STRENGTHENING THE CAPABILITY OF FAMILY HEALTH LEADERS FOR SUSTAINABLE COMMUNITY-BASED HEALTH PROMOTION

Wanasara Chaoniyom[1], Nawarat Suwannapong[2], Nopporn Howteerakul[2] and Oranut Pacheun[2]

[1]Central Regional Training Center for Primary Health Care Development, Ministry of Public Health, [2]Faculty of Public Health, Mahidol University, Bangkok, Thailand

Abstract. The Family Health Leader (FHL) Project was initiated in 1997 to encourage self-care and health promotion. Since then, there has been no retraining. This study aimed to strengthen the FHLs' capability to sustain community-based health promotion and network establishment. The study, of a quasi-experimental design, was conducted in a village in Phan Thong district, Chon Buri Province, Thailand. The intervention emphasized enhancing the FHLs' knowledge, ability, leadership and motivation to advance health promotion activities. Before implementing the main intervention, 5 community health workers were trained as facilitators to strengthen 36 FHL capabilities. The curriculum and manual for training facilitators and FHLs were also developed. The intervention for strengthening FHLs' capabilities lasted for 7 months using participatory training. A within-subject repeated ANOVA was used to measure changes in the main outcome variables immediately, and at three and six months after the intervention. A qualitative methodology was utilized to assess network establishment. The results indicate that the FHLs' knowledge of self-care and health promotion, ability, leadership and motivation had increased significantly after the intervention ($p<0.001$). The FHLs also sought to extend their network by involving both the community committee and the local authorities. The intervention appeared to be successful in strengthening the FHLs' capabilities to sustain health promotion within the community, and it established networks vertically and horizontally. The FHLs were the key persons to bring good health to family members. Periodical participatory learning and group empowerment are recommended for encouraging the FHLs to maximize their potential for family self-care and health promotion.

INTRODUCTION

Family health leaders (FHL) are representatives of families who take responsibility for the family members' health. FHLs were selected by health workers, village health volunteers (VHV) and community leaders to attend a training course which focused on self-care, disease prevention, and first-aid. The FHL development project was initiated in Thailand in 1997 as part of the Primary Health Care policy to increase the coverage of self-reliant communities. The FHL project focuses on human development to attain a healthy condition at individual, family and community levels, and its mechanisms link popular health systems to government health services. At the end of the 8th Thai National Five Year Health Plan, it was expected that 80% of all families should have at least one person trained as a FHL (Office of Primary Health Care, 1998). In 2002, the coverage of FHLs in Thailand was 85%. Of these, 60% were in the Central Region (Central Regional Training Center for Primary Health Care Development, 2002).

Initially, FHL development emphasized first-aid and self-care rather than enhancing knowledge and capability-building for health promotion. Refresher training did not revitalize the FHL development program. There was no continuous follow-up from VHVs or health officers. The FHLs had fewer opportunities to participate, and less recognition, in the health activities of the community (Central Regional Training Center for Primary Health Care Development, 2002). Thus,

Correspondence: Nawarat Suwannapong, Department of Public Health Administration, Faculty of Public Health, Mahidol University, 420/1 Rajvithi Road, Bangkok, 10400, Thailand.
Tel: +66 (0) 2354-8529; Fax: +66 (0) 2354-8558
E-mail: adnsw@mahidol.ac.th

the FHLs lacked work motivation. They could neither work as a team to extend community health promotion activities, nor have their own network for technical support.

In 2000, the Thai Ministry of Public Health launched the 30-baht, or universal coverage, scheme to strengthen community-based health promotion, and give people more convenient access to health services. However, to date, no clear model has been approved for implementation. Therefore, it is challenging to attempt a more appropriate community-based health promotion model by strengthening FHLs' capabilities through group processes and participatory learning, as well as the establishment of a network.

MATERIALS AND METHODS

A quasi-experimental, One-Group, Pre-Test/Post-Test design was used to strengthen FHLs' capabilities for sustaining community-based health promotion and network establishment. Data were collected during the period October 2002 to September 2003. The intervention consisted of 2 phases, preceded by a pilot study. The process of strengthening the capability of FHLs, and the evaluation for establishing a network, is shown in Fig 1. The purposes of the pilot study were to collect baseline data for the target village using rapid participatory community appraisals (RPA) to access community health needs, improve the facilitators' knowledge and abilities, to develop a curriculum and manual for the FHL training program, and to plan facilitator activities. Pre- and post-intervention tests were used to assess the facilitators' capabilities. The objective of Phase I was to enhance the FHLs capability to practice self-care, family health care, and sustainable community-based health promotion. Measurements were made at baseline, immediately after the intervention, and at 3 and 6 months after the intervention to assess changes in the FHLs' knowledge, abilities, leadership and motivation. Phase II aimed to assess the process of network establishment and expansion. The research team convened 4 times every 2 weeks for discussions with each group and had 4 monthly visits for motivation and psychological support, according to the plan. Changes in individuals and groups were observed through the group process, interactions of group members, transfer of experience, and motivation and satisfaction in the group.

Setting and participants

The investigation was carried out in Chon Buri Province, a tourist and industrial town about 80 km southeast of Bangkok, where the basic infrastructure has been developed. Chon Buri was the first province to join the primary health care program and had 72% FHL coverage. Ban Nern Phi, a village in Phan Thong district, Chon Buri Province was selected as the study area, since it had the lowest incidence of dengue hemorrhagic fever (DHF) in the province, which indicated that the people had an existing ability to prevent and control endemic disease. Ninety-one persons identified themselves as FHLs. Convenience sampling was used to select the study samples with the following inclusion criteria: 1) living in the community during the study period, and 2) willing to participate in the study. FHLs with a chronic health problem, such as hypertension or arthritis, or other illnesses that might be barriers during training, were excluded. Altogether, 36 family representatives met the inclusion criteria.

The study protocol was reviewed and approved by the Mahidol University Ethics Committee for Human Research.

Instruments

A training curriculum and manual for facilitators and FHLs were developed in the pilot study. The pre- and post-intervention tests for the facilitators consisted of 3 parts: Part 1 comprised closed-ended questions concerning the respondent's general characteristics; and Part 2 comprised 9 multiple-choice items for knowledge of self-care, community health promotion, and being a facilitator. The Cronbach's alpha was 0.86. Part 3 dealt with the ability to be a facilitator, and was comprised of 11 items with a 4-point rating scale (4=practice immediately without supervision, 3=practice if received supervision, 2=practice with close supervision, 1=not confident to practice). The Cronbach's alpha was 0.91.

In phase I, the FHL capability assessment form consisted of 5 parts: Part 1 was comprised of closed-ended questions regarding the respondents' general characteristics; and Part 2 contained 25 items regarding knowledge of self-care and family health care during normalcy and illness, prevention and control of disease, and community health promotion. A dichotomous method was used by answering "yes" or "no". The Cronbach's alpha was 0.83; Part 3 evaluated the FHLs' ability for self-care and family health care, including community health promotion. Altogether, there were 13 items with a 4-point rating scale (4=practice without supervision, 3=practice if received supervision, 2=practice with close supervision, and 1=not confident to practice). The Cronbach's alpha was 0.91. Part 4 evaluated the leadership of the FHLs, which consisted of 8 items on a 3-point rating scale (2=regularly practiced, 1=sometimes, 0=never). The Cronbach's alpha was 0.74. Part 5 contained 6 items regarding the FHLs' work motivation, which was a 2-point-rating scale (2=more, 1=less). The Cronbach's alpha was 0.80. A score of ≥80% of the total possible score was classified as "good/high" and <80% of the total possible score was classified as "need for improvement".

Phase II employed an observation checklist for observing the activities, participation and interaction of FHLs and facilitators, and included discussion guidelines for exploring the establishment and expansion process for the network (Chaoniyom, 2004).

Data analysis

Descriptive statistics (mean, frequency and standard deviation) were used to describe all of the studied variables. The Wilcoxon's signed ranks test was used to compare the facilitators' knowledge and abilities before and after the intervention. Trend analysis was carried out using a within-subject repeated measure with ANOVA for significant changes in the FHLs' knowledge, abilities, leadership and motivation scores over time. The level of significance was set at $p<0.05$. Thematic analysis and triangulation techniques were used for qualitative data analysis.

RESULTS

Baseline data of the setting

In a pilot study, the Rapid Participatory Appraisals method was used for community assessment to obtain baseline data, which included the strengths and challenges of Ban Nern Phi village. This village is located about 13 km from the city, and transportation to the city was convenient. The roads in the village were made of concrete and asphalt. There were 91 households with 112 families; the households were rather scattered. The total population was 353 persons, with 171 males and 182 females. The literacy rate was 97.0%. About 97.0% were Buddhists. Most people were agriculturists, raising poultry and fish.

Almost all of the villagers were under the health insurance system, or "30-baht Scheme". During the study period, there were 2 cases of diabetes and 13 cases of hypertension, and a minor illness, which was an upper respiratory tract infection. A health center is located about 4 km from the village. The villagers cooperated to prevent DHF with the Tambon or sub-district Administrative Organization (TAO), by eradicating mosquito breeding sources and keeping the household surroundings tidy, removing discarded containers, such as old tires, broken jars and coconut shells.

The community development organization is comprised of a village headman with 11 village committee members. In addition, there was a VHV group with 8 members, 1 agricultural group (raising fish), 1 community fund, 1 elderly group and 1 income-generating group. A community primary healthcare center (CPHCC) provided basic services and primary screening, such as measuring blood pressure and weighing, under the supervision of public health staff, and there was one civil welfare center. There was no school or health center in this village.

Strengths of the community: 1) it was a peaceful village where most of the villagers were relatives and were familiar with each other; and 2) the head of the sub-district stayed in this village. He was an active leader. In addition, he was a committee member of the TAO and VHV groups. People had convenient access to ser-

vices and information, including resource support. 3) The community was located near the city, so that communication and transportation were convenient; a variety of media were accessed in the community. This village also had a grocery store where people could meet each other and disseminate information. The geography enabled a good infrastructure. 4) People accessed the services of the CPHCC and health center near the village. 5) The local government organization had budgets and materials to support health promotion activities in the community. 6) The villagers still adhered to local customs and cultural practices that brought about unity and cooperation among them.

Challenges for the community: 1) having industrial factories scattered around the community. Many people worked in the factory, but had less free time to participate in community development activities. 2) The FHLs who had undergone training lacked the appropriate stimulation or incentive to be a good FHL. 3) There were no obvious health-promoting activities in the community, although the policy of the local governing organization would support such activities. 4) There were many group leaders in this community, but they were responsible to their groups, which lacked the integration of networks that can influence the empowerment of the community.

General characteristics and capabilities of the facilitators

Of the 5 participating facilitators, 3 were female; their ages ranged from 36-43 years. Four of them had finished bachelor degrees; one had finished high school. Regarding work experience, 3 were health personnel and 2 were VHVs. Strengthening the capabilities of the facilitators focused on increasing their knowledge and ability to be a facilitator. Before the intervention, almost all of the facilitators had a good knowledge of health promotion, whereas 4 out of the 5 facilitators lacked knowledge about being a facilitator, in the aspects of participatory learning and the techniques for increasing participation. After the training, the mean scores for all the facilitators' knowledge and abilities had increased significantly ($p<0.05$), as shown in Table 1.

General characteristics and prevalence of FHLs with good capability pre- and post-intervention

Five trained facilitators conducted participatory training to enhance the FHLs' knowledge, abilities, leadership and motivation for self-care and health promotion. Of the 36 FHLs participating in this study, 75.0% were females, age 36-66 years, with a mean of 40.1 years; 86.1% were married, and most were merchants. The average monthly income ranged from 3,600-50,000 baht (40 baht = 1 US$) with a mean of 10,100 baht. Approximately 89.9% finished primary school. About 36% were caretakers for their family members when they got sick. About 85% were selected by VHVs to be a FHL.

After the participatory training, all components of the FHLs' capabilities were improved. The proportion of FHLs with good knowledge increased from 19.4 to 94.4%, their abilities increased from 50.0 to 88.9%, their leadership increased from 30.6 to 61.1%, and their motivation increased from 88.9 to 91.7% (Table 2).

Changes in the FHLs' capability over time

Changes in the FHLs' knowledge, abilities, leadership and motivation were measured before the intervention, immediately after the intervention, and 3 and 6 months post-intervention using a within-subjects repeated measure analysis of variance (ANOVA). Table 3 shows that overall there was a significant change in knowledge by within-subjects effect ($F_{3, 105} = 168.69$, $p<0.001$). The FHLs' mean scores for knowledge increased from 16.50 at baseline to 22.81 im-

Table 1
Mean (M) and standard deviation (SD) for knowledge and ability scores of 5 facilitators pre- and post-intervention.

Variable	Pre-intervention M (SD)	Post-intervention M (SD)	p-value
Knowledge	6.80 (0.45)	8.80 (0.44)	0.039
Ability	33.80 (1.64)	36.00 (1.58)	0.034

P-value by Wilcoxon signed ranks test
Range of possible scores: Knowledge: 0 to 9
Ability: 11 to 44

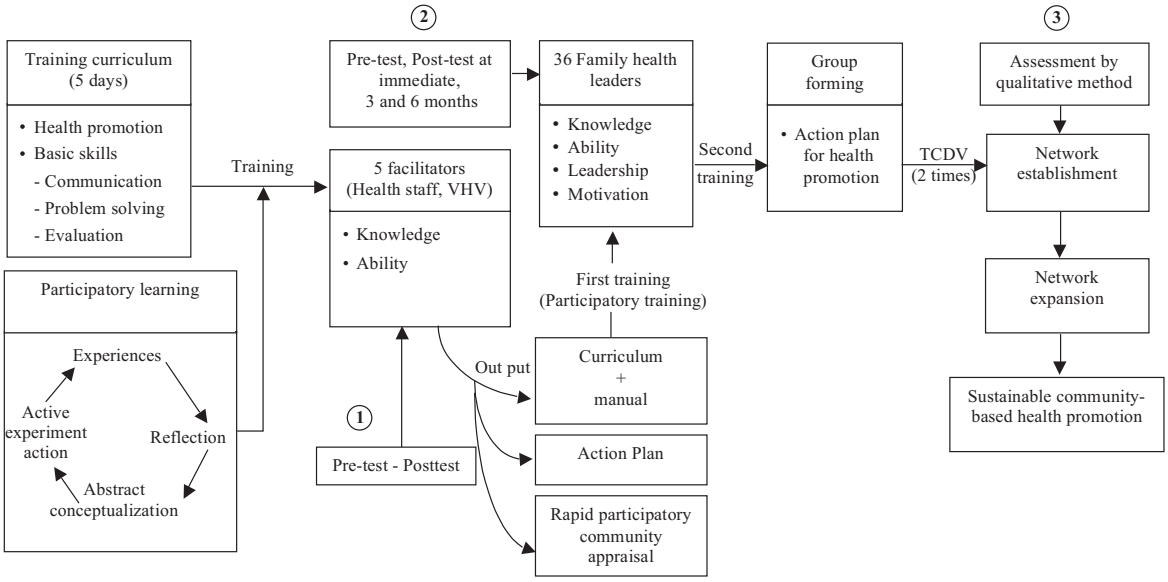

Fig 1–The process of strengthening the capability of family health leaders on sustainable community-based health promotion and evaluation of network establishment.

Table 2
Level of knowledge, ability, leadership and motivation of 36 FHLs pre- and post-intervention, by percentage.

Variable	Pre-intervention		Post-intervention	
	Good/high[a]	Need for improvement[b]	Good/high[a]	Need for improvement[b]
Knowledge	19.4	80.6	94.4	5.6
Ability	50.0	50.0	88.9	11.1
Leadership	30.6	69.4	61.1	38.9
Motivation	88.9	11.1	91.7	8.3

[a] ≥ 80% of total score; [b]< 80% of total score

Range of possible scores: Knowledge: 0 to 25 Ability: 13 to 52
Leadership: 0 to 20 Motivation: 6 to 12

Table 3
Means (M) and standard deviation (SD) of outcome variables at different measurement times for 36 FHLs.

Variable	Pre-intervention M(SD)	Post-intervention M (SD)			F[a]
		Immediately after	3 months after	6 months after	
Knowledge	16.50 (2.99)	22.81 (1.41)	22.92 (1.59)	19.67 (3.30)	168.69
Ability	42.36 (6.61)	46.00 (4.35)	47.69 (3.38)	46.81 (4.41)	40.45
Leadership	14.03 (3.71)	16.03 (3.49)	15.50 (3.97)	18.89 (1.49)	40.46
Motivation	26.94 (3.32)	27.33 (2.55)	28.61 (1.36)	28.08 (1.08)	7.88

[a]$F_{3, 105}$ value by repeated-measure ANOVA; all statistically significant at $p < 0.001$

mediately post-intervention, and 22.92 at 3 months post-intervention; this dropped to 19.67 six months post-intervention. Significant changes were also found in the FHLs' ability, leadership and motivation ($p<0.001$). The mean scores for ability, leadership and motivation were also increased at six months post-intervention, compared with baseline (42.36 *vs* 46.81; 14.03 *vs* 18.89; 26.94 *vs* 28.08, respectively).

Establishment of a network for community health promotion

After the implementation of the intervention, the FHLs conducted many activities. Observation and group discussion techniques were used to evaluate the establishment and expansion of networks for community health promotion. The process of network establishment for health promotion was as follows:

Initiation of community health promotion network. The establishment of the health promotion network began with the community vision "the community can care for itself without communicable diseases, having a good environment and peacefulness". The FHLs and VHVs transferred knowledge and abilities to their family members, relatives and neighbors. The process of establishing and expanding the health promotion network was as follows:

Stage 1. The FHLs improved their health behaviors as a model for their family members and encouraged other family members and relatives to do so. Stage 2. The FHLs searched for relatives and neighbors who had health problems. They gave advice about daily life self-care according to the procedures provided in the manual. Stage 3. The FHLs collaborated with the chief of the VHV who supported this program. Stage 4. The FHLs held group meetings twice a month within their clusters, and participated in various village activities, such as religious ceremonies. They integrated health promotion topics into every meeting, even those activities that did not relate to health, with interactive communication among the FHLs, VHVs, village committee, health personnel and TAO, so as to become a network.

Health promotion networks expansion. Many existing groups, such as the exercise, elderly and VHVs clubs in the study village, were linked to other groups both within and nearby the village under their own ideas. The results of expanding the health promotion network were as follows:

A representative of the FHLs participated in every monthly community meeting and raised topics regarding community health promotion more frequently. The study village received financial support from the TAO for promoting physical exercise, household cleaning, the "clean food/good taste" campaign, and for FHL training in nearby villages.

Several FHL groups cooperated with VHV clubs, youth and elderly groups to establish a health-promoting club. All interested people were able to join this club. Examples of health promotion activities were a health-promoting clubs contest, and a campaign of exercise to prevent drug dependence. The FHLs also joined government campaigns, for example, during an outbreak of "avian flu", the people stopped eating chicken and eggs. The government tried to convince the public that well-cooked chicken and eggs were safe by implementing "100% safety for the chicken-egg eating festival".

The FHLs, village committees, members of TAO and facilitators organized two study tours to other villages that could be good models for health promotion. It was considered to be a technical cooperation between developing villages (TCDV), which was an effective network expansion method that led to community health promotion and the sustainability of the networks. As a result of the expansion of the networks, there were new exercise groups in nearby villages.

DISCUSSION

Five facilitators were trained to empower the FHLs. The training curriculum for the facilitators emphasized knowledge and ability for self-care, health promotion facilitation techniques and the roles of the facilitators. After five days' training, all the facilitators' knowledge of health promotion, and of being facilitators, was at a good level. This was probably because most facilitators were well educated and had worked in health-related fields for several years. Most facilitators had a

good baseline knowledge of health promotion. Therefore, a slight change was found in this part. However, their facilitation techniques were much better after the intervention, as it was needed for the interactive learning process (World Bank, 1999; Hund, 2002).

Before the intervention, the ability of most facilitators was at the level of a "need for improvement", since they could not practice some of the activities without recommendations from an expert, such as demonstrating exercise to the FHLs, creating a positive atmosphere, summarizing the main topic of a group discussion, motivating the group to participate in and evaluate FHL training. After the training, the abilities of the facilitators improved significantly, possibly because the process of participatory learning empowered and stimulated the participants to improve their skills. Furthermore, continual practice, close supervision, participatory consulting and moral support were needed to improve the facilitators' skills (Bhattacharyya *et al,* 1999; Keawhawong, 2000; WHO, 2001; Yimyam, 2003).

Each component of their capabilities (knowledge, abilities, leadership and motivation) was strengthened after the intervention. There was a significant change in the FHLs' knowledge, abilities, leadership, and motivation after the intervention.

The FHL's knowledge about self-care and health promotion was significantly improved after the intervention, which may have been because the majority of the FHLs had been selected and trained since 1998, and most of them attended only one training session on self-care. There was no continuing training. Thus, their knowledge about health care and health promotion declined (Lerkchaiyapoom and Wirakul, 1998; Pitakchareon, 2002). The results of this study revealed that the knowledge of the FHLs significantly improved after implementation of the intervention. However, in the sixth month, the knowledge scores had declined slightly due to fading memory, which was common. One possible reason for the knowledge score remaining high was that the facilitators had frequently conducted continuing participatory learning and group discussions with the FHLs.

Before the intervention, 50% of the FHLs' abilities were at a "need for improvement" level, in particular, 95% lacked first-aid ability for burn patients, and 86% lacked the ability to use herbs to treat stomachache (data not shown). The reason might be that those abilities were less practiced among the FHLs after attending the required training for FHLs 4 years previously, and they lacked continuous practice in daily life. After the intervention, the ability of the FHLs was significantly better than before the intervention. This result also showed that 3-6 months after the intervention, their ability levels were still being maintained. This might be due to having opportunities to participate, which motivated them to join many activities, such as group exercises and other activities held by their group, accompanied by the facilitators.

After the intervention, the proportion of FHLs with good leadership behavior increased from 30.6 to 61.1%, possibly because the training process affected the FHLs' performance. From participant observation, the FHLs fully participated in all activities according to their roles. They could practice and fully utilize the time, gain more confidence in making decisions, provide opportunities for other people to express their opinions and accept with equity, including planning before working (Jaiartham, 2001). They could better control their emotions when conflicts arose within the group (Stone, 1989; Kamper, 1995). In addition, they were still self-care role models for their family and neighbors. Two possible reasons can explain this: 1) the participatory learning process motivated participants to do activities by themselves. They were able to accept recommendations from others. This activity can produce results in gradually changing behavior, and they were willing to participate in the program. 2) The training methods helped to build self-confidence and formulate new guidelines. It was a process of developing commitment and trust by building and generating short-term wins, such as submitting projects to the civil society forum to get support from the sub-district for materials, a budget, etc.

Before the intervention, 88.9% of the FHLs were highly motivated. After the intervention, the proportion of FHLs with good motivation slightly

increased, to 91.7%. The possible reasons explaining this are: 1) they were proud of being selected by the VHVs and health personnel, and 2) although appointment as a FHL was voluntary, it was beneficial to them. They gained more health-related knowledge after attending a training course. 3) They could learn by doing, which created more self-confidence and skill. All participants accepted this program and indicated that this was beneficial to the community because community participation formed the community empowerment by building knowledge, skills and experiences to enable increased responsibility for the community's self-development.

The establishment of the community health promotion network started from sharing experiences and seeing the same benefits and opportunities for development, where a person would share experiences and learn together within a self-context, becoming familiar with the group and developing a support system. Building the network was the most important factor for sustainable development, because the group members worked together and shared experiences and information. These would help create empowerment for the community, especially if done by networking, where several campaigns would be successful more easily. The coordinator of a network group must be able to coordinate as a facilitator, catalyst and network member. However, the network among the families and neighbors would form close relationships and make it easy to communicate with each other. Thus, the linkages would be strengthened more than other networks. The networks initiated by the FHLs, which were started from informal communications, made the activity flow together. There are various network structure models (Robbins, 2001; Larry, 2003; Watt, 2004), but the most important issue was the multi-channel communication process by members of that network.

This study had three major limitations, because during the study period, some incidents might have affected the study process, *eg* the national narcotics eradication campaign, TAO election, SARS, and the avian flu epidemic, which prolonged the process and reduced the participation of the health officers and other government employees, including community leaders. The second limitation was that the Thai Ministry of Public Health's policy regarding nationwide "Exercise for Health" was launched in the communities during the same period. This might have affected the success of the community-based health promotion in the present study. The third limitation was that establishment of the network for community health promotion was time-consuming. Health promotion activities were far from the community concerned. Some successful activities might not be seen during a short period. They emerged gradually and were evident when the FHL group had its own power.

In conclusion, the intervention appeared to be successful in strengthening the FHLs' capabilities for sustaining health promotion within the community, and it also established vertical and horizontal networks. The FHLs were key to bringing good health to family members. Periodic participatory learning and group empowerment are recommended to encourage the FHLs to maximize their potential for family self-care and health promotion. Participatory learning and group empowerment are recommended to encourage the FHLs to maximize their potential for family self-care and health promotion. Observation and group discussion revealed that the facilitators, who were involved in strengthening the capability of the FHLs, and the FHLs were satisfied with collaborating with people in the community. The community leaders had learned about the critical thinking process and had the power to promote health in their community. The villagers who participated in several activities were able to solve their village problems themselves. They could express their feelings and ideas through being leaders, motivating the people in the community to participate in exercise in the community. They still intended to continue their practice and motivate all of the villagers in the district to participate in this program for their good health. In addition, they shared the experiences gained from study tours with the villagers to develop the community. This reflected a good trend for sustainable community-based health promotion.

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REFERENCES

Bhattacharyya T, Freund JC, Made NQ, Teshome IS. Empowering: an effective learning. *Educ Today* 1999; 27: 137-42.

Central Regional Training Center for Primary Health Care Development. Annual report 2002. Bangkok: P Press, 2002.

Chaoniyom W. Strengthening capability of family health leaders on sustainable community-based health promotion. Nakhon Pathom: Mahidol University, 2004. DrPH Thesis.

Hund M. From "neighbourhood watch group" to community: the case of ASEAN institutions and the policy of sovereignty. *Aust J Int Affairs* 2002; 56: 99-122.

Jaiartham Y. Learning process for promoting participation of community leaders in health development planning of self-help community. Nakhon Pathom: Mahidol University; 2001. MS Thesis.

Keawhawong T. The process of strengthening the community and civil society. Khon Kaen: Northeast Regional Training Center for Primary Health Care Development; 2000.

Kamper W. Healthy life campaigns. *Health Promot Int* 1995; 10: 35-40.

Lerkchaiyapoom T, Wirakul W. Self care and learning system of family health leaders in 6th Zone. *J N/E Primary Health Care* 1998; 9: 28-34.

Larry J. Communication for youth. New York: McGraw-Hill, 2003.

Office of Primary Health Care. The family health leader development project. Nonthaburi: Ministry of Public Health, 1998.

Pitakchareon P. The evaluation of self-care in Chachoensao Province. Chachoensao Provincial Health Office, 2002.

Robbins SP. Organizational behavior. 9th ed. Mexico: Prentice Hall, 2001.

Stone L. Cultural crossroads of community participation in development: a case from Nepal in human organization. New York: Rinehart and Winston, 1989.

Watt R. Networking: the means of power building. Perth: University of Western Australia, 2004.

World Health Organization. The role of health in enhancing productive capacities in LCDs. Background and issue for discussion. Prepared for the Third UN Conference on Least Developed Countries. Department for Health in Sustainable Development. Geneva: WHO, 2001.

World Bank. World development report 1998/99: knowledge for development. Washington DC: World Bank, 1999.

Yimyam N. Promoting health behavior via empowerment process. Ratchaburi Provincial Health Office, 2003.