

บทบาทและภาระงานของนักกายภาพบำบัดที่ให้บริการสุขภาพระดับปฐมภูมิ

นางศราภย์ เต็มวุฒิ¹, น้อมจิตต์ นวลเนตร^{2*}

Received: April 21, 2016

Revised & Accepted: July 21, 2016

บทคัดย่อ

การวิจัยนี้มีวัตถุประสงค์เพื่อศึกษาบทบาทและภาระงานของนักกายภาพบำบัดที่ให้บริการสุขภาพระดับปฐมภูมิในจังหวัดบุรีรัมย์ ชัยภูมิ และนครราชสีมา ซึ่งเป็นพื้นที่ที่มีจำนวนนักกายภาพบำบัดปฏิบัติงานแบบเต็มเวลาในสถานบริการสุขภาพระดับปฐมภูมิมากที่สุด ดำเนินการศึกษาโดยส่งแบบสอบถามถึงนักกายภาพบำบัดที่ให้บริการสุขภาพระดับปฐมภูมิใน 3 จังหวัดดังกล่าวจำนวน 150 ราย ซึ่งมีผู้ส่งแบบสอบถามที่มีข้อมูลสมบูรณ์กลับคืนมาจำนวน 94 ราย (ร้อยละ 62.7) โดยเป็นนักกายภาพบำบัดที่ให้บริการทั้งในสถานพยาบาลและในชุมชนจำนวน 81 ราย ผลการศึกษาพบว่าบทบาทและภาระงานหลักของนักกายภาพบำบัดกลุ่มดังกล่าว ได้แก่ การให้บริการในกลุ่มเสี่ยง ผู้ป่วยโรคเรื้อรัง ผู้ป่วยระยะหลังเจ็บป่วย และคนพิการ และการให้บริการด้านกายอุปกรณ์ การปรับสภาพบ้านและสิ่งแวดล้อม ซึ่งในแต่ละบริการประกอบด้วยหลากหลายกิจกรรม โดยจัดกิจกรรมละประมาณ 3-4 ครั้งต่อเดือน และส่วนใหญ่ใช้เวลาครั้งละประมาณ 1 ชั่วโมง ส่วนจำนวนผู้รับบริการมีจำนวนแตกต่างกันไปขึ้นกับลักษณะของกิจกรรม ผลการศึกษานี้จะเป็นประโยชน์ต่อสถาบันผู้ผลิตนักกายภาพบำบัด และหน่วยงานต่าง ๆ ที่เกี่ยวข้องกับการวิชาชีพกายภาพบำบัด สำหรับใช้ในการกำหนดกลยุทธ์เพื่อสนับสนุนการทำงานแบบเต็มเวลาในสถานบริการสุขภาพระดับปฐมภูมิของนักกายภาพบำบัดในอนาคต

คำสำคัญ : กายภาพบำบัด การดูแลสุขภาพระดับปฐมภูมิ ชุมชน

¹แผนกกายภาพบำบัด โรงพยาบาลสมเด็จพระยุพราชภูษิตนรินทร์ อำเภอภูษิตนรินทร์ จังหวัดกาฬสินธุ์

²สายวิชากายภาพบำบัด คณะเทคนิคการแพทย์ มหาวิทยาลัยขอนแก่น จังหวัดขอนแก่น

* ผู้รับผิดชอบบทความ

Roles and workloads of physical therapists providing primary health care services

Nongkhran Termwut¹, Nomjit Nualnetr^{2*}

Abstract

This study aimed to explore the roles and workloads of physical therapists (PTs) who were providing primary health care services in Buri Ram, Chaiyaphum and Nakhon Ratchasima Provinces, the areas having the greatest number of PTs working full-time at primary health care settings. A questionnaire was distributed to 150 PTs currently providing primary health care services in those three provinces; 94 (62.7%) of them responded. Of 94 participants, 81 provided both institutional- and community-based services. The results revealed that the main roles and workloads of the participants were services for risk people and persons with chronic diseases, sub-acute conditions and disabilities, and services of assistive devices and home and/or environment modification. In each service, they conducted a lot of activities about 3-4 times a month per activity and spent about one hour for most of the activities. The number of clients receiving each service varied, depending on the activities. The information should be useful for physical therapy schools and other organizations related to physical therapy profession to establish strategies to support the full-time work at primary care settings of PTs in the future.

Keywords: Physical therapy, Primary health care, Community

¹Department of Physical Therapy, Kuchinarai Crown Prince Hospital, Kalasin

²Division of Physical Therapy, Faculty of Associated Medical Sciences, Khon Kaen University, Khon Kaen

*Corresponding author: (e-mail: nomjit@kku.ac.th)

Introduction

Primary health care services were defined as continuing health care services with the collaboration of people by integrating bodies of knowledge of medicine, psychology and social science. The services are provided to the individuals, families and community by concentrating on health promotion, disease prevention, curative care and rehabilitation with holistic approach, proper referring system and community participation. The optimal goal of the services is to develop the spirit of self-care and self-reliance of the clients⁽¹⁾. At present, health service in Thailand has been focused on health promotion and disease prevention with the slogan of “building before repairing health”⁽²⁾. Primary health care settings (namely sub-district health promotion hospitals or urban health centers) are established thorough the country for distributing primary health care services to the community. Furthermore, there is a rising trend in community-dwellers who need physical therapy services, e.g. the elderly, persons with chronic illnesses or disabilities^(3,4). These reasons lead to an increase in roles of physical therapists (PTs) at primary health care settings^(5,6). Currently, PTs who are working at primary health care settings may be categorized into 2 characteristics: full-time and part-time staff. A full-time PT works at a primary health care setting for the whole of each week under the administration of the hospital or center directly. A part-time PT works at a primary health care setting for only part of each week. S/he is usually a PT of a district or provincial hospital of that area.

Working at a primary health care setting seems to be a new role of PTs. Based on the database of Thai Community Physical Therapist Club in late-2014, there were only 39 PTs currently working full-time at primary health care settings thorough the country; most of them (21 of 39, 53.9%) were in the northeastern region. To promote the full-time work at primary health

care settings of PTs, the current information about the roles and workloads of PTs who are providing primary health care services in our country is considered as fundamental data. Such information, however, has been limited. The investigator was thus interested in studying current situation of PTs who were providing primary health care services, either as full-time or part-time personnel of primary health care settings. Because most of PTs currently working full-time at primary health care settings are in Buri Ram, Chaiyaphum and Nakhon Ratchasima Provinces, these 3 provinces were selected as a study area of this research. This study aimed to explore the roles and workloads of PTs who were providing primary health care services in Buri Ram, Chaiyaphum and Nakhon Ratchasima Provinces.

Materials and Methods

Participants

The main target population of this research was PTs who were providing primary health care services in Buri Ram, Chaiyaphum and Nakhon Ratchasima Provinces. From the database of Thai Community Physical Therapist Club and the personal communication with some PTs in the study areas, there were 150 PTs currently working as full-time or part-time staff at primary health care settings in these 3 provinces. The criteria for recruiting the participants were 1) 20 years of age or older, 2) female or male and 3) willing to participate in the study on a voluntary basis.

Research tools

A survey questionnaire designed by the investigator contained 2 sections. The demographic data of the participants were explored by 13 questions of the first section. The second section consisted of 9 questions about the roles and workloads of the participants. These questions were derived from available evidences for community physical therapy⁽⁷⁻⁹⁾. Before

conducting the data collection, the questionnaire was examined for its content validity by 3 PTs who had experiences in community works. The Index of Item-Objective Congruence of each item of the questionnaire was calculated and presented with the minimum value at least 0.50⁽¹⁰⁾.

Data collection procedure and analysis

The survey was conducted from June to September, 2015 with the approval of the Khon Kaen University Ethics Committee for Human Research (HE582120). The questionnaire and an information sheet providing a full explanation of the study with a return stamped addressed envelope were sent to 150 participants. The PTs were asked to return the questionnaire to the investigator within 4 weeks. After the deadline for the questionnaire submission, the investigator sent the questionnaire to the participants again and reminded them via e-mail to return the questionnaire to the investigator within next 2 weeks. All data were analyzed by using descriptive statistics.

Results

Demographic data

Of 150 questionnaires distributed, 103 (68.7%) were returned. Nine of the returned questionnaires were discarded because they were totally blank, resulting in 94 (62.7%) questionnaires being analyzed for the study. Of 94 participants, 85 (90.4%) and 9 (9.6%) were part-time PTs (working at a primary health care setting for only part of each week) and full-time PTs (working at a primary health care setting for the whole of each week), respectively. Seventy-one (83.5%) part-time PTs and 8 (88.9%) full-time PTs had their stand-alone physical therapy department (or

unit). The rest of them were under other departments such as family or social medicine, nurse, pharmacy and Thai traditional medicine. Demographic characteristics of both groups of the participants are presented in **Table 1**. The participants were 24 to 47 years old with an average of 29.9 ± 4.5 years. Eighty-six (91.5%) PTs were females. Eleven (11.7%) participants held a master's degree. The participants worked at the current workplace with an average of 5.5 ± 3.1 years; 60 (63.8%) of them worked for 5 years or less. Sixty-four (68.1%) participants were employed as public servants. For the part-time group, about 60% of them had a PT as the administrative head. For the full-time group, all of them worked under the administration of other health professions. The first and last priorities of physical therapy services mentioned by the participants were curative care and disease prevention, respectively. The number of patients treated per day was 25.4 ± 14.1 and 7.0 ± 2.7 cases for the part-time and full-time PTs, respectively. Apart from physical therapy services, the participants had other works, especially the administrative and documenting works. Time spent for administrative and documenting works were reported at 5.9 ± 5.0 and 8.0 ± 4.9 hours per week, respectively. Of 94 participants, 81 (86.2%) provided both institutional- and community-based services to the clients with the ratios of 4:1 days per week for 38 (46.9%) participants and 3:2 days per week for 33 (40.7%) participants. Thirteen (13.8%) participants organized only the institutional-based service because their workplaces had been upgraded from community hospitals to general hospitals.

Table 1 Demographic characteristics of participants (n=94)

Characteristics	Part-time PTs (n=85), No. (%)	Full-time PTs (n=9), No. (%)
Female	78 (91.8)	8 (88.9)
Educational level		
bachelor's degree	74 (87.1)	9 (100.0)
master's degree (physical therapy, sport sciences, physiology of exercise, community health development, public administration, business)	11 (12.9)	0 (0.0)
Workplace		
central hospital / provincial hospital	13 (15.3)	0 (0.0)
community hospital	72 (84.7)	0 (0.0)
primary health care setting (sub-district health promotion hospital, urban health center)	0 (0.0)	9 (100.0)
Length of being a physical therapist at the current workplace		
≤ 1 year	1 (1.2)	1 (11.1)
1-5 years	50 (58.8)	8 (88.9)
6-10 years	25 (29.4)	0 (0.0)
≥ 11 years	9 (10.6)	0 (0.0)
Type of employment		
public servant	64 (75.3)	0 (0.0)
employee of the Ministry of Public Health	16 (18.8)	8 (88.9)
other (government employee, temporary worker)	5 (5.9)	1 (11.1)
Professional background of the administrative head		
physical therapist	50 (58.8)	0 (0.0)
medical doctor	20 (23.5)	1 (11.1)
public health technical officer	1 (1.2)	6 (66.7)
other (nurse, pharmacist, medical technologist, public health officer)	14 (16.5)	2 (22.2)
First priority of physical therapy services (answer more than one item)		
curative care	74 (87.1)	7 (77.8)
rehabilitation	14 (16.5)	5 (55.6)
health promotion / disease prevention	8 (9.4)	2 (22.2)
Characteristic of physical therapy services		
both institutional- and community-based services	72 (84.7)	9 (100.0)
only institutional-based service	13 (15.3)	0 (0.0)

PTs: physical therapists

Roles and workloads

Eighty-one participants who performed both institutional- and community-based services were further analyzed for their roles and workloads in community-based work. Services for risk people, persons with chronic diseases, persons with sub-acute

conditions as well as persons with disabilities and services of assistive devices and home and/or environment modification were the main roles reported by more than 80% of the participants (**Table 2**). Only 10 (12.4%) of them mentioned the role in young and teenage group.

Table 2 Number of participants providing each role in community-based services (n=81)

Community-based services (answer more than one item)	Number of participants (%)
Services for risk people and persons with chronic diseases	74 (91.4)
Services for persons with sub-acute conditions	72 (88.9)
Services for persons with disabilities	72 (88.9)
Services of assistive devices and home and/or environment modification	70 (86.4)
Services for the elderly	53 (65.4)
Community-based rehabilitation	50 (61.7)
Services for mother and child	31 (38.3)
Services for working-age group	27 (33.3)
Services for young and teenage group	10 (12.4)

Table 3 describes workloads of 81 participants in the top three roles in community-based services shown in Table 2. In each role, they conducted a lot of activities about 3-4 times a month per activity and spent about one hour for most of the activities. The number of clients receiving the services varied, depending on details of the activities.

Table 3 Workloads of participants in the top three roles in community-based services (n=81) (Data presented as mean (standard deviation))

Community-based services (answer more than one item)	Characteristics of services		
	Frequency (times/month)	Duration (minutes/time)	Number of clients (persons/time)
Services for risk people and persons with chronic diseases (n=74)			
assessment of the risks (n=35)	3.3 (2.9)	71.3 (62.4)	24.3 (18.0)
assessment of the symptoms / complications (n=55)	3.4 (2.9)	83.1 (73.0)	32.4 (22.9)
education about diseases / appropriate behaviors (n=59)	3.4 (2.7)	54.6 (67.4)	29.1 (21.3)
education about physical therapy techniques (n=62)	3.4 (2.3)	52.4 (64.9)	25.4 (20.3)
provision of home health care (n=57)	4.6 (3.1)	139.6 (85.4)	7.1 (7.8)
facilitation of self-help groups among risk people or the patients (n=21)	2.1 (1.4)	104.8 (160.7)	34.6 (20.1)
Services for persons with sub-acute conditions (n=72)			
carrying a survey of target persons (n=42)	3.9 (3.6)	76.2 (62.1)	5.7 (3.9)
assessment and diagnosis for service planning (n=50)	4.4 (3.2)	60.6 (42.7)	4.6 (3.1)
provision of home health care (n=71)	4.7 (3.1)	161.0 (76.5)	4.2 (1.9)
education about rehabilitation to family, village health volunteers and other health personnel (n=56)	2.7 (2.5)	60.8 (44.4)	16.7 (18.0)
provision of assistive devices / home modification (n=57)	3.4 (2.6)	71.0 (52.6)	5.2 (6.6)
Services for persons with disabilities (PWDs) (n=72)			
carrying a survey and registration of PWDs (n=55)	3.0 (2.9)	70.5 (63.4)	10.2 (14.6)
assessment and diagnosis for service planning (n=61)	4.8 (5.8)	71.9 (65.0)	8.3 (12.3)
provision of home health care (n=71)	4.9 (4.3)	151.7 (109.5)	7.1 (9.6)
education about rehabilitation to family, village health volunteers and other health personnel (n=62)	3.0 (3.0)	70.1 (47.7)	16.9 (17.5)
provision of home modification (n=50)	4.1 (3.7)	78.6 (56.9)	4.9 (8.5)
facilitation of self-help groups among PWDs (n=30)	2.5 (2.9)	60.0 (45.7)	15.6 (17.5)

Table 3 (Cont.)

Community-based services (answer more than one item)	Characteristics of services		
	Frequency (times/month)	Duration (minutes/time)	Number of clients (persons/time)
Services of assistive devices and home and/or environment modification (n=70)			
carrying a survey of target persons (n=56)	3.6 (3.6)	72.8 (50.1)	5.5 (5.9)
assessment for physical fitness and conditions (n=59)	3.5 (3.4)	72.6 (45.3)	5.6 (6.6)
provision of suitable assistive devices (n=68)	3.3 (3.4)	69.1 (48.8)	4.0 (3.9)
modification or instruction for proper environment (n=58)	3.3 (3.7)	83.5 (58.2)	2.9 (2.9)
coordination with other organizations (n=48)	2.8 (3.0)	60.9 (32.8)	3.6 (3.7)
evaluation after use and re-adjustment (n=52)	2.8 (3.1)	63.5 (46.6)	3.7 (3.3)

Work problems

In their institutional- and community-based services, 79 of 81 participants faced a lot of problems or barriers, especially excessive workload and limited

number of staff (**Table 4**). Furthermore, about 50-60% of them complained about the insufficient cooperation with related organizations and supporting budget.

Table 4 Problems or barriers of participants in institutional- and community-based physical therapy services (n=81)

Problems or barriers (answer more than one item)	Number of participants (%)
Excessive workload, resulting in inability to organize the services to the community as much as expected	67 (82.7)
Insufficient number of physical therapists	66 (81.5)
Insufficient cooperation with related organizations	48 (59.3)
Insufficient supporting budget	41 (50.6)
Insufficient support from the main organization	27 (33.3)
Necessary to follow the organization's policy, resulting in inability to provide services relevant to needs of the community	25 (30.9)
Difficulty in travelling to the target area	24 (29.6)
Poor coordination and communication among personnel within the organization	22 (27.2)
Insufficient knowledge and skills of community physical therapy	21 (25.9)
Lack of practice guidelines for various disease conditions in the community	18 (22.2)
Poor understanding of other staff of the organization about roles of physical therapists	14 (17.3)
Insufficient information about the target community, resulting in inability to relate the disease occurrence to the way of life of the community	11 (13.6)
Other (low salary/income)	1 (1.2)
No problem	2 (2.5)

Discussion and Conclusion

In this study, a questionnaire was sent to 150 PTs who were currently working as full-time or part-time staff at primary health care settings in Buri Ram, Chaiyaphum and Nakhon Ratchasima Provinces. Of 19 PTs who were full-time staff, however, only 9 (47.4%) returned the questionnaire. Data comparisons between full-time and part-time groups were thus not

possible. Hence, results and discussion of the research were presented for the participants overall. Nevertheless, it could be observed that the prominent difference between part-time and full-time PTs who were providing primary health care services in the 3 provinces was about the professional background of the administrative head. Most of the part-time staff had a PT as the administrative head; meanwhile all of the full-time staff worked under

the administration of non-physical therapy personnel. A possible reason for this finding is full-time working at a primary health care setting, either a sub-district health promotion hospital or an urban health center, is a new role of PTs. At present, the main health personnel of a primary health care setting are registered nurses or nurse practitioners and public health officers⁽¹¹⁾. If required, PTs will be included in a primary health care setting as full-time or part-time staff. No formal physical therapy department has been specified in the administrative structure of primary health care settings. Therefore, full-time PTs of primary health care settings had to work under the administration of other health personnel.

A great number of the participants were employed as public servants or employees of the Ministry of Public Health. The finding was quite different from that of a survey study in 2001⁽¹²⁾ which presented that most of PTs in the community hospitals were temporary workers. This could be implied that the employment of PTs in community-based settings was improving. Most of the participants provided both institutional- and community-based services. Time spent for the community-based service was about 1-2 days per week. Although the roles of PTs in the community are extensive for healthy and non-healthy clients in all ages⁽⁷⁻⁹⁾, more than 80% of the participants focused their services on persons with chronic diseases, sub-acute conditions and disabilities. Services of assistive devices and home and/or environment modification were another main issue. These services corresponded to the increasing number of persons with chronic diseases or disabilities^(3,4) and the long term care policy of our country⁽¹³⁾. The services for other target groups, especially working-age, young and teenage groups, were mentioned by only one-third or less of the participants. In fact, PTs have a role in encouraging these groups of people to adopt for appropriate health-promoting behaviors to continue into the healthy elderly⁽¹⁴⁾. Such a role is limited probably due to insufficient number of PTs (i.e. only about

2 PTs per workplace) and excessive workload, leading to inability to organize the services to the community as much as expected. These factors were expressed as the main work problems or barriers by the participants. The findings are consistent with those presented in previous studies of PTs⁽¹⁵⁻¹⁸⁾, nurses⁽¹⁹⁾ and pharmacists⁽²⁰⁾. In the present situation of limited budget of our country, a request for increasing number of PTs in any health setting should not be possible. To contribute effective community-based services, therefore, PTs should not provide the services alone but establish the collaboration with other relating agencies in the community, e.g. other health professions, community volunteers, local governments, private sectors. Networking with local governments including sub-district administrative organization, municipality and provincial administrative organization should be useful for PTs for the support of resources, e.g. manpower, materials, money. Apart from being providers of direct care, PTs are able to play various roles in community-based services, e.g. team leaders and managers, program facilitators, skill trainers and advisors to local governments and community on establishing the service^(21,22). Community participation should be able to help PTs combat the problem of insufficient number of staff and organize the services to the community as much as they need⁽²³⁾. Hence, in community-based services, PTs should learn to work in a format of teamwork and to develop team capacity. They should have a high degree of flexibility and a wide range of management and practice⁽²⁴⁾. To prepare PTs to work in community settings, physical therapy schools should design community-oriented curriculums or educational programs which provide adequate knowledge, skills and attitude towards community works to the students who will be our future PTs.

When determining the top three roles in community-based services in detail, it could be observed that the longest duration of activity (i.e. 2-3 hours) was found in the services of home health care either for risk

people, persons with chronic diseases, sub-acute conditions or for persons with disabilities. Despite spending long service duration, each service of home health care could provide for a small number of clients. According to the regulation of the National Health Security Office, Thai people with home-bound conditions have a right to receive home health care at least once a month⁽²⁵⁾. PTs, with the collaboration of nurses or other health personnel, are assigned to take responsibility for home health care for these groups of people^(26,27). Hence, home health care was one of prominent community-based services of PTs. However, due to the long duration needed for each service of home health care and a limited number of staff, home health care services with the collaboration with other relating agencies in the community is necessary for PTs, as mentioned above.

As the current study could recruit only 9 full-time PTs of primary health care settings, this could be a limitation of the study in term of generalization of the findings. Future research on such full-time PTs throughout the country should be considered. It will clearly specify the roles and workloads of PTs who provide primary health care services in the current situation. The information should be useful for physical therapy schools, organizations of physical therapy profession, the Ministry of Public Health and the National Health Security Office to establish strategies to support the full-time work at primary care settings of PTs in the future.

In conclusion, PTs who were providing primary health care services in Buri Ram, Chaiyaphum and Nakhon Ratchasima Provinces had the main roles on services for risk people and persons with chronic diseases, sub-acute conditions and disabilities, and services of assistive devices and home and/or environment modification. In each service, they conducted a lot of activities about 3-4 times a month per activity and spent about one hour for most of the activities. The number of clients receiving each service varied, depending on the activities.

Acknowledgement

This research was supported by Graduate School and Faculty of Associated Medical Sciences, Khon Kaen University. The most sincere thanks were expressed to all physical therapists for their cooperation with this study. The authors were extremely thankful to Dr. Pakavalee Poomsutat, Dr. Sauwanan Bumrerraj and Dr. Saowanee Nakmareong for their comments to the development, refinement and completion of the study.

References

1. Srivanichakorn S. Primary health care, primary care and family medicine: definition, meaning and relation. *Thai J Primary Care Fam Med* 2009; 1: 11-5. [in Thai].
2. Bureau of Policy and Strategy, Ministry of Public Health. Health policy in Thailand 2007. [online] 2007 [cited 2014 Aug 8]. Available from: <http://bps.ops.moph.go.th/HealthPolicy7.pdf> [in Thai].
3. Bureau of Health, Department of Health, Ministry of Public Health. Long term care. 3rd ed. Bangkok: The War Veteran Organization of Thailand Printing; 2013. [in Thai].
4. Bureau of Non Communicable Disease, Department of Disease Control, Ministry of Public Health. Data of non communicable disease. [online] 2012 [cited 2014 Aug 8]. Available from: <http://www.thaincd.com/information-statistic/non-communicable-disease-data.php> [in Thai].
5. Suansin P, Nualnetr N. Prospective physical therapy services of community. *Thai J Phys Ther* 2008; 30: 95-105.
6. Petchroung N, Priyatrak P, Thongkeang V. The study of continuing care for patients with cerebrovascular disease in primary care unit. *J R Thai Army Nurs* 2013; 14: 25-34. [in Thai].
7. Nualnetr N. Physical therapists and primary health care services. *Thai J Fam Care Fam Med* 2009; 1: 43-6. [in Thai].

8. World Confederation for Physical Therapy. Policy Statement: community based rehabilitation [online] 2011 [cited 2015 January 27]. Available from: <http://www.wcpt.org/policy/ps-CBR>.
9. World Health Organization. The World Health Report 2008: primary health care now more than ever. Geneva: WHO; 2008.
10. Worakijkasemkul S. Research methodology in behavioral and social sciences. Udon Thani: Aksornsilp Printing; 2010. [in Thai].
11. Supawong C, Chunharas S, Sirilak S, Damrikarnlerd L, Srivanichakorn S, Vechasuthanon K. A manual for services of sub-district health promotion hospital. 2nd ed. Bangkok: War Veteran Organization of Thailand Printing; 2009. [in Thai].
12. Ariyachaikul S, Pengping V, Habudha V. The role and duty of physical therapists in community hospitals. Bull Chiang Mai Assoc Med Sci 2001; 34: 169-79. [in Thai].
13. Department of International Organizations, Ministry of Foreign Affairs. Thailand's information on the realization of the right to health of older persons. [online] 2016 [cited 2016 Mar 21] Available from: <http://www.mfa.go.th/humanrights/implementation-of-un-resolutions>.
14. Nualnetr N, Thanawat T. Health-promoting behaviors of physical therapy students. J Phys Ther Sci 2012; 24: 1003-6.
15. Poomsutat P, Nualnetr N, Chantaraviroj P, Ariyachaikul S, Wongsirinawarat M, Danaitangtrakul J. The mechanisms of formation and adaptation of physical therapy services in community. Thai J Phys Ther 2012; 34: 45-54. [in Thai].
16. Phandeck K. The performance through standard service of physical therapist in community hospital, public health region 12 [Master Thesis in Public Health Administration]. Khon Kaen: The Graduate School, Khon Kaen University; 2012. [in Thai].
17. Wilaichit S, Tridech P, Pandii W. Factors affecting standard of practice for physiotherapist in hospitals under Ministry of Public Health in the central region. J Med Tech Phys Ther 2011; 23: 197-208. [in Thai].
18. Nualnetr N. Problems of Khon Kaen's physical therapy graduates working in rural hospital. J Med Tech Phys Ther 2001; 13: 166-75. [in Thai].
19. Sarakshetrin A, Samphawamana O, Suwannarat K. Role practices of professional nurses at the PCU. J Nursing Division 2010; 37: 52-63. [in Thai].
20. Chirunthorn R, Singpaiboonporn N, Lohanavakul P, Trerattanapaiboon P. Factors affecting the role performance of pharmacists in primary care units (PCU): a case study in the upper southern region of Thailand. Songkla Med J 2006; 24: 505-16. [in Thai].
21. Nualnetr N. Physical therapy roles in community-based rehabilitation: a case study in rural areas of north eastern Thailand. Asia Pacific Disabil Rehabil J 2009; 20: 73-82.
22. Bury T. Primary health care and community based rehabilitation: implications for physical therapy. Asia Pacific Disabil Rehabil J 2005; 16: 29-61.
23. Nualnetr N, Sakhornkhan A. Improving accessibility to medical services for persons with disabilities in Thailand. Disability, CBR and Inclusive Development 2012; 23: 34-49.
24. World Confederation for Physical Therapy. Primary health care and community based rehabilitation: implications for physical therapy based on a survey of WCPT's member organisations and a literature review. WCPT Briefing Paper 1. London: WCPT; 2003.
25. National Health Security Office. Criteria of assessment services unit. [online] 2015 [cited 2015 Dec 18] Available from: <http://uckkpho.com/index.php/download/finish/35-2559/317-/0>.
26. Artsanthia J, Kampraw P. Modality of care for the older adults in community. J R Thai Army Nurs 2014; 15: 123-7. [in Thai].
27. Cheausuwantavee T. Community based rehabilitation in Thailand: current situation and development. Asia Pacific Disabil Rehabil J 2005; 16: 51-67.