation for the physical therapy assistant curriculum development (Table 5). In results of educational expectation about the curriculum total educational expectation was presented as minimum 4 to maximum 5. Mean (standard deviation) educational expectation was 4.72 (0.42). This data shows that the educational expectation was high.

In the result of differences of educational expectation according to background variable, the score differences of educational expectation according to gender, major, and degree were not significant, however, the educational experience was significant (Table 6). Mean (standard deviation) of experienced education group about physical therapy was 4.93 (0.13) and

| Table 5. The educational expectation |
|--------------------------------------|
| Question | Minimum | Maximum | Mean | Standard deviation |
| Availability of acquisitional knowledge through the education | 4 | 5 | 4.50 | 0.53 |
| Necessity of education | 5 | 5 | 5.00 | 0.00 |
| Help to improvement of educator capability | 4 | 5 | 4.90 | 0.32 |
| Confidence about education participation | 3 | 5 | 4.50 | 0.85 |
| Total | 4 | 5 | 4.72 | 0.42 |

| Table 6. The difference of educational expectation according to background variables |
|-----------------------------------------------|
| Background variables | Contents | Frequency | Mean | Standard deviation | p-vale |
| Gender | Male | 2 | 4.75 | 0.35 | 0.90 |
| | Female | 8 | 4.71 | 0.31 | |
| Major | Medicine | 4 | 4.75 | 0.20 | |
| | Nursing | 5 | 4.65 | 0.38 | 0.61 |
| | Others | 1 | 5.00 | . | |
| | Bachelor | 5 | 4.70 | 0.41 | |
| Degree | Master | 2 | 4.66 | 0.14 | 0.77 |
| | Doctor | 3 | 4.87 | 0.18 | |
| Educational experience | Yes | 4 | 4.93 | 0.13 | 0.04* |
| | No | 6 | 4.58 | 0.30 | |

*p<0.05
The educational curriculum was developed according as attention points which was suggested by Tyler (Table 8). Introduction of rehabilitation was comprised of 30 hours totally including 15 hours for theory and 15 hours for practice. It contains introduction of physical therapy, public health, and education for patient’s family and community-based rehabilitation. Basic kinesiology was comprised of 50 hours totally including 20 hours for theory and 30 hours for practice. It contains basic anatomy, physical biomechanics, therapeutic exercise using range of motion, and the others. Physical therapy for international medicine & surgery was comprised of 130 hours totally including 40 hours for theory and 90 hours for practice. It contains physical therapy for muscular disorder, physical therapy for progressive central nervous system disorder, physical therapy and functional evaluation for geriatric cognition disorder, and the others. Physical therapy for neurology & pediatrics was comprised of 60 hours totally including 20 hours for theory and 40 hours for practice. It contains development of functional movement in children, physical therapy for children with cerebral palsy, physical therapy for brain injury (traumatic brain injury, hydrocephalus, brain tumor) and the others. Except these subjects, the curriculum contains 90 hours of practice for the field Education and 30 hours including 10 hours of theory and 20 hours of practice for final examination. Totally, the educational curriculum contains 420 hours including 120 hours of theory and 300 hours of practice.

### DISCUSSION

In the present study, we developed the educational curriculum for physical therapy assistant based on local physical therapy condition in Vietnam. Survey results of the educational expectation and consciousness priority of the curriculum subject for providing the high quality medical service to provincial residents and establishing the professionality in physical therapy assistant.

We developed the education program for physical therapy assistant according to Tyler model which affects continuously and enormously in the late 20th century. Advantages of Tyler model are summarized as follows: First, it has a wide availability which could be applied any subject and level. Second, it provides the logic and reasonable procedure, which is easy to follow to curriculum developer and course planer. Third, it provides broad guideline through the emphasis on the behavior and experience of learner. Fourth, it has the totality including purpose, experience selection, experience organization, evaluation, without the discrimination of educational procedure and course. In addition, Tyler suggested the continuum, sequence, and integration as criteria of organization on the educational experience. The sequence is to provide the chance for exercise and development of the curriculum factors repeatedly. It is related to the continuum and to organize the understanding, function, attitude, and interest to the individual level widely, deeply, and highly. While the continuum means repetition of same contents, the sequence means the arrangement in order of different contents. The integration is to concatenate the curriculum factors horizontally. We developed the educational curriculum according to these attention points.

First of all, the educational expectation was conducted to analyze the pre-analysis of expectation for the physical therapy assistant curriculum development. In results of educational expectation about the curriculum, the mean of the educational expectation using Likert 5-point scale was 4.75. Especially, in the question of necessity of education, all educational recipients graded 5-points. These results mean that the educational expectation about the program for physical therapy assistant was very high. Moreover, in the result of differences of educational expectation according to background variable, the differences of educational expectation on scores according as the educational experience were significant. The consciousness priority rank appeared in the order of basic kinesiology and physical therapy for international medicine & surgery, introduction of rehabilitation and basic measurement for joint and muscle, and physical therapy for neurology & pediatrics. The curriculum

### Table 7. Consciousness priority of the curriculum subject

| Curriculum subject                              | Rank 1 frequency | Rank 2 frequency | Rank 3 frequency | Consciousness Rank |
|------------------------------------------------|------------------|------------------|------------------|--------------------|
| Introduction of rehabilitation                 | 8                | 1                | 1                | 2                  |
| Basic kinesiology                              | 9                | 1                | 1                | 1                  |
| Physical therapy for neurology & pediatrics    | 6                | 4                | 3                |                    |
| Physical therapy for international medicine & surgery | 9                | 1                | 1                |                    |
| Basic measurement for joint and muscle         | 8                | 2                | 2                |                    |
subjects were made up based on these results in the present study.

The curriculum for physical therapy assistant was developed to 5 main subjects including totally 420 hours (120 hours of theory and 300 hours of practice). Five main subjects were ‘Introduction of rehabilitation’, ‘Basic kinesiology’, ‘Basic measurement for joint and muscle’, ‘Physical therapy for international medicine & surgery’, and ‘Physical therapy for neurology & pediatrics’. Except these 5 main subjects, the curriculum contains 90 hours of practice for the field Education and

| Subject/Contents | Complete time | Total (h) | Theory (h) | Practice (h) |
|------------------|---------------|-----------|------------|--------------|
| Introduction of rehabilitation | | 30 | 15 | 15 |
| Purpose: Introduction of rehabilitation is for understanding about physical therapy and fundamentals of patient care skills. It includes simple nursing procedures necessary, charting of the care and comfort of patients, and communication with patient care. | | | | |
| 1 Introduction of physical therapy | 5 | 3 | 2 |
| 2 Public health | 15 | 10 | 5 |
| 3 Education for patient’s family and community-based rehabilitation | 10 | 2 | 8 |

| Basic kinesiology | | 50 | 20 | 30 |
| Purpose: Basic kinesiology is the integration of facts and principles derived from the field of anatomy, physiology, and biomechanics with implications for normal physical activity, conditioning and therapeutic exercise. | | | | |
| 1 Basic anatomy | 10 | 5 | 5 |
| 2 Physical biomechanics | 6 | 3 | 3 |
| 3 Range of Motion | 10 | 4 | 6 |
| 4 Therapeutic exercise using range of motion | 6 | 2 | 4 |
| 5 Activities for patient transfer | 10 | 4 | 6 |
| 6 Proper patient posture | 8 | 2 | 6 |

| Basic measurement for joint and muscle | | 30 | 15 | 15 |
| Purpose: Basic measurement for joint and muscle is designed to assist students in acquiring an understanding and skills in the basic measurement procedure of physical therapy including gross and definitive measurement of muscle strength, joint motion, and posture. | | | | |
| 1 Performance and contents of patient counsel | 3 | 1 | 2 |
| 2 Systemic observation, mental status, and functional evaluation | 3 | 1 | 2 |
| 3 Understanding of vital sign | 3 | 1 | 2 |
| 4 Musculoskeletal evaluation | 7 | 4 | 3 |
| 5 Neurological evaluation | 7 | 4 | 3 |
| 6 Assessment and evaluation for special needs child | 7 | 4 | 3 |

| Physical therapy for international medicine & surgery | | 130 | 40 | 90 |
| Purpose: Physical therapy for international medicine & surgery includes the motor relearning program, evaluation and treatment of patient demonstration, treatment of various orthopedic conditions, application of therapeutic exercise techniques to regions of the body (shoulder, elbow & forearm complex, wrist & hand, hip, knee, ankle & foot, spine & posture), and treatment of other musculoskeletal conditions. | | | | |
| 1 Ready for patient care | 2 | 1 | 1 |
| 2 Infection management | 10 | 3 | 7 |
| 3 Understanding and care for disability | 12 | 4 | 8 |
| 4 Physical therapy for patient with disability by defoliant | 8 | 2 | 6 |
| 5 Application of walking aid | 6 | 2 | 4 |
| 6 Physical therapy for joint disorder | 13 | 4 | 9 |
| 7 Physical therapy for muscular disorder | 13 | 4 | 9 |
| 8 Physical therapy for cardiopulmonary disorder | 10 | 3 | 7 |
| 9 Physical therapy for amputation | 10 | 3 | 7 |
| 10 Physical therapy for non-progressive central nervous system disorder | 9 | 3 | 6 |
| 11 Physical therapy for progressive central nervous system disorder | 9 | 3 | 6 |
| 12 Physical therapy for peripheral nervous system disorder | 10 | 3 | 7 |
| 13 Physical therapy and functional evaluation for geriatric cognition disorder | 10 | 3 | 7 |
| 14 Accident and emergency measure | 8 | 2 | 6 |
The curriculum in Quang Tri medical college which was accredited to The Ministry of Labor Society of Vietnam.

‘Introduction of rehabilitation’ was comprised of 30 hours totally including 15 hours for theory and 15 hours for practice. The purpose of this subject is the integration of facts and principles derived from the field of anatomy, physiology, and biomechanics with implications for normal physical activity, conditioning and therapeutic exercise. Thus, it contains basic anatomy, physical biomechanics, therapeutic exercise using range of motion, and the others. ‘Basic kinesiology’ was comprised of 50 hours totally including 20 hours for theory and 30 hours for practice. The purpose of this subject is to study about physical therapy and the fundamentals of patient care skills. Additionally, it includes simple nursing procedures necessary, charting of the care and comfort of patients, and communication with patient care.

‘Physical therapy for neurology’ includes motor relearning program, evaluation and treatment of neurological injury with patient demonstration, treatment of various conditions and treatment of other neurological and pediatric conditions. The detailed contents are based on the present condition of this area.

On the basis of survey results of the educational expectation and consciousness priority of the curriculum subject and on the present local physical therapy condition, we developed the educational curriculum for physical therapy assistant in this study. It will be necessary to have an additional study about the usability and effectiveness of the developed curriculum via the comparison with the educational satisfaction.
ACKNOWLEDGEMENTS

This work was performed with the cooperation of Eulji University and Medipeace, and supported by Korea International Cooperation Agency (KOICA), Republic of Korea.

REFERENCES

1) Farrell PC, Hunter C, Truong B, et al.: Control of highly pathogenic avian influenza in Quang Tri province, Vietnam: voices from the human-animal interface. Rural Remote Health, 2015, 15: 3044. [Medline]

2) Riewpaiboon A, Van Minh H, Huong NT, et al.: Burden of care for persons with disabilities in Vietnam. Health Soc Care Community, 2014, 22: 660–671. [Medline] [CrossRef]

3) Richards JC: Curriculum approaches in language teaching: forward, central, and backward design. RELC J, 2013, 44: 5–33. [CrossRef]

4) Chaudhary GK, Kalia R: Development curriculum and teaching models of curriculum design for teaching institutes. Athl Ther Today, 2015, 1: 57–59.

5) Vendrely A, Carter R: The influence of training on the rating of physical therapist student performance in the clinical setting. J Allied Health, 2004, 33: 62–69. [Medline]

6) Graham CL: Conceptual learning processes in physical therapy students. Phys Ther, 1996, 76: 856–865. [Medline]

7) Shepard KF, Jensen GM: Physical therapist curricula for the 1990s: educating the reflective practitioner. Phys Ther, 1990, 70: 566–573, discussion 573–577. [Medline]

8) Saarinen-Rahiika H, Binkley JM: Problem-based learning in physical therapy: a review of the literature and overview of the McMaster University experience. Phys Ther, 1998, 78: 195–207, discussion 207–211. [Medline]

9) Dopson LR, Tas RF: A practical approach to curriculum development: a case study. J Hosp Tour Educ, 2004, 16: 39–46. [CrossRef]

10) Prideaux D: ABC of learning and teaching in medicine. Curriculum design. BMJ, 2003, 326: 268–270. [Medline] [CrossRef]