Community Participations in Health Problem Solutions using Local Wisdom at Ban Mae Tom Nai, Phayao Province

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Abstract

This study aimed to promote community participations and identify the results of participations in community health problem solutions using local wisdom. Participants were 60 households residing in Ban Mae Tom Nai, Phayao province, since 2014 – 2017. There were 3 stages in the study: 1) community assessment, 2) planning and implementation to solve health problems, and 3) monitoring and evaluation. The data were gathered from HOSxP database, as well as interview, focus group discussion, and community participation forms. Qualitative data were analyzed by using content analysis; whereas, quantitative data were analyzed by using descriptive statistics. Paired t-test was used to test the differentiation between pre- and post-test. An epidemiology data were analyzed by using health index. The results suggest that the first priority of health problem solution was to prevent and cure muscle pains from hard labor. Then, researchers and villagers started to explore herbs growing in a community and nearby forest. After that, people with local wisdom in the community worked together with Thai traditional therapists from Sub-district Health Promoting Center in order to produce herbal medicine for releasing muscle pains. There were 53 people voluntarily participated in the project. The process of participation learning resulted in a significant increase of villagers' knowledge at the end of project ($p<0.05$); moreover, over half of villagers reported that they relieved their muscle pains from 4-6 score to 1-3 score after using community's herbal medicine. Finally, the villagers formed a group to produce their own herbal medicinal products such as herbal foot soap and herbal sauna and massage balls. These products were sold at a community shop as well.

Keywords: Phayao province, Ban Mae Tom Nai, Health problem, Local wisdom, Pain-relieving herbs

Introduction

Public health is a foundation for other developments. Making people healthy will bring a good quality of life, especially for those who live in rural areas. These people might have a cost problem in getting public health services, due to poverty and from living far away from health facilities. Although Thai people in rural areas have a right to use the thirty-Baht healthcare card, they still cannot access healthcare services (Health Systems Research Institute, 2017) and, moreover, they have to pay for other expenses, such as car hire, meals, and accommodation for relatives, which make accessing healthcare services even more difficult (Kongrukgreatiyos, 2016). Social factors impede access to healthcare services too, which include beliefs and cultural norms, low levels of health knowledge, and a lack of readiness in using resources to support health promotion (Bolin & Bellamy, 2012). The Ministry of Health has changed its role in health development, which will emphasize health promotion and focus on access to healthcare services by mission expansion of village health volunteers (VHV) in terms of "access and community participation" of stakeholders. However, proactive and involving approaches are still not effective, according to the VHV, as healthcare providers in rural areas are not confident in themselves, and still use old techniques in reaching villagers. Moreover, they lack confidence in giving information and healthcare services (Thongchai & Boonjarut, 2017).

Community participation, or public participation, is a development process of people's self-reliance, which focuses on acceptable and usable concepts in all aspects of community development, as well as health problem solving that requires the community to be concerned about the importance of participating (Wasee, 2011, Junsawang, 2003, Winitkul, 2007). As seen in Australia, the involvement process has been encouraged through the fundamental public healthcare and primary health system in rural areas (Jessamy & John, 2012, Farmer & Nimegeer, 2014). Health development is governed by the Ottawa Code of Conduct (Ottawa Charter), which emphasizes public participation in health promotion suitable for diverse areas (Khanindra, 2004, Kenn, et al., 2013). A healthy society would occur if there is community participation with network partners in solving community health problems (Flynn, 1996). Internal and external networks will be involved in management integration, will be linked, and will create a new engagement style of management regarding supporting each other with a holistic approach and in encouraging people to realize their own health care (Kaewcharoenta, 2016).

The health status of people in Phayao Province, from 2010 to 2013, showed that, from the disease rate per 100,000 population, the major diseases were ischemic heart disease, cerebral stroke, mellitus diabetes, and hypertension. In 2011, the first three major health problems were hypertension, kidney failure, and mellitus diabetes, which are "lifestyle diseases" that can be prevented by oneself and at the family level. These problems were also found to be the first five major diseases in the statistics of outpatient services in the fiscal year 2016, including muscular disease, respiratory diseases, and blood circulatory system diseases (Phayao Provincial Public Health Office, 2017). On Dec 6-7, 2014 the research team, the officers of Analayo health promotion hospital, and the community developers of Sanpamuang municipality sub-district, conducted a field survey at Moo.7 of Ban Maetomnai, Sanpamuang sub-district, Muang, Phayao Province, which is a small community. It is located in a valley, with mountains surrounding it, between Doi Luang National Park and the mountains of the Analayothipayaram and Huaytubchang reservoir area. The boundary area are rich in landscape and has biodiversity, especially in terms of local plants and herbs. There is a folk philosopher present, who inherited knowledge about herbs usage from ancestors. This made the community stronger. In 2014, the communities participated in a forest conservation network and a Royal Project, "Do good without ostentation (Pidthonglangpra)". The majority of villagers are farmers and natural product hunters. The village is 8 kilometers away from the 60th birthday anniversary of Nawamintrachinee Analayo health promotion hospital. The way to get to the health center passes the mountain and the reservoir, which is quite isolated. This limits travel to health services and participation in the health promotion activities of the health centers and municipalities. A boundary map of the village is shown in Figure 1.

The community leaders, health volunteers (Aorsormor), and representatives of various occupations held a group discussion to review the community health situation and prepare for the research. There were many factors that may be associated with the health status of people in the community, such as: family and community health care taking place whenever illness occurs, rather than taking health promotion and disease prevention; medicines being bought from peddlers/grocery shops when they were sick, in which these medicines may contain steroids that cause long

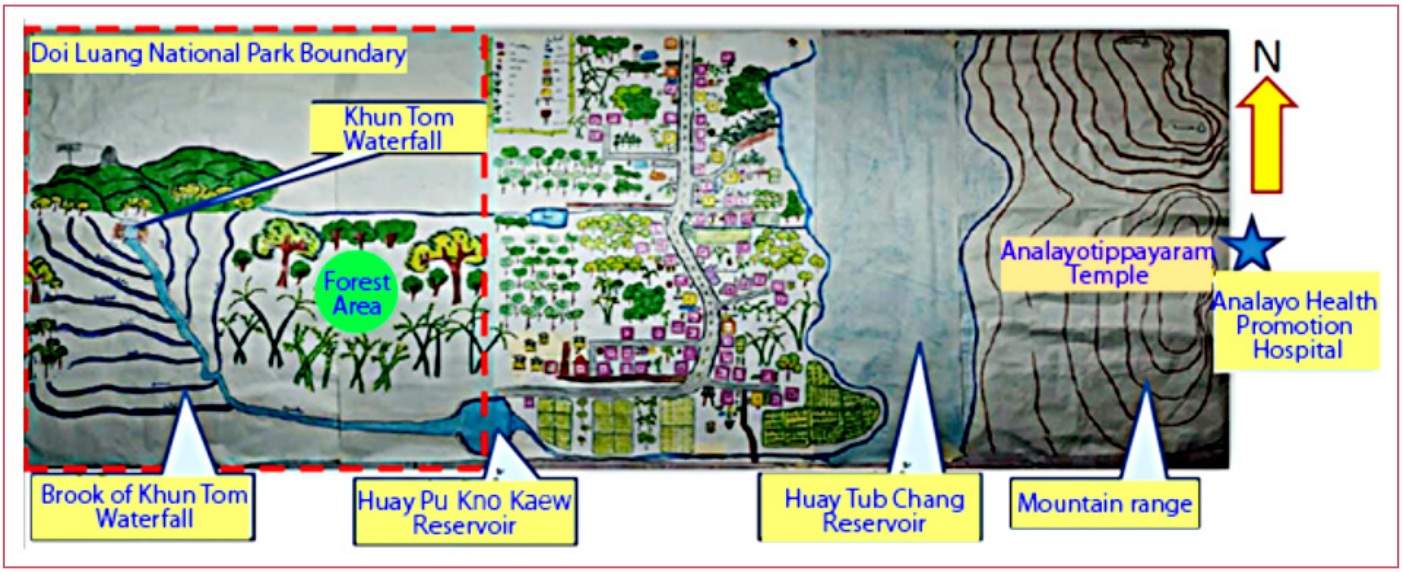

Figure 1 Boundary map of Ban Maetomnai Moo.7, Sanpamuang sub–district, Muang, Phayao Province.

term health effects towards the body system, such as the immune system and osteoporosis; and the community being threatened by the usage of chemicals in agriculture in order to increase rice field, field crop, and horticultural crop productivity, in which organophosphate and carbamate chemicals leave residue in farmland or in the blood vessels of farmers. These problems lead to the use of the participatory processes of the villagers in the community, who are direct stakeholders, participating in decision–making to project evaluation (Cohen & Uphoff, 1981). This was concordant with the context, problems, and needs of the community. The funding of community participation in health problem solving by using local wisdom at Ban Maetomnai had its goals as the strengthening of the participatory process of the community and the study of the effect of community participation process on health problems in the community by using Participatory Action Research (PAR), which was unformulated and flexible in order to produce results and to meet the needs of the community.

Conceptual, theoretical, and research involvement

The health problems of people in each community have various causes and complexities. These varieties of health problems cannot be solved at the same time. This depends on the community context, resources limitation, and different social capital. It is imperative to prioritize the problem as needed, and the problem is solved by necessity, according to the elements considered. How to prioritize problems, according to the methods of the Department of Public Health Administration, Faculty of Public Health, Mahidol University, is very popular in its usage, because of its decisive elements and ease of calculation. Each element has a score of 0–4 or 1–5, which is then sorted in descending order. There are 4 elements that are taken into account.

1) **Size of problem** refers to the prevalence of a disease that occurs in the community. When did it happen, and how many patients are there? If it is contagious, is it able to be transmitted through contact and spread easily? What is the trend of the disease? This is shown as a problem ratio. For example, there are 43 patients with diarrhea, calculated as 25.29% of the total population. After that, the outcome percentage is compared with standard, in which none equals 0 points, 0–25 percent equals 1 point, 26–50 percent equals 2 points, 51–75 percent equals 3 points, and 76–100 percent equals 4 points.

2) **Severity of the problem** is determined by the death rate or disability of the disease. If found, death equals 4 points, disability equals 3 points, chronicity equals 2 points, sickness equals 1 point, and none equals 0 points.

3) **Ease of management** is based on the factors related to the problem, such as academic progress, human resources, sufficient materials, time, and whether it is against legal or moral standards. Not being able to manage equals 0 points, very hard to manage equals 1 point, hard to manage equals 2 points, easy to

manage equals 3 points, and very easy to manage equals 4 points.

4) Community reaction, or community concern, considers whether the community members realized the importance of the problem and were willing to solve the problem. None equals 0 points, 0–25 percent equals 1 point. 26–50 percent equals 2 points, 51–75 percent equals 3 points, and 76–100 percent equals 4 points (Tamdee & Tuanrat, 2012, Prathomsook, 2011).

Problem solving requires people participating freely, which includes thinking, reflecting, decision making, practicing, evaluating, and acknowledging benefits; Cohen & Uphoff (1981) gave the meaning of community participation as community members having to be involved in 4 dimensions: 1) Participation in decision making of what to do and how to do it. 2) Participation in developing and implementing as decided. 3) Participation in sharing the benefits arising from the process. 4) Participation in evaluating the project. In general, it is difficult to get everyone involved in mutual thinking and decision making within a group because everyone has different capabilities, status, social power, perspectives, and experiences. Moreover, some cultural factors impede the independence of expression (Noppakesorn, 2015).

The researcher and villagers of Ban Maetomnai had gone through community assessment and problem prioritization together, and had found the community strengthened by plant and herb capital resources and folk philosophers with local wisdom on herbal usage. Mr. Khaikhaosan Moon has experience and knowledge inherited from his ancestors, and adapted its usage from generation to generation, regarding the socio-cultural situation and the environment. Local wisdom is tallied with the traditional way of life of the villagers. Thai traditional medicine for muscular and skeletal pain relief has been studied and developed as suitable remedy from the local wisdom usage of Thai people (Thai Encyclopedia for Youth, Vol. 19, 1997). Local wisdom has been applied in modern medical knowledge, such as herbal bags and compressed balls, in an easy-to-use and convenient manner. Herbs are used for saunas in order to relieve muscular pain. Muscular pain assessment is evaluated before and after the herbal bags and compressed ball usage. Patients are asked to describe the pain during a physical examination. The assessment of pain severity may be related to other factors, such as the mental status, temper, insomnia, or drug taking of the patient. The numeric rating scale (NRS) has a rating scale of 0–10, in which 0 means no pain, while 10 means very painful. The categorical scale is grouped as follows: 0 means no pain, 1–3 means slightly painful, 4–6 means moderate pain, and 7–10 means very painful (Paiboonworachart, n.d.).

Research Method

1) Research process

The research was divided into 3 phases; 1) community assessment 2) planning and implementation, and 3) follow up and evaluation, as described in Figure 2.

Phase I: Community assessment was conducted from May to November 2015. Secondary data on medical illness treatment was collected from the Hospital Information Extreme Platform (HOSxP) at the Analayo health promotion hospital, while data on environmental sanitation in people's heath was collected from the Sanpamuang municipality sub-district. The field operations were done by health volunteers and community leaders by using community analysis tools such as the community history, a community map, an organizational chart, a community calendar, the community economy, and the community health system, and was participants were observed with voice and video recording to use as supplementary secondary data in order to prioritize the problem in terms of the supportive and risk factors of disease.

Phase II: Planning and implementation was conducted from February to October 2016, as follows: 1) a community forum was held with the nominal group process (NACCHO, 2017), as the researcher had raised the issue of a community health problem that had threatened the villagers by using 3 of the hygiene index; size of the problem, severity of the problem, and ease of

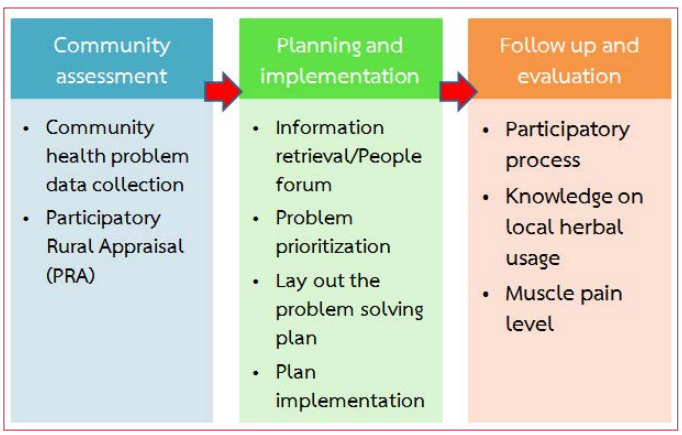

Figure 2 Research process

management, and qualitative data were collected by creating a participatory learning process to be the participatory analytical tools while the community problem was realized and analysis of the problem causes was done, regarding the community interest attending; 2) a problem-solving plan was done by surveying and creating a database of herbal plants within the community and in the community forest in order to implement a project, "Inheritance of using local herbs for pain relief", and to determine the role and the evaluation framework of the research team and villagers; 3) the problem-solving process was planned by using the 3-level scale of the constructed participatory assessment form and the knowledge assessment form for local herbs usage, which had reliability of 0.83 and 0.89, respectively.

Phase III: Follow up and evaluation was done by using a numerical rating scale (NRS), with 0 indicating no pain and 10 indicating the highest pain, with a reliability of 0.80 (Paiboonworachart, n.d.). The evaluation of pain scores was done pre- and post-usage of herbal bags and compressed balls for pain relief. The researcher had informed participants of the objectives and the expected benefits, at both the individual and community level. The research process started with organizing the community forum, defending the right of participation, and declaring the collected data as to be kept confidential, used and presented as a whole in this research only; then, data collection was done in November 2016 by using the questionnaire, with assistance from fourth-year nursing students in order to help those who were unable to read.

2) Data Analysis

Qualitative data was analyzed by using content analysis. Quantitative data collection, by using the community health survey, the questionnaire on measuring the participatory process, and the muscle pain assessment form, were then analyzed by descriptive statistics. Knowledge of herbal usage was tested before and after participation and was then analyzed by using the paired t-test. Epidemiological data were analyzed by using the hygiene index.

Research result

1) Community Assessment summarized the problem groups by using the hygiene index, as per the following:

1.1) Household problems with unsafe waste disposal, in which 46 households disposed of garbage by burning, accounted for 71.7% regarding the standard of basic minimum needs that would affect the pollution disturbance of peoples' health in the community.

1.2) People problems, with agricultural toxins in a group of organophosphate and carbamate residue in the blood vessels. According to the results of 70 blood samples from Analayo health promotion hospital, 40 unsafe levels were found, which accounted for 57.14%.

1.3) People problems with muscular aches from hard work. In a population group of 40-year-olds, 102 of them were randomly assigned to use the numerical rating scale (NRS); 53 of them identified as being at the painful level, at 4-6 points, constantly taking NSAIDs for pain relief, which accounted for 52.00%.

1.4) People problems with chronic diseases, such as high blood pressure disease associated with diabetes, which accounted for 50% of risk groups older than 35 years old, according to the WHO criteria.

2) Problem prioritization There were 35 representatives from the participating households who attended the problem prioritization activity, which examined the problems to see which were important and needed to be solved in the first order, by using the highest score multiplication, as shown in Table 1.

Table 1 shows that the people who attended the community forum considered the sum by multiplication with the highest value as an agreement acceptance dimension. This led to the importance of muscular pain from hard work being identified as the first major problem that must be solved together.

3) Health problem solving plan Eight researchers and community leaders had worked together in laying out the project in order to solve the problem of muscular pain from hard work. This started with the problem solving plan by using the resources that resided within the community, which were plants, local herbs, and philosophers with herb knowledge who cooperated with network parties outside the community, such as Thai traditional medicine from Analayo health promotion hospital and the community developer from the municipality sub-district. The plan was specified as follows: 1) Collect and create a database of varieties of plants and herbs inside the community and community forest; 2) Organize the project "Inheritance of using local herbs on pain relief"; 3) Define an activity plan, roles and responsibilities; 4) Lay out the evaluation.

4) Implementation of health problem solving plan

4.1) Data were collected and a local herbal database created by surveying the community and forest area on March 29, 2016 and acquiring information from the philosophers. The most commonly used herbs within households were Zingiber cassumunar Roxb (plai), lemon grass, leech lime, turmeric, Acacia concinna (sompoi), tamarind, and Plantago major (yaenyeut). Herbs found in the Doi Luang forest at the survey time comprised 54 species, such as Thailentadopsis tenuis (Craib) Kosterm (hosapankhwai), Thunbergia laurifolia (rangjeut- with white/purple flower), Coscinium fenestratum (tonham), Clerodendrum infortunatum L. (nangyam), Bastard Cardamon (makneng), Croton oblongifolius Roxb (tonpao), Scleropyrum pentandrum (Dennest.) Mabb (tonnomsao), Plantago major (yaenyeut), Eurycoma longifolia Jack (tonplalaipheuak), etc.

4.2) The results of the project "Inheritance of using local herbs on pain relief" were as follows: 1) The researcher organized the learning process by integrating the traditional knowledge that remained in the community from the herbalists with the modern knowledge of traditional Thai medicine from Analayo health promotion hospital, in order to produce easy-to-use herbal remedies in daily life according to the formula compiled by the herbalists and Thai traditional medicine (Figure 3). Local herbs were used in making the herbal bags for foot spas and saunas. The ingredients of 1,000 grams of plai, 400 grams of leech lime leaf/skin, 400 grams of tamarind leaf, 200 grams of lemon grass, 200 grams of turmeric, 200 grams of sompoi, and 100 grams each of Crinum asiaticum L. (phlapphleung), Barleria Lupulna (saletpungpon), and hosapankhwai could produce 20 of the compressed ball in 120 grams size, or 50 herbal bags for foot spas and saunas (Figure 4). 2) The research team organized the learning process with the health volunteers (Aorsormor) and conducted the outcome knowledge to 53 persons of a target group with pain. 3) A group of housewives formed the herbal processing group.

4.3) Assessment results for the participatory health problem solving are shown in Table 2.

Table 2 shows that the villagers of Ban Maetomani participated in the community health problem solving at a moderate to high level. The most involved activity was target group setting or people who needed to be treated for the health problems.

4.4) Fifty-three of the volunteering villagers were tested for their knowledge of local herbal usage in pain relief; the results are shown in Table 3.

Table 3 shows that knowledge in the utilization of herbs after participating in the third week was increased, with statistical significance at the 0.05 level.

4.5) The results of the co-learning formed a group of herbal processors (Figure 5). The first products that was jointly produced and used in the project were the herbal bags for foot spas and the compressed balls. The joint action of the research team with the community leader group, the chairman of the health volunteers, the chairman of the career group, and the traditional Thai medicine group at Analayo health promotion hospital was to take the compressed balls and herbal bags for foot spas for use at the clinic of traditional Thai medicine of Sanpamuang sub-district, and placing recommendations for the sub-district development plan of forested watershed and the sub-district health development plan.

5) Follow up and evaluation

5.1) A group discussion was organized and an interview with a questionnaire on problem solving for muscular pain using

Table 1 Result of health problem prioritization.

Health problem	Health index Survey data			Community forum	Principles of problem considering	
	Size of problem	Severity	Ease of problem solving	Interest	Sum by addition	Sum by multiply
1. Unsafe waste disposal	4	2	2	2	10	32
2. Toxic residues in the blood	3	2	2	2	9	24
3. Muscular aches from hard work	3	2	2	3	10	36
4. Chronic illnesses	2	2	2	1	7	8

Figure 3 Herbal processing and herbal products.

Figure 4 Herbal foot spa testing.

local wisdom of the community was conducted.

5.2) The results of the evaluation of the severity of muscular pain in the volunteered target group was tested by using the numerical rating scale (NRS) after using a herbal bag in a foot massage and a compressed ball in pain relief for 15 to 20 minutes a day, 3-5 times a week, which lasted for 3 weeks. The NRS test was done prior to and after joining the activity. The target group wrote a check mark on the numerical scale that indicated the severity of the muscular pain, as shown in Table 4.

Table 4 shows that 53 patients were assessed for the severity of muscular pain, pre-joining the activity, were at a moderate pain level (73.33%). After joining the activity of local herbal usage for foot spas and compressed ball massage for pain relief, the pain level had decreased to the slightly painful level (90.0%).

5.3) The learning process of the villagers about the health promotion of the community came out with the integration of the local wisdom of philosophers in using traditional knowledge from ancestors and modern knowledge of Thai traditional medicine in the production and processing of local herbal usage, as well as the utilization of resource capital in areas that had a biodiversity of local herbal plants. This learning process was the beginning of other health promotion.

Discussion

The results of community participation in health problem solving in Ban Maetomani, Sanpamuang sub-district, Muang, Phayao Province, by using local wisdom, can be discussed as follows.

1) The result of the community participation process in health problem solving succeeded with the initial community assessment of the villagers with their leaders and health volunteers. They knew their own problems without researcher guidance from

Table 2 Participatory level of community health problem solving in Ban Maetomnai.

Participatory activity (n = 25)	Participatory level					
	High		Moderate		Low	
	Total	%	Total	%	Total	%
1. Survey the community data	25	47.17	15	28.30	13	24.53
2. Find out the causes of community health problem	28	52.83	15	28.30	10	18.87
3. Implement the health problem plan	35	66.04	10	18.87	8	15.09
4. Organize meetings with the research team, officers from the health promotion hospital, and health volunteers	23	43.40	18	33.96	12	22.64
5. Raise the health issues in the community forum	39	73.58	11	20.76	3	5.66
6. Set the target groups or people who need to be treated for the health problems	40	75.47	10	18.87	3	5.66
7. Determine the way, or guidelines, to solve the health problems	38	71.70	10	18.87	5	9.43
8. Estimate the funding sources or budget use	30	56.61	15	28.30	8	15.09

Table 3 The results of knowledge tests on local herbal usage pre- and post-joining the activity.

	n	$\bar{X}$	SD	df	t
Pre-joining the activity	53	4.96	0.99	52	10.07*
Post-joining the activity	53	6.06	0.91		

*Significance at 0.05

Figure 5 A group of housewives formed the herbal processing group

Table 4 Evaluation on the severity of muscular pain pre- and post-joining the activity under the project "Inheritance of using local herbs on pain relief".

Pain level	Pre-joining the activity		Post-joining the activity	
	Total	%	Total	%
0 points (No pain)	0	0	0	0
1 – 3 points (Slightly painful)	12	22.34	48	90.00
4 – 6 points (Moderate pain)	39	73.33	5	10.00
7 – 10 points (Very painful)	2	3.33	0	0

the researcher. This is just like community-based research, in which the research is done by villagers with the need to solve their own problems. So, it can be attached strongly to empirical data and stakeholder participation (Boon-long et al., 2010), with initial community realization and acknowledgement of the beneficial project. For instance, in processing community participation in Australia, people initially laid out the policy in order to support healthcare services (Jessamy & John, 2012). Moreover, community forums are the brain storming processes of residential power development which is suitable for communities with a variety of needs. Attendants have the right to express their own opinions clearly, and the process mediates party conflicts which would have benefit at both the individual and the community level. Participation starts from raising and summarizing the problems to defining the mutual goals (Naccho, 2017). This empowers people/group/community organization in remote areas, allowing the ability to make decisions about primary healthcare with their own needs (MacCormack, 1983).The research of Pangsiri (2016) developed elderly health promotion by integrating local wisdom and community participation. It was found that the group activities made the elderly aware of health problems, be able to analyze problems, and find solutions to problems together, which shows self-empowerment, leading to good health. The research results of Wongseng and Jadesadalug (2016) in studying the role and involvement of the elderly in civil society in community development revealed that the elderly had a role and involvement in the main issues, the work process, the responsibilities, the techniques, and the methods of creating engagement. The research of Rojpaisarnkit

and Kreingkaisakda (2017) developed a community-based approach to improve the well-being of the elderly. It was found that action needed the support and cooperation of network partners and needed to be carried out in a participatory manner.

Because community health problems are varied and complicated, the troubleshooting cannot fix all problems at once. Problem prioritization is an important step in health planning, in which the community health problem can be identified at any given time. There is no fixed formula in choosing the most important problem, as this depends on the community context and community-based problem solving (Sousa et al., 2017). In this research, there were obstacles and limitations of the scoring process in prioritizing problems using the Health Index. The data must be converted into ratios or percentages. The problems found in the community-based exploration and the community assessment used a variety of information and had to be prioritized with limited resources. This was an ad hoc process; as in Sweden, there were three major criteria: the severity of health conditions, the benefits of the clients, and the value (Vilnius & Dandoy, 1990; Eva et al., 2012). Even after converting the non-disease information or information that does not directly affect the disease into the hygiene index with high value, the villagers did not consider it to be a community problem, as no one was sick with this problem. For example, if the problem concerned the turbidity of the village water supply that flowed from the mountain carrying excess sediment, meaning people could not use it for consumption, the organophosphate and carbamate residues in blood vessels, and invalid waste disposal. After converting the information of peoples' illness with mellitus diabetes and hypertension into a numerical score, it was found that the size and severity of the problem was low, but it did not mean that people did not have this health problem. So, various methods (Rob & Louis, 2006) were developed. It could be seen that the process of prioritizing problems is an important step, but several criteria should be considered to make it suitable for the context of the area (Kim, 2015), which was confirmed by the study of Nantsupawat and others (2012) in developing a community health system by synthesizing problem issues to reflect community awareness and realization of health problems together and setting up a joint working group from all sectors in health problem solving prioritization.

2) The results of the community participation process in health problem solving with local wisdom usage of the community. Learning principles were used with participatory action in community assessment, planning of health problem solving, and organizing activities under the project "Inheritance of using local herbs on pain relief", which used the natural capital of a biodiverse community and the value of philosophers, in combination with modern knowledge of Thai traditional medicine. The first change was found to be a knowledgeable community with the ability to analyze problems and plan together to solve community health problems in the context of the community. This was the outcome of the participatory learning process, which allowed for human potential, developed by having the opportunity to think, plan, and decide to learn from experience. The second change was found to be that the community members were confident in speaking, thinking, and expressing. The participatory tools and techniques used in community analysis were implemented in order to encourage the community members in exchanging knowledge, experience, and information on joint activities, so it allows for clearer views and more systematical and effective thoughts. This conformed to the research results of Srimala and others (2016) in developing a participatory community health management model that created potential health community leaders who were able to manage their own health. This also was akin to the research results of Jaitae and others (2016) in developing a community learning process of health culture that focused on engaging in participatory processes and planning activities and learning resources in order to develop knowledge management of health culture.

Health promotion trends focus on problem solving by the community in various health problems. This was a main strategy of changing risk behaviors at the individual, family, and community levels. People had self-directed learning and saw the value of community capital, which could be resources and people who were philosophers or local wisdom teachers. All come together to create a learning process in order to contribute to community empowerment in health promotion (Cheryl & Joanna, 2003). The advantages are the ability to extend the caring scope to other remote areas and the collaboration of all sectors of the health network. This is sustainable when people have the ability of self-healthcare, self-reliance on a knowledge-based society, collective experience, and group participation that responds to the needs of the community (Kaewcharoenta, 2016: 170). According to research results of Aiemchai and Injeen (2012) in

studying the effects of community participation on health problem planning at Ban Thungtonsri, it was found that the adaptation of the A-I-C technique included the public and the stakeholders' creative brainstorming, which could make people get involved in finding strategies to solve their own problems and community problems. This focused on creating a learning process, attitude, and the adaptation of risk behavior in using agricultural chemicals. The research results of Pongsaengpan and Rodjarkpai (2014) in studying the health promoting behaviors of the elderly in the east of Thailand found that organizing learning exchange meetings and planning for participatory actions made the public health officers, health volunteers, the elderly, and community members have more understanding of the concepts and processes of health promotion. In addition, the community strengthened self-health promotion and had suitable health promotion behaviors. This is similar to the research results of Teerachitkul and others (2012) in studying muscular pain experiences, pain management, and outcomes of pain management of the elderly with rubber tree slit, which found that pain had affected life in the behavioral dimension, and pain management was selected in the order of painkiller medicine usage, resting, and herbal medicine usage. The research results of Naewboot and Kanchanatawan (2016) showed that a muscular and fascia pain group had less pain, anxiety, and depression after 3 sessions of Thai massage; hence, the average pain level before and after treatment were 2.46 and 1.80, respectively.

Utilization

1) The community and the network parties, comprising community leaders, philosophers, health centers, the municipality sub-district, Muang medical councils, and related parties at the sub-district and district level, are able to use the information obtained in this research as a local herbs data center, in order to pass on local wisdom of the community in Phayao Province and nearby areas.

2) The housewives' group formed a group for processing herbs, which is supported by the developmental fund of Sanpamuang municipality sub-district. The community developers used this research results to promote knowledge and skills in the processing of herbs and to coordinate the marketing channels in order to place the processed herbs, such as herbs for feet spas, dried herbs for drinking, and herbs for massage with hot presses and spas, for sale in the provincial OTOP shop.

3) A group of health volunteers and community members are part of the learning process as a leader group in preserving rare herbs by increasing the growing areas, breeding, and protecting local herbs which grow naturally within the Doi Luang National Park boundary.

4) Thai traditional medicine at the Analayo health promotion hospital organized a continuous project, forming a cooperative learning group for local herbs and their uses which combines the health promotion methods of villages with the use of community capital. This is the combination of local herbs with modern knowledge in processing, preserving, and applying herbal products to clients of the Thai traditional medicine clinic.

5) Boromarajonani College of Nursing, Phayao, has applied their teaching and learning in complying with the goals of education management. This is to produce people from the community so as to fulfill the community health system regarding the production of graduates, research, and academic services to the community and society, by building relationships and creating cooperative learning in which to promote sustainable healthcare for people.

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References

Aiemchai, K. and Injeen, J. 2012. **Community participatory in health problem-solving plan at Ban Tung Ton Sri, Huay Lan sub-district, Dok Kham Tai district, Phayao province.** *Journal of Medicine and Health Sciences.* 19(1); 44-52. (in Thai).

Arvidsson, E. et al. 2012. **Setting priorities in primary health care – on whose conditions?. A questionnaire study.** *BMC Family Practice.* 13; 114-121.

Baltussen, R. & Niessen, L. 2006. **Priority setting of health interventions: The need for multi-criteria decision analysis.** *Cost Effectiveness and Resource Allocation.* 4(14). Retrieved from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1560167/. Accessed 5 August 2017.

Bath, J. & Wakerman, J. 2015. **Impact of community participation in primary health care: What is the evidence?.** *Australian Journal of Primary Health.* 21(1); 2-8.

Bolin, J. & Bellamy, G. 2012. **Barriers to health promotion and disease prevention in rural areas.** Retrieved from: https://www.ruralhealthinfo.org/community-health/health-promotion/1/barriers. Accessed 5 August 2017.

Boon-long, P. et.al. 2000. **Community based research: Foundation of power wisdom.** The Thailand Research Fund (TRF). Wanida Press: Chiang Mai. (in Thai).

Cohen, J. M. & Uphoff, N. T. 1981. **Rural development participation: Concept and measures for project design implementation and evaluation.** Rural Development Committee Center for International Studies. Cornell University. 317p.

Farmer, J. & Nimegeer, A. 2014. **Community participation to design rural primary healthcare services.** *BMC Health Services Research.* 21(3); 14-30.

Flynn, B. C. 1996. **Healthy cities: Toward worldwide health promotion.** *The Annual Review of Public Health.* 17; 299-309.

Health Systems Research Institute (HSRI). 2017. **Concepts and practical guidelines to respond to the health needs of vulnerable populations in Thai contexts. Research report.** Health Systems Research Institute. Nonthaburi. (in Thai).

Jaitae, S. et. al. 2016. **Development of learning program for healthcare culture promotion: Case study of Li watershed, Lamphun.** *Journal of Community Development and Life Quality.* 4(2); 284-296. (in Thai).

Jessamy, B. & John, W. 2012. **Impact of community participation in primary health care:What is the evidence?** *Australian Journal of Primary Health.* 21(1); 2-8.

Junsawang, W. 2003. **Community health concept and process.** Brother Printing: Songkhla. (in Thai).

Kaewcharoenta, P. & Tubjun, J. 2016. **How to get the healthcare outcome: Tools and techniques on community health process.** Pabpim: Bangkok. (in Thai).

Kenny, A. et al. 2013. **Community participation in rural health: A scoping review.** *BMC Health Services Research.* 18(2); 13-64.

Khanindra, K. B. 2004. **Health promotion through self-care and community participation: Elements of a proposed programme in the developing countries.** *BMC Public Health.* 16(4); 4-11.

Kim, J.-H. 2015. **The analysis of priority setting in community health planning in Korea and its Implications.** Retrieved from: https://www'researchgate.net/publication /2768410605. Accessed 5 August 2017.

Kongrukgreatiyos, K. 2016. **Aging in Thailand – Addressing unmet health needs of the elderly poor.** Retrieved from: http://www.worldbank.org/en/news/press-release/2016/04/08/ aging-in-thailand. Accessed 30 December 2017. (in Thai).

MacCormack, C. P. 1983. **Community participation in primary health care.** *Tropical Doctor.* 13(2); 51-54.

Merzel, C & Afflitti, J. 2003. **Reconsidering Community-Based Health Promotion: Promise, Performance, and Potentia.** *American Journal Public Health.* 93(4); 557–574.

NACCHO. 2017. **First thing frst: Prioritizing health problems.** The National Connection for Local Public Health. Retrieved from: http://www.naccho.org/topics/infrastructure/accreditation/upload/Prioritization. Accessed 5 August 2017.

Naewboot, J. & Kanchanatawan, B. 2016. **Effects of Thai traditional massage to anxiety, depression and pain level of patients with myofascial pain syndrome at the clinic of applied Thai traditional medicine, Faculty of medicine, Thammasart university.** *Health Equity through Innovation and Collaboration.* 60(3); 313-27. (in Thai).

Nantsupawat, R.et. al. 2012. **Development of community health system by the people for the people: Case study of Chisathan district.** *Nursing Journal.* 39(2); 144-154. (in Thai).

Noppakesorn, T. 2015. **Facilitator: Community health development.** Wanida Printing: Chiang Mai. 60 p. (in Thai).

Paiboonworachart, S. n.d. **Pain assessment and measurement.** Department of anesthesiology, Faculty of medicine, Chiang Mai university. Retrieved from: http://www.med.cmu.ac.th/dept/anes/2012/images/Lecture2015/Pain_Assessment.pdf. Accessed 12 December 2017. (in Thai).

Pangsiri, M. 2015. **Development of elderly care model by integrating the local wisdom with the community participatory, Ban Klang Subdistrict Administration Organization, San Pa Tong district, Chiang Mai.** *Rajabhat Chiang Mai Research Journal.* 16(2); 87-96. (in Thai).

Phayao Provincial Public Health Office. 2017. **Important Problems of People at Phayao Province 2016.** Retrieved from: http://203.209.96.245/sapa/frontend/ web/index.php?r=hstatus/hproblem/. Accessed 5 August 2017. (in Thai).

Pongsaengpan, P. & Rodjarkpai, Y. 2014. **Community participatory on elderly health promotion at the East of Thailand.** *The Public Health Journal of Burapha University.* 9(2); 13-20. (in Thai).

Prathomsook, S. 2011. **Community health nursing concepts principles and practical.** 2nd ed. Judthong: Bangkok. 227 p. (in Thai).

Rojpaisarnkit, K. & Kreingkaisakda, W. 2017. **Development of guidelines for implementation of the community for developing well-being of the elderly.** *Journal of the Association of Researchers.* 22(1); 81-88. (in Thai).

Sousa, F. et al. 2017. **Setting health priorities in a community: A case example.** *Revista de Saúde Pública.* Retrieved from: http://www.rsp.fsp.usp.br/. Accessed 5 August 2017.

Srimala, R. et. al. 2016. **Community health management by participation approach: A case study of Chachoengsao province.** *VRU Research and Development Journal Humanities and Social Science.* 11(3); 159-168. (in Thai).

Tamdee, D. & Tuanrat, W. 2012. **Community health assessment and problem prioritization in community health nursing.** 1st ed. Krongchang Printing: Chiang Mai. 262 p. (in Thai).

Teerachitkul, J. et.al. 2012. **Management of muscular aches and pains in old-age rubber tappers.** *Thai Journal of Nursing Council.* 27(2); 134-147. (in Thai).

Thai dictionary for youth vol.19. 1997. **Local wisdom.** Retrieved from: http://www.kanchanapisek.or.th/kp6/BOOK19/chapter8/chap8.htm. Accessed 30 December 2017. (in Thai).

Thongchai, C. & Boonjarut, S. 2017. **Capacity adaptation of village health volunteers under changing contexts in the semi-urban area of Ban Tha Bo, Chae Ramae sub-district, Ubon Ratchathani province.** *Area Based Development Research Journal.* 9(3); 206-220. (in Thai).

Vilnius, D. & Dandoy, S. 1990. **A priority rating system for public health programs.** *Public Health Reports.* 105(5); 463-470.

Wasee, P. 2011. **New viewpoint new management in community health system.** Sahamitr Printing and Publishing: Bangkok. 47 p. (in Thai).

Winitkul, S. 2007. **Community health diagnostic process and problem solving.** 3rd ed. Funny Publishing: Bangkok. 146 p. (in Thai).

Wongseng, W. & Jadesadalug, V. 2016. **The role and participation of the elders in term of civil society in community development, Bangkhae district, Bangkok.** *Veridian E-Journal, Silpakorn University.* 9(1); 1399-1415. (in Thai).