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Community-Based Participatory Research to Improve Early Detection and Treatment of Hypertension in a Suburban Community in Thailand

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COMMUNITY- BASED PARTICIPATORY RESEARCH TO IMPROVE EARLY DETECTION AND TREATMENT OF HYPERTENSION IN A SUBURBAN COMMUNITY IN THAILAND

A DISSERTATION

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BY

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Date

To the Dean for the School of Nursing:

I am submitting a dissertation written by Chuncharaporn Sinsiri and entitled "Community-Based Participatory Research to Improve Early Detection and Treatment of Hypertension in a Suburban Community in Thailand." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Nursing.

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ABSTRACT

Chuncharaporn Sinsiri, MSN, RN

Community-Based Participatory Research to Improve Early Detection and Treatment of Hypertension in a Suburban Community in Thailand

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Communities have a significant role in working with health personnel to detect new and previously diagnosed cases of high blood pressure during community BP screening programs. In Thailand there are many people with elevated BP who do not access treatment. The purpose of this Community-Based Participatory Research (CBPR) was to build a community partnership following the CBPR approach to develop a health program to improve early detection and treatment of hypertension. Three specific aims were: Aim 1. Using CBPR principles, describe the process of building a community partnership to develop a community health program to improve early detection and treatment of hypertension; Aim 2. Using CBPR principles, describe the process and activities with the community to agree on the problem and to develop a sustainable health program; and Aim 3. Describe elements of a culturally appropriate health program. The study was conducted from June 2014 to March 2015 in Kokkram subdistrict, Bangplama District, Suphanburi province, Thailand. Forty-one participants represented four stakeholders' groups: 1) community representatives, 2) Chief Executives from health care organizations (CEOs), 3) health personnel, and 4) municipal organizations. Participant observation and document review were the major data collection techniques. The data were summarized in Excel tables. Process analysis was used to find and document patterns, process and outcomes of the data in the ongoing CBPR research cycle.

Results show that the study AIMS were met. Applying the process of building a community partnership (approaching; knowing and understanding; acquainting; supporting; and partnership working) using a CBPR approach was successful in engaging the community to agree on the problem and to develop a health program. Building the partnership will enable future efforts to implement and evaluate the Hypertension Control Program. The developed program is comprised of acceptable objectives, method and activities that account for strengthening capacities through community participation, education and training.

Recommendation: Community health nurses working with other community health personnel can use community participation methods to develop and implement a program for hypertension control. Further research should be conducted to evaluate the effectiveness of the program on screening and referral services, and on hypertension control.

Keywords: partnership, action research, CBPR approach, hypertension control, community health program.

TABLE OF CONTENTS

TABLE OF CONTENTS (cont'd.)

SUMMARY OF STUDY

Uncontrolled hypertension has been a major health problem worldwide. The purpose of the study was to apply a process of community participation with local health care providers, administrators, volunteers and local government officials to develop a hypertension control program in a suburban community in Thailand. Specific aims were to describe: 1) the process of building a community partnership to develop a community health program to improve early detection and treatment of hypertension; 2) the process and activities with the community to agree on the problem and to develop a sustainable health program to improve early detection and treatment of hypertension; 3) elements of a sustainable health program including its components and management. The meetings, participatory observation, and small group discussions and informal interviews were the major method of data collection. The study was conducted from June to July 2014 in Kokkram subdistrict, Bangplama District, Suphanburi province, Thailand. Forty one respondents were enrolled according to the informed consent protocol (Appendix C). This study has no risk except the time to participate in meetings.

The results of the pilot study show that the overall study was feasible to conduct in this community setting. Most of the activities in a beginning guide (Appendix E) were conducted and provided further direction for further activities in the research cycle. All 41 participants served on a Project Committee that worked with the researcher in conducting the project. Additionally, four CEOs, who were also members of the Project Committee, served as a Community Advisory Group (CAG). The Project Committee participated in data analysis in order to create and complete the research activities. The Project Committee, including the researcher, reflected during the meetings upon

information gained from field work, small group discussions, and informal interviews. The stakeholders integrated research activities into their routine jobs to determine the feasibility of the hypertension control program being developed. Even though data collection lasted much longer than anticipated, the developed health program meets the components of a sustainable health program. As part of the data analysis, Excel tables (Appendix G) were developed to document the process and activities in the research cycle used to achieve each specific aim. The tables helped the researcher to understand and gain insight into a complex and confusing action research data set.

The results show that the study AIMS were met. A community partnership was established and a program was developed to improve health services for persons with hypertension in the community. The study helped fill the need to develop and implement a community health program that is acceptable and can be successfully implemented for improving early detection and treatment of hypertension. Community health nurses working with other community health personnel can use community participation methods to develop a health program for hypertension in the community. Further research should be conducted to evaluate the effectiveness of the program on screening and referral services, and on hypertension control.

This dissertation is comprised of three parts: 1) a research proposal and a pilot study; 2) a manuscript; and 3) material supplements in the Appendixes. The manuscript presents the results regarding the three specific aims, which is part of an ongoing process to prepare for publication.

PROPOSAL

Specific Aims

Uncontrolled hypertension has been a major health problem worldwide. Some hypertensive patients cannot be managed to have their blood pressure under control whereas some people don't even know they have high blood pressure (Aekplakorn, 2010; Chobanian, 2010). High blood pressure leads to vital organ damage and increased risk of coronary heart disease complications. Community-based blood pressure screening is beneficial way to promote population health (Fulwood, Guyton-Krishnan, Wallace, & Sommer, 2006). However, little is known about how many incidents of hypertension are detected during screening or have already been diagnosed. Nor is it known how to assure that persons with early hypertension receive treatment.

Community organizations, especially community health workers and/or health volunteer groups, play a significant role in working with health personnel to detect new and previously diagnosed cases of high blood pressure in the community. The Thailand health system has increased its efforts to strengthen community capacities to take part in helping primary health care teams achieve population health (Bureau of Policy and Strategy, 2012). Community nurses, as community health care team leaders, have developed partnerships with village health volunteers (VHVs) to care for hypertensive patients in the community (Getpreechaswas, Boontorterm, & Yospol, 2007; Nuntaboot, 2007; Sinsiri, 2011). The village health volunteers have explicit roles in screening blood pressure both at the community health fair and in their communities and to report their findings monthly to the hospital. However, lack of an effective referral system limits the effects of this valuable activity. Measuring blood

pressure as a routine job without seeing its impact on controlling blood pressure gives the VHVs low confidence in their ability to do their job (Sinsiri & Charoenyooth, 2007). Ineffective referral systems also contribute to the cumulative negative impact for people having high blood pressure. That is, they have not paid attention to blood pressure level, since nothing happened after finding high blood pressure from community screening.

Community partnership, the collaborative working between health care providers and stakeholders to promote health through empowerment of the community, is necessary to develop a culturally sensitive and sustainable community health program to improve early detection and treatment of hypertension in restricted resource areas in Thailand. Community-based participatory research (CBPR) approach has been successfully used to accomplish these goals (Sinsiri, 2013). It allows stakeholders to participate in every process of research; however, it is unclear how to develop community partnership in each step of research to develop the health program in a community. The purpose of this study is to apply a process for community participation towards building a partnership to develop a community program for hypertension control. The process is conceptualized from prior community-participatory study conducted in the target community (Charoenyooth et al., 2006). Results of the study will help fill the need to develop a community health program that is acceptable and can be successfully implemented for improving early detection and treatment of hypertension. I propose to conduct a CBPR with three specific aims in a suburban Thai community:

Aim 1. Using CBPR principles, describe the process of building a community partnership to develop a community health program to improve early detection and treatment of hypertension

Aim 2. Using CBPR principles, describe the process and activities with the community to agree on the problem and to develop a sustainable health program to improve early detection and treatment of hypertension

Aim 3. Describe elements of a culturally appropriate health program including components and management of the program

Aim 3.1 Components of the program are objectives, activities, how, and when it will be implemented and evaluated

Aim 3.2 Program management includes community organization (strategies applied to facilitate a community to succeed in implementing health program; members, resources, organizational structure and functions)

Research Strategy

Significance

Hypertension. Uncontrolled blood pressure (BP) is a significant risk factor for cardiovascular disease, renal disease and stroke (Chobanian et al., 2003). About 24% of persons with hypertension in Thailand have their hypertension under control (Aekplakorn, 2010). The Thailand rate of control is 2 times lower than that of the United States (U.S.), which has a success rate of 50% in 2010 (Chobanian, 2010). According to the Third National Health Survey in Thailand in 2008, the prevalence of hypertension and prehypertension in Thailand was 22% and 32.8%, respectively. Hypertension prevalence is higher in men than in women and is higher in men in urban areas than men in rural areas. There is no difference in the prevalence of hypertension in women by urban or rural area. About 70% of persons with

hypertension, especially rural populations and those from the lower economic status in the northeast region, were unaware of having hypertension, whereas 36.6% of the awareness group had blood pressure <140/90 mmHg (Aekplakorn et al., 2008). According to the Fourth National Health Survey in 2009, the prevalence of hypertension was 21.4%; the hypertension control rate was 20.9%; and the prevalence of hypertension was similar for men and women (Aekplakorn, 2010). This is in contrast to data from a national audit of hypertension control found in primary care hospitals in Thailand. The audit showed that about 43% of patients with hypertension have their BP under control (Buranakitjaroen, 2006). In addition, only 12.3% of Diabetes patients had BP under control level of 130/80 mmHg as recommended by the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure, JNC 7(The seventh report of the Joint National Committee on prevention, detection, evaluation, and treatment of high blood pressure [JNC 7] as cited in Chobanian et al., 2003). Even though the prevalence of hypertension in Thailand is similar to that of the U.S., the control rate in Thailand is about one half the control rate in the U.S. The ultimate goal of antihypertensive therapy is the reduction of cardiovascular and renal morbidity and mortality. Thailand is one of the Asian countries that has seen a rapid increase in stroke mortality and the prevalence of hypertension (Singh et al., 2000). Aekplakorn et al. (2008) found that men had a diagnosis, received therapy, and controlled their blood pressure less than did women. Concerning mortality in Thailand, the mortality rate of hypertension showed a small decrease from 3.9 per 100,000 population in 2005 to 3.6 in 2009. However, the death rate from cerebrovascular diseases was high at about 25.53 per 100,000 population in 2005 and 21.0 in 2009. Most of deaths were among people aged over 60 years (Bureau of Policy and Strategy, 2009).

Control of chronic diseases in the community. Building community partnership by engaging the communities in health interventions have been effectively used for health promotion and control of non-communicative, communicative diseases, and chronic disease. These interventions can improve diet, activity, and weight outcomes in the school-age population (Krishnaswami, Martinson, Wakimoto, & Anglemeyer, 2012). Having the community participate in program can reduce incidence and/or prevalence of malaria (Atkinson, Vallely, Fitzgerald, Whittaker, & Tanner, 2011), and CBPR was effective in addressing obesity and diabetes in children (Vaughn, Wagner, & Jacquez, 2013). Community interventions are effective when they involve community members such as community health workers (CHW) in health care teams. Such interventions have focused on increasing breast and cervical cancer screening (Lu et al., 2012), hypertension control, health promoting behaviors, increased physical activity, and decreased consumption of fatty food (Fleury, Keller, Perez, & Lee, 2009).

Hypertension, as a chronic disease, not only requires good treatment but also prevention and a continuum of care. The U.S. has shown a success rate of 50% control of BP by a strong emphasis on specific policies and interventions in setting the Healthy People 2010 national objective to overcome hypertension (Chobanian et al., 2003; Kindig, Asada, & Booske, 2008). Various components of a community-based blood pressure control program, including BP screening, referral to medical care, follow-up and tracking, education and support, and evaluation and reporting can be implemented to achieve better control (Fulwood et al., 2006). Effective community referral systems, either by community health workers (CHWs) or community health nurses can also work to increase getting hypertensive patients the healthcare service

they need (Krieger, Collier, Song, & Martin, 1999; Lucky, Turner, Hall, Lefaver, & de Werk, 2011; Clark, Curran, & Noji, 2000).

For hypertension management, community health workers (CHWs) have been the significant stakeholders in caring for hypertensive patients in community. That is, health education interventions which included participation by CHWs, significantly reduced BP in almost every study (Hill et al. 2003; Jafar, 2009; Krieger et al., 1999; Levine et al., 2003). These studies reported that they sustained decreases in BP from three months to three years (Hill et al., 2003; Krieger et al., 1999; Levine et al., 2003; Nine, Lakies, Jarrett, & Davis, 2003; Xue, Yao, & Lewin, 2008; Zoellner et al., 2011). Three studies reported increased follow up rates (Getpreechaswas et al., 2007; Krieger et al., 1999; Nguyen et al., 2011) and one study reported increases in hypertension control rate (Victor et al., 2011). Two studies reported significant positive outcomes in biological variables such as slowing left ventricular hypertrophy (LVH), renal insufficiency (Hill et al., 2003) and urine sodium and cholesterol (Balcazar, Byrd, Ortiz, Tondapu, & Chavez, 2009). However, community HTN control programs that failed to encourage community participation in program development were less sustainable and had poorer long term outcomes than those programs that encouraged active community participation (Sinsiri, 2012). Community health volunteers who are usually charged with taking blood pressure measurements are called different names depending on the region or country that they are serving. In the U.S. they are called community health workers (CHWs) or promotoras (in Spanish speaking communities). In Thailand they are called village health volunteers (VHVs). CHWs have an important impact on the self-management of hypertension (Brownstein et al. 2007). Hypertensive patients who receive services show significant improvements in BP by improving self-management behaviors, going to their healthcare appointments

and adhering to their antihypertensive drugs. CHWs fulfill cultural gaps between health care personnel and the hypertensive patients in community.

Community developed hypertension control program. Community, family and patients have been partners with health professionals in the redesign of medical care to overcome the complex causes of noncommunication diseases (NCDs) in developing countries (Epping-Jordan, Pruitt, Bengoa, & Wagner, 2004; Hanson, 1998). Thailand's health policy emphasizes strengthening community participation at the primary care level and that partnership is one of the keys to success (Bureau of Policy and Strategy, 2009). The objectives of Thailand's' National Health Development Plan are to foster proactive health promotion, disease prevention and control; establish health security and equal access to quality health services; and build up people's capacity in health promotion and in health system management (Bureau of Policy and Strategy, 2009). The community program services usually consist of collaboration between community hospitals, Health Centers, Sub-district Health Promotion Hospital (held the position of Health center in 2009), Village health volunteers (VHVs), and community leaders or representatives from the community and Local Administration Organization (LAO). Under the universal health care coverage policy (UC), the government policy is to promote preventive care and curative care in the primary care setting. Hypertensive patients receive BP screening, health education of personal lifestyles, community programs, and public health program at the primary care setting. This primary prevention can prevent the onset of hypertension and can serve as a secondary prevention by screening and detecting high blood pressure in the community. Even though Thailand has expressed the goal of screening for hypertension in its national health plan, this is still far from being accomplished. Mortality rates from stroke and cerebrovascular disease of Thai

population remain high. Previous studies found that undetected and poorly controlled hypertension are direct causes for the increased rates of death from strokes and cerebrovascular disease.

Community groups and community organizations, such as the villages health volunteers (VHVs), community leaders and the Local Administration Organization (LAO) have been key to the success of community health care teams' ability to participate in hypertension control programs in Thailand (Bureau of Policy and Strategy, 2009). The literature suggests that community health workers (CHWs) are important resources for HTN patients in underserved or restricted resource communities. They provide health education or services to monitor BP and follow up (F/U). Diverse community groups work to provide community-based resources for developing culturally sensitive health education programs aimed at reducing uncontrolled BP. However, the outcomes from this valuable community collaboration have not been evaluated. Little is known about how many incidents of hypertension are detected during screening, how many of the newly detected have already been diagnosed and/or how many are being treated. Also, little is known about how to assure that persons with early hypertension get to care. Measuring BP as a routine job without seeing its impact on controlling blood pressure may give the VHVs low confidence in their ability to do their job (Sinsiri & Charoenyooth, 2007). Ineffective referral systems also contribute to the cumulative negative impact for people having high blood pressure. That is they have not paid attention to blood pressure level, since nothing happened after finding high blood pressure from community screening. As a consequence, an effective community and sustainable health program to improve early detection and treatment of hypertension has been called for in Thai community.

This study will be conducted utilizing existing collaborations among Bangplama hospital, VHVs, community leaders, municipal organizations and a university researcher. The partnerships were developed in 2002 as part of Thailand's health Policy to implement health promotion programs in the Kokkram subdistrict. The projects targeted health promotion and prevention in the community. However, the lack of a clearly defined formal organizational structure and the lack of established job descriptions and equitable responsibilities among the stakeholders have impeded long-term program sustainability and effectiveness. CBPR approach can be applied to promote equal partnerships. The process of building partnerships is conceptualized from research conducted in this community by Charoenyooth et al. (2006). This process will be used as a strategy to engage the community in the CBPR approach. It corresponds with a process of community-capacity building in Canada (Moyer, Coristine, MacLean, & Meyer 1999). There is little published guidance available about how to initiate relationships and engage communities in building partnerships (Shalowitz et al., 2009). Therefore, the process for building a partnership to develop a health programs needs to be more clearly documented so that it can be used to guide others in this type of work. This study addresses a gap in the literature regarding the effectiveness of community partnership by examining its process and outcomes. Specifically, this proposal will add to the literature by using a CBPR approach to develop a sustainable health program in a suburban community in Thailand.

Conceptual Framework

Building partnership in CBPR approach. CBPR has been successfully implemented in the U.S. to address complex health problem and health disparities by integrating knowledge and experiences from community stakeholders, with an insider

point of view, and health professionals from outside the community (Minkler & Wallerstein, 2003). The term CBPR was named for its principles and values of participation, community engagement, co-learning process, involved system development, and balance between research and action (Wallerstein, 1999). CBPR was developed on principles of action research, and participatory action research (PAR). CBPR emphasizes community participation throughout the research process. Applying an action research cycle of look, think, act, makes all stakeholders understand the problems more deeply and comprehensively from different points of views, which lead to effective problem solving and strengthened community capacity (Minkler & Wallerstein, 2003; Marcus et al., 2004; Stringer, 2007).

Equal partnership is a key principle in conducting CBPR approach. This researcher conducted a comprehensive review (Sinsiri, 2013) and found that building professional- community partnership by engaging the community in research is an essential strategy for success in developing, implementing, and sustaining health programs for chronic disease in the CBPR (Balcazar et al., 2009; Davis, Goldmon, & Coker-Appiah, 2011; Dodani, Sullivan, Pankey, & Champagne, 2011; Feathers et al. 2007; Jones et al., 2013; Lam et al., 2003; Mendenhall et al., 2010;) and action research (Getpreechaswas et al., 2007; Oba, McCaffrey, Choonhapran, Chutug, & Rueangram, 2011). The communities engaged in developing and implementing health programs were able to integrate cultural components within the health program while strengthen community resulted in effective outcomes (, Balcazar, Alvarado, Hollen, Gonzalez-Cruz, & Pedregon, 2005; Balcazar et al., 2009; Carter et al., 2009; Chambers et al., 2005; Culica, Walton, & Prezio, 2007; Feathers et al. 2007; Fernandez et al., 2009; Gary et al., 2003; Hansen et al. 2005, Jones et al., 2013;

Krieger et al., 1999; Lam et al., 2003; Levine et al. 2003; Moodley, Kawonga, Bradley, & Hoffman, 2006;).

The current study will apply the process of building community partnership to develop community health program for chronic diseases and extends the work by Charoenyooth et al. (2006) showed in Figure 1. Building community partnership comprises five steps: 1) approaching; 2) knowing and understanding; 3) acquainting; 4) supporting; and 5) working partnership.

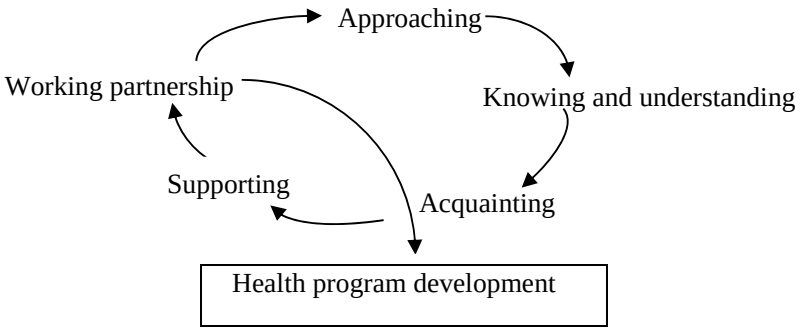

Figure 1. Process of building community partnership to develop community health program for chronic diseases extended from Charoenyooth et al. (2006). These concepts are integrated into the CBPR research process in Figure 2 (in red).

Approaching refers to the researcher entering/reaching the community with a primary purpose or health goal. The researcher contacts community organizations, groups or key informants to invite them to work together. Communication methods can be both formal and informal. Knowing and understanding refers to the researcher learning and understand the community deeply. The researcher learns about community resources from its structure and function such as geographical area, population, political and governance, socio-cultural environment, and community health. Acquainting means the researcher becomes familiar with community stakeholders. Acquainting is developed through formal and informal contact throughout research and community activities. The researcher may participate in the social and/or cultural activities of the community in order to inform community

members about his/her role. Supporting refers to the researcher's functions as a resource for the community. The research supports the community in different ways to create health activities, such as finding new resources and supporting existing resources. Supporting increases effective use of resources and promotes resource sharing among stakeholders. In working partnership, the researcher works and takes responsibility or be a partner in community health projects by participating in policy making and implementing health projects or other community development projects.

Innovation

The results of this study will demonstrate a process of building community partnership to develop a community health program emphasizing the referral system for newly detected hypertensive persons. It is an innovative process of building partnership since there are no guidelines available, especially at the local community level, for creating these health promotion partnerships. The study will detail steps and activities for bringing community partners to work together. The process can be used to guide a novice or inexperienced health personnel, community stakeholders, and other community-health disciplines that need to engage communities in health services and build long-term partnerships at the local community level to address hypertension control and develop a new referral program. The content from the program includes qualification of health volunteers, development of job descriptions, and a plan for effective monitoring. These are hypothesized to increase confidence and satisfaction and adequate utilization in the health volunteers. In the long term, appropriate study designs such as the quasi-experimental time series design or randomized controlled trial can be used to test the effectiveness of partnerships or the sustainability of services using this community developed policy.

Preliminary Studies

Preliminary studies supporting the Model in Figure 1 comprised of four studies: 1) three previous studies about health promotion and hypertension were conducted in the proposed research setting; and 2) a pilot study.

Previous Studies

First, the researcher, as one of the co-investigators, conducted participatory action research (Charoenyooth et al., 2006) and process of building community partnership, as seen in Figure 1, will be applied to the current study. The aims of the study were to 1) build professional-community partnership for community health promotion and 2) find strategies to strengthen community in health promotion. The study period was from November 2005 to October 2007. The data were collected by participatory action research (PAR) through the use of focus group discussions and participatory observations. These were completed to identify the problem area, assess the community perspective, analyze the data, develop a long-range plan, take action and evaluate the program. The research results showed that the step to development of building professional and community partnership for health promotion are approaching to community, knowing and understanding community, acquainting with community, supporting community activities and working partnership in their activities. These will help the community to build healthy public policy, create supportive environments and strengthen community action and support various groups and personal skills in health promotion.

Second, the researcher as the principle investigator (PI) conducted a qualitative research study with aims: 1) find factors related to caring for HT patients and 2) describe a model of caring for HT patients (Sinsiri & Charoenyooth, 2007). The 73 respondents consisted of health personnel of Bangplama hospital, leaders

and members of Kokkram Local Administration, community leaders, health volunteers, HTN patients and care givers. The data were collected by 6 focus group discussion groups and in-depth interview with 8 persons. The data was analyzed by content analysis. Factors related to caring for HT patients included 1) hypertensive patients themselves; stress, knowledge and attitude to hypertension, 2) family; family relationship and economic status, 3) community factors; health volunteers' skills, the local administration and community health policy. The strength of the service system was it can reach hypertensive patients that were not likely to visit a healthcare facility and thus, were not likely to receive the proper care they need to treat their hypertension.

Third, the researcher as a PI conducted a participatory action research to develop the model of the continuing care for persons with hypertension through strengthening of cooperation between health care institutions and the community (Sinsiri, 2011). The Charoenyooth's five steps of health promotion network (Charoenyooth et al., 2006) in the community provided the theoretical framework for the study. Specific selected sampling was employed to recruit 68 participants; health volunteers, health providers of Bangplama hospital, chief executive organization (CEO) and members of municipal district, community leaders, hypertensive patients and their family, and health educator. The research results confirmed the effectiveness of health promotion model composes of 5 steps: approaching, knowing and understanding, acquainting, supporting, and working partnership. The cooperative networks have participated in six major health activities including municipal strategic planning for control and caring of persons with hypertension, developing resource support, traditional Thai dancing and forming of elderly club in the village, home visiting, developing personnel skill of the health volunteer, hypertensive patient and their family.

However, the steps and activities of building partnership with the community were not well developed due to the wide scope of the program that needed a much longer time to implement.

Pilot Study

COMMUNITY-BASED PARTICIPATORY RESEARCH TO IMPROVE EARLY DETECTION AND TREATMENT OF HYPERTENSION IN A SUBURBAN COMMUNITY IN THAILAND: A PILOT STUDY

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Abstract

Communities have a significant role in conducting community BP screening programs. In Thailand there are many people with elevated BP who do not access treatment. The purpose of this Community-Based Participatory Research (CBPR) was to build a community partnership following the CBPR approach to develop a health program to improve early detection and treatment of hypertension. Three specific aims were: Aim 1. Using CBPR principles, describe the process of building a community partnership to develop a community health program to improve early detection and treatment of hypertension; Aim 2. Using CBPR principles, describe the process and activities with the community to agree on the problem and to develop a sustainable health program; and Aim 3. Describe elements of a culturally appropriate health program. The purpose of this pilot study was to assess the feasibility of the proposed study by addressing and analyzing results of approaching the community, an objective for AIM 1, to enlist participation of community members.

The study was conducted from June to July 2014 in Kokkram subdistrict, Bangplama District, Suphanburi province, Thailand. Forty-one participants represented four stakeholders' groups: 1) community representatives, 2) Chief Executives from health care organizations (CEOs), 3) health personnel, and 4) municipal organizations. The researcher collected data through participant observation and document review. Data was analyzed according to the CBPR process.

Results show that the overall study is feasible to conduct. The researcher can reach the community to invite all stakeholders to work together to conduct the study. The process and activities of approaching the community were analyzed through using the CBPR approach.

Recommendation: The beginning guide used for documenting the research process is beneficial to conduct research activities. The informed consent protocol should be flexible.

Keywords: partnership, action research, CBPR approach, hypertension control, community health program.

Uncontrolled hypertension has been a major health problem worldwide. Some hypertensive patients cannot be managed to have their blood pressure under control whereas some people don't even know they have high blood pressure (Chobanian, 2010). The Thailand rate of control is 2 times lower than that of the United States (U.S.), which has a success rate of 50% in 2010 (Chobanian, 2010). According to the Fourth National Health Survey in 2009, the prevalence of hypertension was 21.4%; the hypertension control rate was 20.9% (Aekplakorn, 2010). This is in contrast to data from a national audit of hypertension control found in a hospitals audit in Thailand. The audit showed that about 43% of patients with hypertension have their BP under control (Buranakitjaroen, 2006).

For hypertension management, community-based blood pressure screening is a beneficial way to promote population health (Fulwood et al., 2006). In Thailand, communities have a significant role in working with health personnel to detect new and previously diagnosed cases of high blood pressure during community BP screening programs (Bureau of Policy and Strategy, 2012; Getpreechaswas et al., 2007; Nuntaboot, 2007; Sinsiri, 2011). However, the outcomes on controlling blood pressure from this valuable community collaboration have not been evaluated. Little is known about how to assure that persons with early hypertension get to care. It also contributes to the cumulative negative impact for people having high blood pressure. That is they have not paid attention to blood pressure level, since nothing happened after finding high blood pressure from community screening (Sinsiri & Charoenyooth, 2007).

Building professional- community partnership by engaging the community in research is an essential strategy for success in developing, implementing, and sustaining health programs for chronic disease. Community-based participatory

research (CBPR) approach emphasize on community participation throughout the research process to promote equal partnerships (Minkler & Wallerstein, 2003; Marcus et al., 2004; Stringer, 2007). It is unclear, however, how to develop and maintain the community participation during each step of the research. The purpose of the full study is to apply the CBPR process of building a partnership to develop a community program for hypertension control. The process is conceptualized from prior community-participatory study conducted in the target community (Charoenyooth et al. 2006). Results of the study will help fill the need to develop a community health program that is acceptable and can be successfully implemented for improving early detection and treatment of hypertension. I propose to conduct a CBPR with three specific aims (below) in a suburban community in Thailand.

The purpose of this pilot study is to assess the feasibility of the overall study by addressing and analyzing results of approaching the community to enlist participation of community members. Approaching community is the first objective for AIM 1.

Aim 1. Using CBPR principles, describe the process of building a community partnership to develop a community health program that will improve early detection and treatment of hypertension

Aim 2. Using CBPR principles, describe the process and activities with the community to agree on the problem and to develop a sustainable health program to improve early detection and treatment of hypertension.

Aim 3. Describe elements of a culturally appropriate health program including components and management of the program.

Aim 3.1 Components of the program are the objectives, activities, and plan to implement and evaluate the program.

Aim 3.2 Program management includes community organization (strategies applied to facilitate a community to succeed in implementing health program; members, resources, organizational structure and functions of the program.

Conceptual Framework (see pp. 11-14 in the proposal)

Method

Design; Setting and Participants (see pp. 39-42 in the proposal)

Data Collection and Data Analysis

The pilot study was conducted between the dates of June 1, 2014 and July 31, 2014. Data was collected after the proposal was approved by the Committee for the Protection of Human Subjects (CPHS) at the University of Texas Health Science Center at Houston and the Institutional Review Board (IRB) of Thammasat University, Thailand.

Data collection. Participant observation and document review were the major data collection techniques. Regarding participant observation, the researcher 1) documented research activities and decisions in a journal according to the research process as shown in figure 1; 2) recorded her own thoughts, feelings and impressions; and 3) recorded a description of the context and reactions of the participants in meetings. For the interviews and small group discussions, the researcher summarized the data that was collected during those sessions. For the review of documents and records, data was collected from the hospital's existing documents, reports, memos, statistical data, policy statements, procedure statements, organizational mission and plans. The researcher recorded all observations in writing.

The researcher worked with the Head of Department of Health Promotion (HDHP) as a facilitator of the process rather than as a director of the process to achieve the aims of the study (Reason & Bradbury, 2006). Although the CBPR

approach is iterative, the researcher has developed a beginning guide to use for documenting the research process to achieve the aims of this study. The guide includes specific objectives for each aim, activities, participants, questions and data to answer the questions.

For purposes of the pilot study, Objective 1 of specific aim 1 (See Table 1) was addressed to recruit the study participants. The researcher modified the guide with the community partners as needed, keeping with CBPR principles.

Recruitment.

Obtaining Informed Consent:

1. Researcher worked with Head of Department of Health Promotion to arrange four small group meetings of the: 1) director (or physician representative) and health personnel of Bangplama hospital; 2) Director, Heads of the Division of Health and Environment, and two members of the Kokkram Municipal Committees; 3) Director, Heads of the Division of Health and Environment, and two members of the Tonkram Municipal Committees; 4) VHVs and three community leaders(from a possible 12); and 5) the president of the Health Volunteer Association. The purpose of the meetings were to explain the study and to get informed consent (#1 activity in Table 2). The protocol for obtaining informed consent from each of the four group meetings (above) is attached as Appendix A. The Informed Consent Form is in Appendix B.

2. Researcher asked the Head of Department of Health Promotion to invite the director (or physician representative) and health personnel of Bangplama hospital to their respective small group meeting to obtain informed consent.

3. Researcher asked the Head of Department of Health Promotion to invite two municipal directors and members of the four municipal Committees and two Heads

of Division of Health and Environment to attend a small group meeting to obtain informed consent from each of the two municipal organizations.

4. Researcher asked the Head of Department of Health Promotion to invite three community leaders, and thirty six VHVs (3 VHVs per villages) to attend a group meeting. (Thirty six will be invited (from 122 VHVs) in order to get at least 24 VHVs to participate in the project).

5. The four meetings took place as follows: 1) meeting with health personnel in meeting room of Bangplama hospital; 2) two meetings with director and members of the four municipal committees and two Heads of Division of Health and Environment in reception rooms of the two Municipal Organizations; and 3) meeting with the VHVs and community leaders in the meeting room of Bangplama hospital.

Data analysis. Process analysis was used to find and document patterns, process and outcomes of the data in the ongoing CBPR research cycle. Descriptive statistics were used to calculate number and percentage of participants who decided to participate in the study and provide informed consent.

Table 1

Specific Aim 1: Describe the process of building a community partnership to develop a community health program to improve early detection and treatment of hypertension: Objectives, research questions, data to answer the questions and researcher's activities to achieve Specific Aim 1

Objectives	Research questions	Data to answer the questions	Researcher's activities
1. Describe process and activities of approaching community	1) How does the researcher enter/reach the community to invite all stakeholders to work together?	1) Documentation (field notes) of the researcher's activities, steps and resources used to contact Head of the Department of Health Promotion, key community representatives and other stakeholders and their stakeholders' responses	1) Contact the Heads of the Department of Health Promotion (HDHP), Primary Care Unit (PCU) and Out Patient Department (OPD) to discuss the research project and the CBPR approach 2) Work collaboratively with Head of the Department of Health Promotion to recruit all stakeholders in the study 3) Meet 4 chief executive organizations(CEOs): Director of Bangplama hospital or physician representative, Director of Kokkram Municipal, Director of Tonkram Municipal, and President of Bangplama's Village Health Volunteer Association to introduce herself and the project with these key stakeholders, ask for their collaboration and invite them to group meetings to provide informed consent
	2) What are the indicators that the researcher has gained acceptance to conduct the project from the community?	1) Documentation (field notes, meeting minutes) that stakeholders meet with the researcher, and attend the meetings (meeting #1 in Table 1) to get informed consent 2) Number of potential participants decided to participate in the project and provide informed consent 3) As the organizational representatives, 4 CEOs agree to organize the team and support the study 4) Documentation (field notes, list of stakeholders attending 1st meeting) that stakeholders attend the 1st meeting in Table 1 to organize the team and identify problem	1) Arrange 4 group meetings to get informed consent to recruit stakeholders in the study 2) Invite all stakeholders to attend 1st meeting to organize the team and identify problem 3) After getting informed consent, conduct field work by visiting and/or observing the village health volunteers (VHVs), community leaders (CLs) in their community to learn about their role's and responsibility in developing community health program and encourage them to attend the 1st meeting and prepare necessary information to share in the meeting 4) Work with Head of the Department of Health Promotion to arrange the 1st meeting and provide information about CBPR approach

Table 2

Objectives, activities, participants, and place in implementing the meeting

Objectives	Activities	Participants	Place
1.Get informed consent	Small group meeting 1.1 health personnel	1 physician, 4 nurses of Health Promotion Department (HPD) Outpatient Department (OPD), Primary Care Unit (PCU),	Meeting room Bangplama hospital (BPH)
	1.2 Municipal Organization (Kokkram Municipal Organization)	Director of the Municipal, Head of Division of Health and Environment, 2 members of Municipal Committee	Reception room of the Kokkram Municipal Organization
	1.3 Municipal Organization (Tonkram Municipal Organization)	Director of the Municipal, Head of Division of Health and Environment, 2 members of Municipal Committee	Reception room of the Tonkram Municipal Organization
	Meeting - Village health volunteers (VHVs), community leaders (CLs)	*36 Village health volunteers (3 VHVs per village *12 villages), 3 community leaders, 1 President of Village Health Volunteer Association	Meeting room Bangplama hospital (BPH)
2. Orientation meeting to form the CAG, and identify problem	1st meeting (3 hours meeting) among all stakeholders	41-53 participants:1 physician, 4 nurses, 2 Director of Municipal Organization, 1 President of Village Health Volunteer Association, 2 Head of Division of Health and Environment, 4 members of the two Municipal Committees, 24-36 VHVs, 3 community leaders	Meeting room Bangplama hospital (BPH)
3. Get agreement on the problem	2nd meeting	The community advisory group(PC)**, 24-36 VHVs	Meeting room Bangplama hospital
4. Plan health program	3rd meeting	The CAG, 24-36 VHVs	Meeting room Bangplama hospital
	4th meeting	The CAG, 24-36 VHVs	Meeting room Bangplama hospital
5. Summarize progress and plan the next steps	5th, 6thmeeting	The CAG, 41-53 participants: 1 physician, 4 nurses, 2 Director of Municipal Organization, 2 Head of Division of Health and Environment, 4 member of Municipal Committee, 24-36 VHVs, 3 village leaders	Meeting room Bangplama hospital

Note. * invite 36 VHVs (potential participants) to get at least 24 VHVs,
** Community Advisory Group (CAG) = representative of 41-53 stakeholders or all community stakeholders

Results

The goal was to assess the feasibility of the study by initiating and analyzing the results of approaching the community. Approaching the community is the first objective for AIM 1: Using CBPR principles, the researcher described the process of building a community partnership to develop a community health program to improve early detection and treatment of hypertension.

The 1st to 3rd weeks of June were spent recruiting the study participants. Then, two weeks (3rd week of June to the 1st week of July) were spent working in the research field completing the processes #2-5 described in Table 1 and arranging the 1st meeting to identify the problem. The researcher spent the month of July summarizing and testing the process of approaching the community according to the CBPR approach. The processes and activities of approaching the community will be described according to the two research questions of Objective 1.

1) How does the researcher enter/reach the community to invite all stakeholders to work together?

The researcher reached the community by: 1) contacting a leader of the community health team in the research setting, (i.e. the Head of Department of Health Promotion (HDHP)); 2) gaining an understanding of the local working environment and culture; 3) eliciting community participation; 4) collaboratively working with the HDHP to invite the potential participants to participate in the study; and 5) integrating research activities with community activities. The processes and activities are described in Table 3.

1) What are indicators that suggest that the researcher has gained acceptance from the community to conduct the project?

Acceptance was measured by successful recruitment of the study participants who were willing to work together and share decision making.

Research participants were recruited

Forty-one participants were recruited from four stakeholders' groups: 1) community representatives, 2) Chief Executives Organizations (CEOs), 3) health personnel, and 4) Municipal organizations. The community representatives were comprised of 24 village health volunteers (VHVs) and three Village Leaders (VLs). Thirty-six VHVs were invited to attend the meeting to provide informed consent. Twenty-seven of them (75%) attended the meeting and 22 (84.6%) provided informed consent to participate in the study. Two VHVs couldn't attend the meeting because they had a volunteer activity in their villages but they were willing to participate in the study. They provided consent at a Village Health Volunteer monthly meeting at the Bang plama hospital. Four CEOs welcomed the researchers to conduct the project and provided support to implement the project. Due to a timing conflict, two CEOs provided informed consent separate from their group members.

Table 3

Processes, activities and outcomes of approaching community

Processes	Activities	Outcomes	Time
1) contacting a leader of the community health team in the research setting	-made phone call to inform the progress of getting IRB approval -made appointment to meet in the research setting -explain the project: objectives, participants and recruitment,	-the researcher was welcome to conduct the study -got support from the CEOs, VL, Department of Health Promotion (DHP)	3-8 June,
2) gaining an understanding of the local working environment and culture	-open mind to learn and practice leadership and facilitator skills - shared concepts and experiences with experts or others who were experiences in collaborative works with community organization, a Planning Consultant or Strategic Planner -participatory observation: working environment of DHP, OPD, monthly meeting of the VHVs, relevant community and hospital's health projects -met with the CEOs, VLs	-had some information and understand about community resources, HTN health situations, workloads of the DHP and the VHVs - learn about culture in working with official organization in the community: cultural and political issues -known formal and informal key informants relevant to the study -gain acceptance and no conflict in working in the research field	10 June – Ongoing process
3) eliciting community participation	- discussed the participatory issues of the study: purposes of the study, CBPR - provide time for the HDHP as a research coordinator and staff in the DHP, and the researcher to learn about research's roles of each other in the study -provide opportunity and time to the a leader of community health partnership to set criteria and method in selecting potential participants -made decision based on community situation and time	- the HDHP understand the objectives , process of the study, agree to invite all potential participants, DHP booked a meeting room, copy the documents, and prepare coffee break -the dates of 4 group meetings to get informed consent were set based on the available time of relevant persons -researcher got really understanding or a new mindset to work in the fields: insider status of the study of each stakeholders jobs, set acceptable objectives, expectation and activities, accept community restrictions ,flexible, set research activities collaborative with community calendar	6-8 June, after each time of the 4 group meetings

Table 3

Processes, activities and outcomes of approaching community (cont.)

Processes	Activities	Outcomes	Time
4) collaboratively working with the Head of DHP to invite the potential participants to participate in the study	-discussed with the Head of DHP: the solution of the criteria and method in selecting potential participants -present, enter the research setting: learn hypertension screening project, computer program, available to work, meet with the CEOs or others head of Department to get consent	-The potential participants were identified, invited to attend the meeting to get informed consent -had information about community BP, diabetes screening project -research participants were successful recruited - the 1st meeting to identify problem was set	8 June and then 3 July
5) integrating research activities with community activities	- met CEOs, asked for their collaboration in implementation, got their opinion how the project fit with their organizational agendas -discuss with the Head of DHP: hospital plan and, met with VHVs in their monthly meeting	-The study activities were integrated with a development of HTN and DM screening projects, quality assurance of the hospital - Research activities: observation,4 groups of informed consent meeting were set according to a community calendar -Participants attended the 1st meeting to identify problem	

Participants were willing to work together and share decision making

The HDHP worked as a research coordinator with the researcher to create research activities. Initial community need assessments as well as the feasibility to conduct a community developed health program to increase hypertension control were obtained through discussions with key stakeholders. Resources from Bangplama hospital were used as in-kind support along with meeting rooms, cars, and monies for the coffee break and materials. The HDHP introduced the researcher in a monthly meeting of the VHVs emphasizing 1) objectives of the study and how they fit with the existing hypertension and diabetes screening project of the community and the Department of Health Promotion, and 2) asked for their collaboration and support.

The HDHP and the researcher received two invitations from a village leader to informally talk about the project and to encourage his relatives diagnosed with end stage renal disease.

At the time to recruit study participants and prepare the first meeting, there were time conflict issues. The DHP was busy preparing for two hospital accreditations. The researcher and the HDHP rearranged the research schedule and the researcher presented in the research field to provide a new timeline for the project steps to be completed. The researcher also 1) accompanied the DHP staff to the opening ceremony of the Village's Thai dancing project in one community and 2) helped with a conference poster presentation by the DHP. The Department of Health Promotion arranged the 1st meeting by 1) having a nurse make a phone call to invite all participants to attend the first meeting, 2) reserving a meeting room and 3) preparing a coffee break. The researcher prepared the meeting schedule with the HDHP.

Thirty participants out of 41(73.17%) attended the 1st meeting. They were from all stakeholders' group, 22 VHVs, 3 VLs, 1 CEO, 2 nurses form Bangplama hospital, and 2 Heads of Division of Health and Environment.

Discussion

Approaching, a first step in building community partnership to develop a health program, aims to engage the community to participate in the project. The researcher entered a community via existing collaborative works with the head of the community health team (Head of Department of Health Promotion, Bang Plama hospital. The cyclical process of CBPR allowed the opportunity to summarize and test the approaching process, which included inviting other key stakeholders and a village leader and to participate in creating the research activities. The process and activities

of approaching the community summarized in this study were accomplished through a bottom-up approach to build the community capacity. The professional can approach the community through an existing collaboration between the researcher and the community organization or individual collaboration (Kendall, Muenchberger, Sunderland, Harris & Cowan, 2012). Entering the community via an existing based-relationship worked to recruit study participants. Initial contact to figure out whether the project fit well with the community agenda and to assess a possibility of collaboration is a first stage of the model for building the community capacity or partnership (Moyer et al., 1999, Courney et al., 1996).

The CBPR approach requires community participation in every research process. Therefore, the process of approaching to gain acceptance from the community summarized in this CBPR study involves not only a recruitment of the study participant but also a community participatory part as shown in Table 3. The study participants were the representatives from stakeholders who have an important role in developing a hypertension control program. The agreements of the four CEOs and collaborative work and shared decision making with the HDHP showed that the researcher gained acceptance to conduct a project within the community. Collaboration is one of the indicators of community engagement (Jabbar & Abelson, 2011) and partnership (Kernaghan (1993), Gaster and Deakin (1998) as cited in Casey (2008)).

Recommendation from the pilot study

1. In order to retain research participants, develop a channel of communication with others, integrate research activities within a community project and use of community calendar are an important issues in collaborative work with community

stakeholders, especially with the CEOs. Research participants in this study are the key informants in their community, so time conflicts may be an issue.

2. Having a beginning guide to use for documenting the research process to achieve the aims of this study summarized in Tables 2 to 4 (See Appendix C) is very beneficial for the researcher to approach the community according to a CBPR approach. The guide includes specific objectives for each aim, activities, participants, questions and data to answer the question. These components can be adapted to further steps. Moreover, the researcher should emphasize how to know that community is ready to proceed to other steps, since it was found that most of the steps were the ongoing steps.

3. In order to decrease a time conflict issue, the informed consent protocol should be flexible to allow for maximal inclusion due to timing conflicts.

4. Set up a community advisory group for the research team will be very helpful to conduct this CBPR research, since its process requires qualitative methods of data collection and analysis as well as to create research activities.

Conclusion

The overall study is feasible to conduct in this research setting for three reasons. The researcher can reach/enter the community to invite all stakeholders to work together. The researcher gained acceptance to conduct the study from the community. The process and activities of approaching the community can be analyzed through using the CBPR approach.

References

Additional references from the proposal

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Approach

This researcher will use the five concepts from Figure 1 as a strategy in building an equal partnership with a community advisory group (CAG) and when working with stakeholders to create research activities under CBPR research cycle. The first two steps, approaching and knowing and understanding, will be used earlier in the first step to engage community in the research so that the CAG will be formed and community concerned problem will be identified. Acquainting, supporting, and working partnership will be used throughout the next steps to gain agreement on the problem and plan the community developed health program. The research cycle developed for this study, as shown in Figure 2, is a modified CBPR approach to action research (Kemmis & McTaggart, 2000 as cited in O'Leary, 2010; Minkler & Wallerstein, 2003; O'Leary, 2010; Stringer, 2007). The research cycle for the study includes three steps: 1) organize the team and identify problem; 2) agree on the problem and 3) develop health program. The focus will be on incorporating key community stakeholders into the entire research process.

Step 1: Organize the team and identify problem

This step aims to form a CAG to function as a research team, gather related data about the problem and describe the existing community situations and resources. The purposes of this step are 1) introduce the researcher with key stakeholders to gain acceptance, 2) evaluate the possibility of collaboration and support in conducting research using CBPR approach, 3) form the CAG to take responsibility in carry out the research project; 4) gather relevant data and identify problems with a primary purpose to improve detection and treatment of HTN, and 5) plan the first meeting among all stakeholders.

Step 2: Agree on the problem

This step aims to analyze the problem. This researcher can support the community by providing information and training to help them understand and analyze the problem that was chosen from step 1 (detection and treatment of HTN). The outcome of this step is to specify issue that stakeholders need to solve problem from step 1 such as in effective referral system. Then, get agreement on the problem.

Step 3: Develop health program

This step aims to design the new health program emphasizing on newly detected high blood pressure and diagnosed HTN with elevated BP. The program will be newly designed or adapted from the existing HTN control program. Components of the program should include 1) a continuing care; screening, referral to medical care, follow-up and tracking, educational and support, and evaluation (Fulwood et al., 2006), 2) community organization (Dessler, 1980; Mizrahi & Morrison, 1993); organizational policy and job descriptions for how all stakeholders will carry out the policy; and set the policy and job description for the village health volunteers in caring for hypertensive patients. The researcher and the CAG continue support and work as a partner with all stakeholders.

This researcher will try to learn and understand the community and make decisions based on CBPR principle throughout the process of research cycle until they get a health program that all partners feel satisfied. When a working partnership has been created, all partners share goals, responsibility, activities, resources, and benefits (Bidmead & Cowley 2005; Gallant, Beaulieu, & Carnevale, 2002; Kernaghan, 1993 as cited in Casey, 2008; Hook, 2006; Wiggins, 2008). As a result, a sustainable health program to improve early detection and treatment of hypertension in community will emerge from the contribution of outside researcher and community representatives.

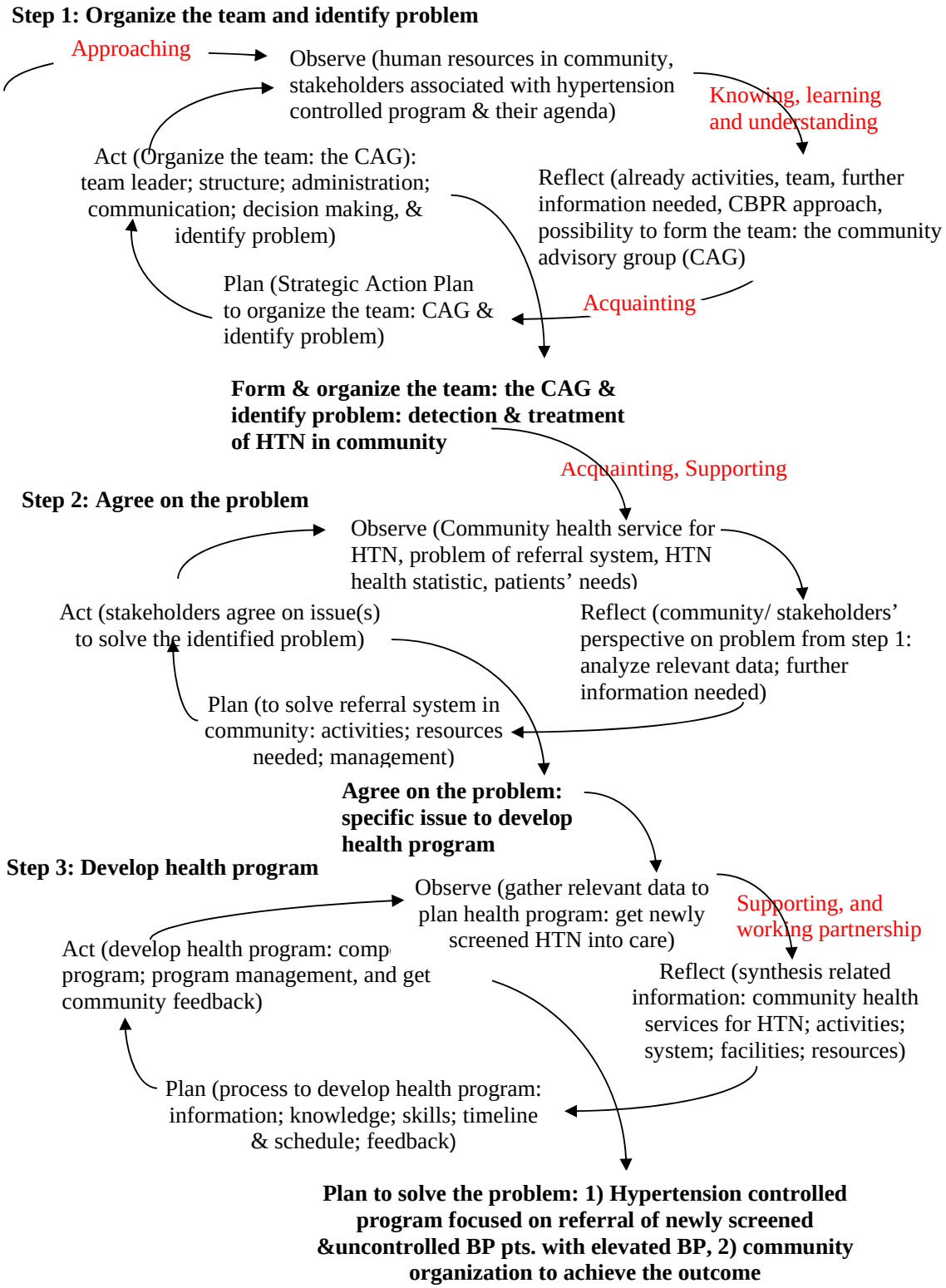

Figure 2. Building equal partnership in community-based participatory research (CBPR) cycle to improve early detection and treatment of hypertension (adapted from O'Leary, 2011).

Methods

The three specific aims are: 1) using CBPR principles, describe the process of building a community partnership to develop a community health program to improve early detection and treatment of hypertension; 2) using CBPR principles, describe the planning process and activities with the community to develop a sustainable health program to improve early detection and treatment of hypertension; and 3) describe elements of a culturally appropriate health program including components and management of the program. Aim 3 has two separate parts: 3.1) describe components of the program, such as the objectives, activities, how, and when it will be implemented and evaluated and 3.2) describe the program management, including community organization (strategies applied to facilitate a community to succeed in implementing health program, members, resources, organizational structure and functions.

Research design. Community-based participatory research (CBPR) approach

CBPR requires involvement of all stakeholders in all stages of research processes (Green,1995 in Minkler & Wallerstein, 2003; Israel, Eng, Schulz, & Parker, 2005). CBPR emphasizes a research orientation or process rather than strict methodology so that 1) level of involvement can vary according to the project; 2) stakeholders may include academic researcher, community-based organization, and community member relevant to the research project (Shalowitz et al., 2009). The partners or stakeholders develop research questions, tools, intervention, and disseminate research results. Nine principles of CBPR researchers are: 1) recognize community as a unit of identity; 2) build on strengths and resources within the community, 3) facilitate collaborative, equitable partnership in all phases of the research; 4) promote co-learning and capacity building among all partners; 5)

integrate and achieve a balance between research and action for the mutual benefit of all partners; 6) emphasize local relevance of public health problems and ecological perspectives; 7) involve systems through a cyclic process; 8) disseminate finding and knowledge gain to all partners; and 9) involve a long term process and commitment (Minkler & Wallerstein, 2003). At the end, the community will emerge with an action plan to target a specific health problem. To improve the referral system both the researchers and the community must collaborate on the focus area.

Community capacity can be used to measure short term outcomes of the CBPR process (Israel, et al., 2005), which is the health program developed by community in this study. The action cycle of plan, act, observe, reflect (O'Leary, 2010) demonstrate a clear continuing process will be applied to develop the CBPR cycle. The CBPR research cycle was shown in Figure 2.

Sample and Setting

Setting. The study will be conducted at Kokkram subdistrict, one of 12 subdistricts of Bangplama district, Suphanburi province located in the central region of Thailand. It is about 7 kilometers (4 miles) from Muang district, Suphanburi province and 100 kilometers (62 miles) from Bangkok. Kokkram subdistrict has 12 villages named "Village 1 to village 12" with total of about 7,000 residents. For government, village $5^{th,}$ where the subdistrict municipal is located, is governed by Municipal Kokkram, and other villages are governed by Municipal Tonkram (held the position of Kokkram Local Administration Organization, LAO). Each municipal has 12 members of committee. The 12 villages can be divided into three subgroups according their geographical area and lifestyle. Village 5 and parts of 6, 12 & 4 are urban; villages 6, 7, 11 & 12 are suburban; and villages 8, 9, 10 & 11 are rural.

Almost all residents are Buddhist; about 50% have graduated from primary

school; and the average family income is 345,179 baht/year (currency exchange 30 baht/$) (Tonkram Municipal Organization, 2012). For health services, the subdistrict is under the responsibility of Bangplama Community or District Hospital (BPH). The hospital has 5 physicians. The clinic averages 300 outpatients per day and has one day for a hypertension clinic. The Department of Health Promotion takes responsibility for health promotion in community. The health service benefit package under the UC Scheme includes inpatient/outpatient treatment at registered primary care facilities and referral to higher care facilities, health promotion and prevention services, and drug prescription. In the past, people paid 30 baht (approx.$1) per visit as the flat-rated of an out- of- pocket payment. Today, there is no charge for the services (Bureau of Policy and Strategy, 2009). Each village has about 5-10 village health volunteers (1VHV/10 household). They measure blood pressure in a community-based blood pressure screening program, and also take blood pressure for people in their village and give recording to the Department of Health Promotion (DHP) every month. However, the rate of follow-up of persons with an elevated BP is not documented. The VHVs receive a monthly allowance payment of 600 baht ($20) for their work (Bureau of Policy and Strategy, 2012).

Sampling design. Purposive sampling will be applied to select representatives from all stakeholders who have a role in developing a community health program for hypertensive patients in the community. According to CBPR principles, all stakeholders affected by the problem should be engaged in the research (Minkler & Wallerstein, 2003; Olshansky et al., 2005; Stringer, 2007). Therefore, the participants will be: 1) 3 chief executive organizations (CEOs) (the Director of Kokkram Municipal Organization and Tonkram Municipal Organization, the President of Bangplama's Village Health Volunteer Association); 2) 4 members of

Kokkram and Tonkram Municipal Organization committees (2members of each municipal committee); 2 Heads of Division of Health And Environment of Kokkram Municipal Organization and Tonkram Municipal Organization; 3) 1 physician and4 nurses from department of health promotion, Primary Care Unit (PCU), and Out Patient Department (OPD) at the Bangplama District hospital; 4) 3 community leaders; 5) and 24 VHVs (2 VHVs per village).

Sample criteria.

Inclusion criteria. Eligible participants are any person who holds the positions (referred to in the above Sampling Design) who have the time and are willing to participate.

Recruitment and Retention Plan

Recruitment. The researcher intends to recruit 41 participants to include: 1) 1 physician and 4 nurses of Department of Health Promotion, Primary Care Unit (PCU), and Out Patient Department (OPD); 2) two municipal directors, two members of each of the two municipal committees, and two Heads of the Division of Health and Environment; and 3) the president of Bangplama Village Health Volunteer Association, 24 Village Health Volunteers (VHVs) and three community leaders (CLs).

This researcher will contact the Head of Department of Health Promotion, Bangplama hospital to assess whether the program fits with the hospital's plan and to access the other stakeholders through the existing collaboration among community hospital, local organizations and the researcher. The researcher and the Head of Health Promotion Department will meet with each of the 4 CEOs in Kokkram subdistrict. These include the Directors of Bangplama hospital or his designee, the Director of Kokkram Municipal Organization, the Director of Tonkram Municipal

Organization, and the President of Bangplama's Village Health Volunteer Association. The purposes are to introduce the researcher and the project to these CEOs, to ask for their collaboration in implementation, and invite them to attend the small group meeting of each group (listed in #1 below) to provide informed consent.

Obtaining Informed Consent:

1. Researcher will work with Head of Department of Health Promotion to arrange four small group meetings of the: 1) director (or physician representative) and health personnel of Bangplama hospital, 2) Director, Heads of the Division of Health and Environment, and two members of the Kokkram Municipal Committees, 3) Director, Heads of the Division of Health and Environment, and two members of the Tonkram Municipal Committees, 4) VHVs and three community leaders(from a possible 12) and the president of the Health Volunteer Association. The purpose of the meetings will be to explain the study and to get informed consent (#1 activity in Table 1). The protocol for obtaining informed consent from each of the four group meetings (above) is attached as Appendix C. The Informed Consent Form is in Appendix D.

2. Researcher will ask the Head of Department of Health Promotion to invite the director (or physician representative) and health personnel of Bangplama hospital to their respective small group meeting to obtain informed consent.

3. Researcher will ask the Head of Department of Health Promotion to invite two municipal directors and members of the four municipal Committees and two Heads of Division of Health and Environment to attend a small group meeting to obtain informed consent from each of the two municipal organizations.

4. Researcher will ask the Head of Department of Health Promotion to invite three community leaders, and thirty six VHVs (3 VHVs per villages) to attend a group

meeting. (Thirty six will be invited (from 122 VHVs) in order to get at least 24 VHVs to participate in the project).

5. The four meetings will take place as follows: 1) meeting with health personnel in meeting room of Bangplama hospital; 2) two meetings with director and members of the four municipal committees and two Heads of Division of Health and Environment in reception rooms of the two Municipal Organizations; and 3) meeting with the VHVs and community leaders in the meeting room of Bangplama hospital.

Retention plan.

1. The researcher will set up a schedule with VHVs for meetings according to the major activity in the project. The researcher will develop a research schedule that correlates with the community calendar such as VHVs monthly, the municipal monthly meeting, Health Promotion Department's schedule or health service for HTN in community.

2. The researcher will provide contact information, such as telephone number, e-mail address, schedule for planning research activities, and plans for communication throughout the study to all participants and organizations.

3. The researcher will attempt to obtain a budget for travel and for lunch for participants in study activities from Thailand Nursing Council or the Local Health Security Fund.

4. The researcher, whenever possible, will participate in village monthly meeting to provide information to community committee, community members about research project, the roles of VHVs and community leaders in the research project, and ask for their support and collaboration with these community representatives throughout the research project.

5. The researcher will plan with the community advisory group to evaluate the application of CBPR principles in research process and provide evaluation information to all stakeholders.

6. The researcher will provide a thank you and acknowledgement letter to each organization; Bangplama Hospital, Municipal Kokkram and Municipal Tonkram, and Bangplama's Village Health Volunteers Association and the 12 villages.

Using CBPR Process

Step 1: Organize the team and identify problem.

1. Approaching: the researcher will access the community via the existing collaboration among the community hospital, local organizations and the researcher by contacting and meeting with the Head of Department of Health Promotion, Bangplama hospital. With collaborative work with Head of Department of Health Promotion, the researcher will arranges the first meeting among all participants to get agreement of conducting this CBPR project, forming the community advisory group (CAG) to take responsibility throughout the research project, and identify problem about detection and treatment of hypertension in community. The criteria to select the CAG members are time, resources, skills, and flexibility to participate in research activities such as attend meetings and review documents (Minkler & Wallerstein, 2003). The meeting participants will learn about each other's needs, set program goals, outline the responsibility of each partner, outline best ways for communicating among the partners and design a work plan for research project. Strategies use in running the meeting will be mind- mapping, community dialogues, small group discussion or other community preference.

2. Knowing and understanding*:* this step aims to gather related data and describe the existing community situations and resources. In the meeting #1, the

researcher and the Head of Department of Health Promotion will provide education for the members of municipal committee and village's health volunteers to learn about: 1) the role of community organization in HTN controlled according to the law; 2) hypertension sign, symptom, prognosis, treatment, and community facilities for caring of HTN to provide a clear picture of how each partner can take part in hypertension managements; and 3) provide information about problems and needs of the care system in this subdistrict from the prior studies and health services for hypertensive patients in community and OPD from the Department of Health Promotion, PCU and OPD and VHVs. Example of the questions and propose objectives will be;

- What percentages of persons who screen positive for HTN go to the hospital for diagnosis and treatment?

- What is already known about the blood pressure screening in the community?

- Organize the team- evaluation-groups meets and expresses charter

- Understand and summarize problem- hypertensive people not in care, evaluate and post data

Step 2: Get agreement on the problem.

Acquainting and supporting will be developed through formal and informal meeting, working with each other along research activities, community activities, and personal contact through social activities.

Arrange the second meeting among the CAG and the VHVs aim to: figure out why the current system does not work; specify problem/issue that the they need to develop health program to improve early detection and treatment of HTN; revise and set a clear vision and mission to generate support and awareness for the partners. Example of the questions will be:

- Whether the screening and referral system is working, How to refine it?

- How to increase the follow up rate?

Step 3: Develop health program.

Supporting and working partnership: all stakeholders work as a partnership to develop a plan to get newly screened hypertensive into care and plan to implement. In the discussion or an important decision making open the broad discussion and debate will be used to create equitable partnership, and get consensus in decision making. Community forum will be held to return data and triangulate information. Example of the questions will be:

- How does the community accomplish the goal?

- How to evaluate follow-up (F/U) of people referred, who make an appointment?

Figure 2 show the CBPR research cycle and Table 1 show the meeting that will be held throughout the project.

Data Collection Procedure

Data will be collected after the proposal is approved by the Committee for the Protection of Human Subjects (CPHS) at the University of Texas Health Science Center at Houston and the Institutional Review Board (IRB) of Thammasat University, Thailand. Informed consent will be obtained from the participants before gathering the data. The researcher will develop a research system that will include all stakeholders in all steps of the research process, including data collection and analysis.

Table 1

Objectives, activities, participants, and place in implementing the meeting

Objectives	Activities	Participants	Place
1.Get informed consent	Small group meeting 1.1 health personnel	1 physician, 4 nurses of Health Promotion Department (HPD) Outpatient Department (OPD), Primary Care Unit (PCU),	Meeting room Bangplama hospital (BPH)
	1.2 Municipal Organization (Kokkram Municipal Organization)	Director of the Municipal, Head of Division of Health and Environment, 2 members of Municipal Committee	Reception room of the Kokkram Municipal Organization
	1.3 Municipal Organization (Tonkram Municipal Organization)	Director of the Municipal, Head of Division of Health and Environment, 2 members of Municipal Committee	Reception room of the Tonkram Municipal Organization
	Meeting - Village health volunteers (VHVs), community leaders (CLs)	*36 Village health volunteers (3 VHVs per village *12 villages), 3 community leaders, 1 President of Village Health Volunteer Association	Meeting room Bangplama hospital (BPH)
2. Orientation meeting to form the CAG, and identify problem	1st meeting (3 hours meeting) among all stakeholders	41-53 participants:1 physician, 4 nurses, 2 Director of Municipal Organization, 1 President of Village Health Volunteer Association, 2 Head of Division of Health and Environment, 4 members of the two Municipal Committees, 24-36 VHVs, 3 community leaders	Meeting room Bangplama hospital (BPH)
3. Get agreement on the problem	2nd meeting	The community advisory group(CAG)**, 24-36 VHVs	Meeting room Bangplama hospital
4. Plan health program	3rd meeting	The CAG, 24-36 VHVs	Meeting room Bangplama hospital
	4th meeting	The CAG, 24-36 VHVs	Meeting room Bangplama hospital
5. Summarize progress and plan the next steps	5th, 6thmeeting	The CAG, 41-53 participants: 1 physician, 4 nurses, 2 Director of Municipal Organization, 2 Head of Division of Health and Environment, 4 member of Municipal Committee, 24-36 VHVs, 3 village leaders	Meeting room Bangplama hospital

Note. * invite 36 VHVs (potential participants) to get at least 24 VHVs,

** Community Advisory Group (CAG) = representative of 41-53 stakeholders or all community stakeholders

The researcher will work with all partners as a facilitator of the process rather than as a director of the process to achieve the aims of the study (Reason & Bradbury, 2006). Although the CBPR approach is iterative, the researcher has developed a beginning guide to use for documenting the research process to achieve the aims of this study. The guide includes specific objectives for each aim, activities, participants, questions and data to answer the question. This guide is summarized in Tables 2 to 4 (Appendix E). The researcher will modify the guide with the community partners as needed, keeping with CBPR principles.

Method of data collection. Participant observation and document review are the major data collection techniques. These methods can be used to evaluate the effectiveness of the process or method in CBPR (Israel et al., 2005). They can be used to increase understanding that comes with the action research process (Herr & Anderson, 2005; Sanjek, 1990).

1. Participant observation: researcher will 1) document research activities and decisions in a journal according to the research process as shown in Figure 1; 2) record researcher's own thoughts, feelings and impressions; and 3) record a description of the context and reactions of the participants in meetings. Audiotape will be used to record the meetings. The researcher will summarize the meetings in Meeting Minutes (Appendix F) and distribute to the CAG to clarify any issue that was left or unclear.

2. Interviews or small group discussions: the researcher will summarize the data collected during all interviews and/or small group discussions.

3. Reviewing documents and records: data will be collected from the existing data, such as hospital's documents and reports, memos, statistical data, policy statements, procedure statements, organizational mission and plans.

While gathering data the researcher will draw on local knowledge or use information generated explicitly within the study and/or to utilize bigger data sets that document trends that might have relevance to the study. The researcher will use participatory observation methods to learn what data are available in the clinics and villages to help the VHVs do their work and to observe the problems the VHVs encounter in doing their work. The researcher will record all observations in writing. Tables 2 to 4 outline the researcher's activities and data collection to answer the objectives for each aim of the study.

Data Management and Analysis

Data management. The data and research database will not include any patient data or patient records. It will be comprised of qualitative data to include data generated from observations, interviews, group discussions and meetings of organizational leaders, village health volunteers and health care providers in Kokkram subdistrict in Thailand. The participants will be asked to provide documents that report health statistics in the subdistrict such as: 1) number of people who received screening services and/or referrals to health care reports, 2) community information; geographical area, community history, community systems such as health system, transportation, socio-economic, local organizations.

Data will be in the form of audiotapes, field notes, transcripts of meetings, meeting minutes, documents, organizational memos, case study reports, artifacts, and photographs of events and activities. The meetings, small group discussions or interviews will be recorded by tape recording. Any documents created in the research activities such as meeting minutes, transcripts of meetings, small group discussions or interviews, documents of group activities, scratch notes, logbooks that record conversations and events will be summarized without any personal identifiers.

The strategies to maintain data quality by Moyer et al. (1999) will be applied in data management. The researcher and head of DHP will train and mentor the CAG about writing field notes and the researcher will monitor the content and completeness of the field notes in the CAG and plan regular meeting for peer debriefing.

Data analysis. The researcher complete field notes every day or no later than the next day. Data analysis begins immediately and guides further data gathering and decision making, decisions for action must sometime be made before get thorough understanding of the data. Staff of the Department of Health promotion and some of the VHVs and community leaders who have worked as a partner from the prior projects will serve as critical friends, peers or validation team for data debriefing to get to another level of understanding, make explicit what they may understand on a more tacit level, thoroughly understand what the situation is. Process analysis will be used to find and document pattern, process and outcomes of the data in the ongoing CBPR research cycle. Each meeting will be summarized and the CAG and other stakeholders in the meeting will be asked to reflect and give input to prepare for the next meeting.

All audiotapes, electronic storage, and written materials (transcripts of small group discussion or interviews, summaries of the meetings, and field notes) will be stored safely in a locked locker, which the researcher and the CAG can access in order to review information and reflect on the data. Audiotapes will be kept separately from the transcripts and they will be destroyed after the completion of data analysis.

These summaries will be transcribed verbatim from Thai language to English. When data collection is completed, the researcher will bring these documents to the U.S. to complete the analysis. The documents will be retained for five years according to the University's policy.

Research Timetable

Table 5

Activities and Research Timeline

Activities	2014								
	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1.Get IRB approval	←	→							
2. Pilot study	←	→							
1.Summarize already available data	←	→							
2. Action	←	→							
3. Data analysis	←	→							
4. Report								←	→

Potential Limitation and Alternative Plan

The potential limitations of the study and alternative plans are as follows: Each partner has their own schedule and will not be available at the same time to have full participation in study activities. The alternative plan is preparing several ways of communication such as mail, summarization of the meeting or activities to distribute to all partners and do it on time. Distribute the phone number or any available method of contact to each partner so that they can communicate with to each other. Create both formal and informal communication to facilitate communication among the respondents.

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COMMUNITY-BASED PARTICIPATORY RESEARCH TO IMPROVE EARLY DETECTION AND TREATMENT OF HYPERTENSION IN A SUBURBAN COMMUNITY IN THAILAND

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Abstract

Communities have a significant role in working with health personnel to detect new and previously diagnosed cases of high blood pressure during community BP screening programs. In Thailand there are many people with elevated BP who do not access to care. The purpose of this Community-Based Participatory Research (CBPR) was to build a community partnership following the CBPR approach to develop a health program to improve early detection and treatment of hypertension. Three specific aims were: Aim 1. Using CBPR principles, describe the process of building a community partnership to develop a community health program to improve early detection and treatment of hypertension; Aim 2. Using CBPR principles, describe the process and activities with the community to agree on the problem and to develop a sustainable health program to improve early detection and treatment of hypertension; and Aim 3. Describe elements of a culturally appropriate health program including components and management of the program. The study was conducted from June 2014 to March 2015 in Kokkram subdistrict, Bangplama District, Suphanburi Province, Thailand. Forty-one participants represented four stakeholders' groups: 1) community representatives, 2) Chief Executives from health care organizations (CEOs), 3) health personnel, and 4) municipal organizations. Participant observation and document review were the major data collection techniques. The data were summarized in Excel tables. The researcher used process analysis to find and document patterns, processes and outcomes of the data in the ongoing CBPR research cycle.

Results show that the study AIMS were met. Applying the process of building a community partnership (approaching; knowing and understanding; acquainting;

supporting; and partnership working) using a CBPR approach was successful in engaging the community to agree on the problem and to develop a health program. Building the partnership will enable future efforts to implement and evaluate the Hypertension Control Program. The developed program is comprised of acceptable objectives, method and activities that account for strengthening capacities through community participation, education and training.

Recommendation: Community health nurses working with other community health personnel can use community participation methods to develop and implement a program for hypertension control. Further research should be conducted to evaluate the effectiveness of the program on screening and referral services, and on hypertension control.

Keywords: partnership, action research, CBPR approach, hypertension control, community health program.

Uncontrolled hypertension has been a major health problem worldwide. It is a significant risk factor for cardiovascular disease, renal disease and stroke (Chobanian et al., 2003). Thailand is one of the Asian countries that has seen a rapid increase in stroke mortality and the prevalence of hypertension (Singh et al., 2000). The mortality rate of hypertension in Thailand showed a small decrease from 3.9 per 100,000 population in 2005 to 3.6 in 2009. However, the death rate from cerebrovascular diseases was high at about 25.53 per 100,000 population in 2005 and 21.0 in 2009 (Bureau of Policy and Strategy, 2009). The United States (U.S.) has a successful hypertension control rate of 50% in 2010 (Chobanian, 2010). The hypertension control rate in Thailand was 20.9% from the Fourth National Health Survey in 2009 (Aekplakorn, 2010) and 43% from the hospital audit (Buranakitjaroen, 2006). Community-based blood pressure screening is a beneficial way to promote population health (Fulwood, Guyton-Krishnan, Wallace, & Sommer, 2006). Even though Thailand has expressed the goal of screening for hypertension in its national health plan, this is still far from being accomplished.

Community organizations, especially community health workers and/or health volunteer groups, play a significant role in working with health personnel to detect new and previously diagnosed cases of high blood pressure in the community. The Thailand health system has increased its efforts to strengthen community capacities to take part in helping primary health care teams achieve population health (Bureau of Policy and Strategy, 2012). Community nurses, as community health care team leaders, have developed partnerships with village health volunteers (VHVs) to care for hypertensive patients in the community (Getpreechaswas, Boontorterm, & Yospol, 2007; Nuntaboot, 2007; Sinsiri, 2011). The village health volunteers have explicit roles in screening blood

pressure both at the community health fair and in their communities and in reporting their findings to the hospital on a monthly basis. However, lack of an effective referral system limits the effects of this valuable activity. Measuring blood pressure as a routine job without seeing its impact on controlling blood pressure gives the VHVs low confidence in their ability to do their job (Sinsiri & Charoenyooth, 2007). Ineffective referral systems also contribute to the cumulative negative impact for people having high blood pressure. That is, they have not addressed blood pressure levels, since nothing happened after finding high blood pressure from community screening.

Community partnership, the collaborative working among health care providers and stakeholders to promote health through empowerment of the community, is necessary to develop a culturally sensitive and sustainable community health program to improve early detection and treatment of hypertension in restricted resource areas in Thailand. Community-based participatory research (CBPR) approach has been successfully used to accomplish goals of a community health program (Sinsiri, 2013). CBPR allows stakeholders to participate in all aspects of the research process. It is unclear, however, how to develop and maintain the community partnership during each step of the research to develop the health program in a community. The results of this study help explain the important steps in developing a community health program that is acceptable and can be successfully implemented for improving early detection and treatment of hypertension. The purpose of this study is to apply steps of building a community partnership (Charoenyooth et al. 2006) using the CBPR approach to develop a health program to improve early detection and treatment of hypertension. The study had three specific aims.

Aim 1. Using CBPR principles, describe the process of building a community partnership to develop a community health program to improve early detection and treatment of hypertension.

Aim 2. Using CBPR principles, describe the process and activities with the community to agree on the problem and to develop a sustainable health program to improve early detection and treatment of hypertension.

Aim 3. Describe elements of a culturally appropriate health program including components and management of the program.

Aim 3.1. Components of the program are objectives, activities, how, and when it will be implemented and evaluated.

Aim 3.2. Program management includes community organization (strategies applied to facilitate a community to succeed in implementing health program; members, resources, organizational structure and functions).

Conceptual Framework

The research cycle developed for this study (see Figure 1), is a modified CBPR approach to action research (Kemmis & McTaggart, 2000 in O'Leary, 2010; O'Leary, 2010; Minkler & Wallerstein, 2003; Stringer, 2007). It comprises three steps in order to engage the community in every step of research process: Step 1: Organize the team and identify problem; Step 2: Agree on the problem; Step 3: Develop health program. Five steps of building a community partnership: 1) approaching; 2) knowing and understanding; 3) acquainting; 4) supporting; and 5) partnership working, developed by Charoenyooth et al. (2006), were applied to the research cycle. The researcher conducted a comprehensive review (Sinsiri, 2013) and found that these steps corresponded with the

steps of engaging the community to develop a community health program for chronic diseases. The first two steps, approaching and knowing and understanding, were used earlier in the first step to engage the community in the research so that a Community Advisory Group (CAG) was formed and a community problem was identified. Acquainting, supporting, and partnership working were used throughout the next steps to gain agreement on the problem and plan the community developed health program. Figure 1 depicts the steps of the CBPR process used for this study.

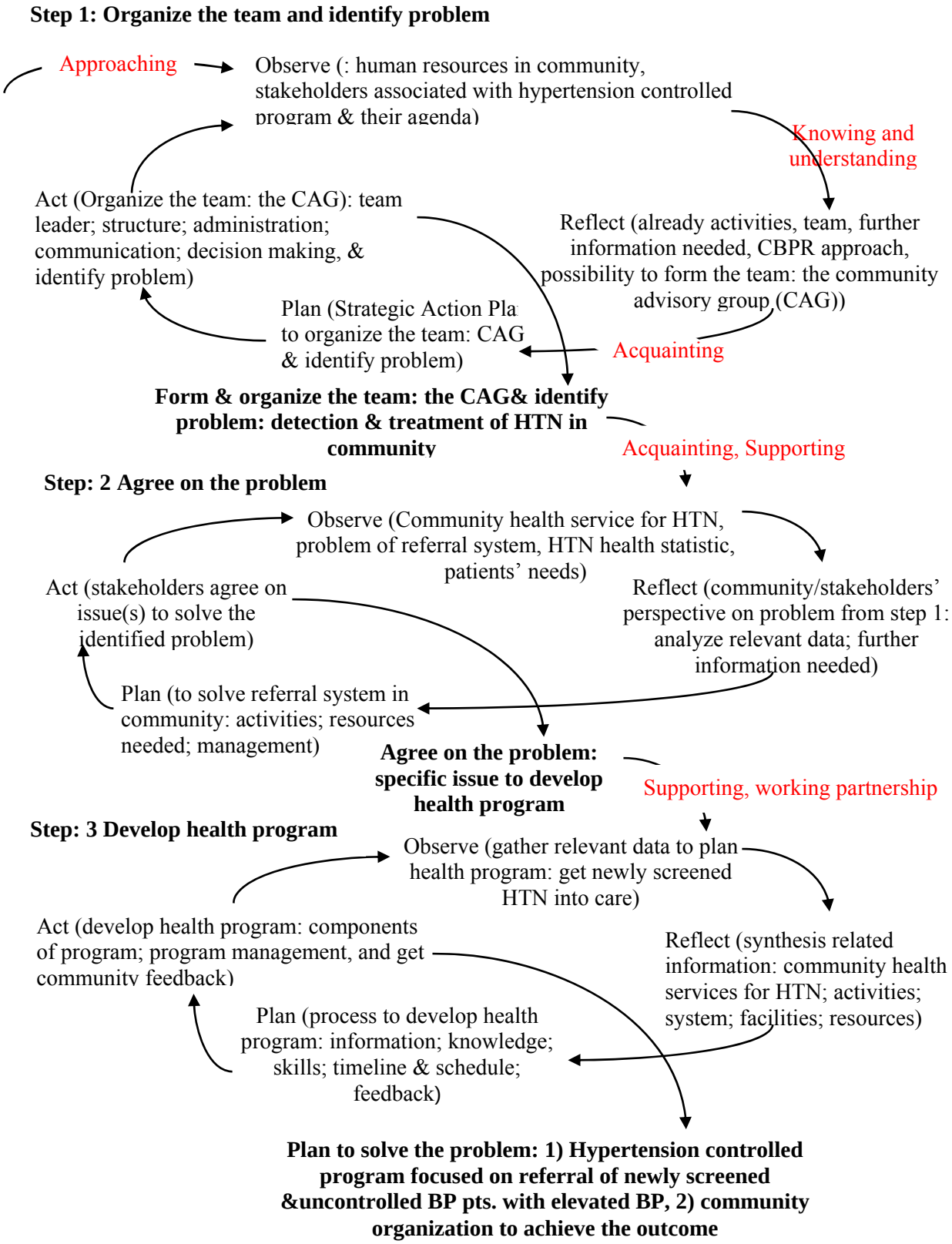

Figure 1. Building Equal Partnership in Community-Based Participatory Research(CBPR) cycle to Improve Early Detection and Treatment of Hypertension (adapted from O'Leary, 2011).

Method

Participants and Setting

Participants. Participants were recruited after the researcher obtained approval from the Committee for the Protection of Human Subjects (CPHS) at the University of Texas Health Science Center at Houston and the Institutional Review Board (IRB) of Thammasat University, Thailand. Purposive sampling was applied to select representatives from all stakeholders who have a role in caring for hypertensive patients in the community. According to CBPR principles, all stakeholders affected by the problem should be engaged in the research (Minkler & Wallerstein, 2003; Olshansky et al., 2005; Stringer, 2007). Inclusion criteria were participant willingness and available time to participate in the study. The 41 participants included: 1) one physician and four nurses in the Department of Health Promotion, Primary Care Unit (PCU) and Out Patient Department (OPD); 2) two municipal directors, two members of each of the two municipal committees, and two Heads of the Division of Health and Environment; 3) the president of Bangplama Village Health Volunteer Association, and 4) 24 Village Health Volunteers (VHVs) and three Village Leaders (VLs).

Setting. The study was conducted at Kokkram subdistrict, one of 12 subdistricts of Bangplama District, Suphanburi province located in the central region of Thailand. It is about 7 kilometers (4 miles) from Muang District, Suphanburi province and 100 kilometers (62 miles) from Bangkok. The Kokkram subdistrict has 12 villages named “Village 1" to "Village 12” with a total of about 7,000 residents. Village 5, where the subdistrict municipality is located, is governed by Municipal Kokkram; the other villages are governed by Municipal Tonkram (held the position of Kokkram Local Administration

Organization, LAO). Each municipality has 12 member committees. The 12 villages can be divided into three subgroups according to their geographical area and lifestyle. Village 5 and parts of Villages 4, 6, and 12 are urban; villages 6, 7, 11 and 12 are suburban; and villages 8, 9, 10 and 11 are rural. Almost all residents are Buddhist; about 50% have graduated from primary school; and the average family income is 345,179 baht/year (currency exchange 30 baht/$) (Tonkram Municipal Organization, 2012).

For health services, the Kokkram subdistrict is under the responsibility of the Bangplama community or district hospital (BPH). The hospital has five physicians. The clinic averages 300 outpatients per day and has one day a week for a hypertension clinic. The Department of Health Promotion takes responsibility for health promotion in the community. The health service benefit package under the Universal Coverage (UC) Scheme includes inpatient/outpatient treatment at registered primary care facilities and referral to higher care facilities, health promotion and prevention services, and drug prescriptions. In the past, people paid 30 baht (approximately $1) per visit as the flat-rate of an out-of-pocket payment. Today, there is no charge for the services (Bureau of Policy and Strategy, 2009).

Each village in the Kokkram subdistrict has about five to ten village health volunteers (1VHV/10 households). The VHVs receive a monthly allowance payment of 600 baht ($20) for their work (Bureau of Policy and Strategy, 2012). Community groups and community organizations, such as the villages health volunteers (VHVs), community leaders and the Municipal have been key to the success of community health care teams' ability to participate in hypertension control programs in Thailand (Bureau of Policy and Strategy, 2009). Diverse community groups work to provide community-based resources

for developing health education programs aimed at reducing uncontrolled BP. Village Health Volunteers have a direct role in community BP screening as well as collaborative work with community leaders to create community development projects.

Data Collection and Data Analysis

This research was conducted from June 2014 to March 2015. Informed consent was obtained from the participants before gathering the data.

Data collection. Participant observation and document review were the major data collection techniques. Regarding participant observation, the researcher 1) documented research activities and decisions in a journal according to the research process as shown in Figure 1; 2) recorded her own thoughts, feelings and impressions; and 3) recorded a description of the context and reactions of the participants in meetings. Audiotape was used to record the meetings, and the researcher summarized the meetings in Meeting Minutes. For the interviews and small group discussions, the researcher summarized the data that was collected during those sessions. For the review of documents and records, data was collected from the hospital's existing documents, reports, memos, statistical data, policy statements, procedure statements, organizational mission and plans. The researcher recorded all observations in writing.

The researcher worked with all partners as a facilitator of the process rather than as a director of the process to achieve the aims of the study (Reason & Bradbury, 2006). Although the CBPR approach is iterative, the researcher has developed a beginning guide to use for documenting the research process to achieve the aims of this study. The guide includes specific objectives for each aim, activities, participants, questions and data to answer the questions. The researcher modified the guide with the community partners as

needed, keeping with CBPR principles. This guide is summarized in Tables 2 to 4 at the end of this manuscript (See Appendix E).

Data analysis. Data were summarized in Excel tables. Process analysis was used to find and document patterns, process and outcomes of the data in the ongoing CBPR research cycle.

Results

The results of the study will be presented according to the objectives and research questions of three specific aims.

AIM 1 - *Using CBPR principles, describe the process of building a community partnership to develop a community health program to improve early detection and treatment of hypertension.*

The researcher collaborated with the Head of Department of Health Promotion (HDHP) to arrange six meetings and conducted fieldwork from July 2014 to March 2015 to create research activities in the action research cycle (Figure 1). The fifth meeting to return data to the community was held on November 11, 2014. The following two months, December 2014 and January 2015, were spent determining the feasibility of the developed health program. The sixth meeting was set to discuss the feasibility, revise the program and plan for implementation. Due to time constraints, the six meetings were extended from early February to late March. In arranging all of the meetings, the researcher set the agenda and activities from the prior meeting and information learned from the fieldwork. The researcher then discussed the concept and joint leadership of each meeting with the HDHP and invited the speakers for the lecture sessions held at each meeting. The researcher prepared any necessary research documents so that the

Department of Health Promotion (DHP) could copy and distribute them in the meeting. The HDHP worked with her secretary and other two DHP staff members to prepare the meeting room, audiovisual equipment, meeting materials, and coffee breaks. DHP staff also assisted with reception and registration at the meetings. Coffee, juice, and pastries were served during the coffee breaks to help create a more professional meeting environment than a typical community meeting setting. The meeting leaders utilized effective time management to encourage the group to accomplish the meeting agenda items.

The process of building a community partnership to develop a community health program to improve early detection and treatment of hypertension is described according to its' six sub-objectives shown in Table 1.

The outcomes of each step in Table 1 are shown in Figure 2. In terms of applying these steps towards building a partnership in the CBPR cycle, results show that approaching, knowing and understanding were applied in the first step to organize the team and identify the problems; acquainting was used in the second step to agree on the problems; and supporting and partnership working were used in the third step to develop a health program.

Table 1

Describe the Process and Activities of Building a Community Partnership

Objectives/ research questions	Example of processes and activities or outcomes
Objective 1.1. Describe the process and activities of approaching community. 1. How does the researcher enter/reach the community to invite all stakeholders to work together? 2. What are the indicators that the researcher has gained acceptance from the community?	- Reached out with the specific goal of working with the community to develop a health program that can improve early detection and treatment of hypertension - Met with a leader of the community health team via telephone and in person - Worked with the Head of DHP to invite potential participants - Integrated research activities with community activities - Gained acceptance to conduct the project - Acceptance was measured by successful recruitment , collaborative work and shared decision making
Objective 1.2. Describe the process and activities of knowing and understanding. 1. What do the community representatives think of the possibility of collaboration and support in conducting research and applying a CBPR approach in this setting? 2. What are the activities and how long does it take to organize the Community Advisory Group (CAG)? 3. How do the researcher and all stakeholders learn to know and understand each other?	- Willing to support the project - Provided the roles and responsibilities of the researcher and the group in CBPR - Provided information to form the CAG - The group discussed potential members and structure of the committee - Project committee was set instead of the CAG - Responsibility to arrange future meetings was discussed in the third meeting - The researcher gained information from an informed consent meeting, and shared experiences and identified resources in the first meeting - The researcher learned community structures and systems for caring HTN from field work and the first meeting

Objectives/ research questions	Example of processes and activities or outcomes
Objective 1.3. Describe the process and activities of acquainting. 1. What are the roles and responsibilities of CAG members? 2. What activities can the researcher, the CAG and other stakeholders do to become familiar with each other? 3. How do the stakeholders understand the problem of uncontrolled hypertension?	- Collaborative work with the researcher to carry out the project - Participate or create both formal and informal activities with the community; spent daily life in the community - HDHP and the researcher 1) set 2nd meeting agenda & activities to help the group feel familiar with each other; 2) integrate community meeting techniques into a formal meeting - Less attention was paid on uncontrolled high BP in the community due to routine and job policies:1) the country's policies have emphasized on BP screening and health screening across the lifespan ; 2) work overload from routine jobs and personnel shortage - The group agree to solve a referral system
Objective 1.4. Describe the process and activities of supporting. 1. What is the information and activities that the researcher and other CAG's members provide to each other or provide to VHVs in each step of CBPR research cycle? 2. How are stakeholders and the CAG sharing available resources? 3. How does each stakeholder support and/or seek help from each other?	- Informed the group and community about the roles and activities of the researcher in the project; asked for collaboration and an opportunity to participate in any community activities - Researcher tried to understand the HDHP and her staff in taking responsibility for community BP screening and finding outside support for the health program - Researcher collaborated in arranging the third meeting; conducted fieldwork; used community resources to create activities - Researcher provided scholarly support and shared experiences - The group provided in-kind support and collaborated with the researcher to create fieldwork opportunities

Objectives/ research questions	Example of processes and activities or outcomes
Objective 1.5. Describe the process and activities of partnership working. 1. How do the researcher, the CAG, and stakeholders get involved, collaborate, make decisions, and share resources, responsibilities, and benefits with each other in CBPR project? 2. What are the activities that they do to build a partnership?	- Set a session in the last three meetings to discuss: 1) roles, responsibilities, and job assignments for the project committee in arranging the meetings; 2) the process and learning experiences involved in using CBPR - Each stakeholder carried out or implemented their assigned jobs - Researcher held discussions with: 1) the community leader team to find solutions to problems and clarify sensitive issues; 2) experts about activities and component of a sustainable health program - Conducted more field work to clarify issues raised by the experts - Set a meeting to reflect and clarify issues found while determining the feasibility of the program. - Stakeholders carried out job activities and shared experiences or results in the last two meeting to revise each component in the program. The researcher gathered more in-depth data to raise or clarify issues in the ongoing meetings to develop the health program. - Provided enough time for stakeholders to determine the feasibility of the health program - The researcher discussed and set research activities and a revised timeline with the HDHP and project president according to community BP screening schedule, community activities, and key informant stakeholders. - The researcher: 1) observed more in-depth situations about community capacities, lifestyles, beliefs; 2) developed capacities to understand and work with the group; 3) conducted community site visits to VHVs to evaluate their BP screening practice - Raised issue about integrating happiness in working in the project

Objectives/ research questions	Example of processes and activities or outcomes
Objective 1.5. Describe the process and activities of partnership working (cont.).	- Emphasized: 1) researcher's roles as a facilitator in the project; 2) stakeholder's participation's role; 3) strategies to promote collaboration, to avoid conflict
Objective 1.6 Describe the characteristics of partnership. 1. How do the stakeholders know they have a partnership? 2. Is there evidence that shows how the partnership has formed or whether it really works? 3. How does each step of building partnership relate to each other? 4. How to know partners could go to the next phase? 5. How will the partners know they are ready to design the program? 6. What activities help in building partnership with community to develop health program?	- When stakeholders worked together, the characteristics of partnership were : 1) goal commitment; 2) shared responsibilities and benefits; 3) shared decision making; 4) successful collaboration and 5) emphasis on increasing or strengthening community capacities; 6) achieved partnership's goal (got a sustainable health program to improve early detection and treatment of HTN - Each step in building the partnership supported the next step in an ongoing process to reach the partnership's goals. - The partners knew they could go to the next phase when they achieved the goals of each meeting. - The partners knew they were ready to design the program after: 1) they reached agreement on the nature of the problem and how to address the problem; and 2) had demonstrated that they could work together. - Activities that helped in building the community partnership were activities that: 1) helped stakeholders understand each other and understand the community situations for caring of HTN in the community such as invited relevant stakeholders to share information, experiences and problems in caring for HTN patients in the community and at the OPD ; and 2) created learning experiences such as opened discussion in small group, applied SWOT analysis proposed by the group to identify community resources, conducted fieldworks with VHVs and used those evidence based in the project

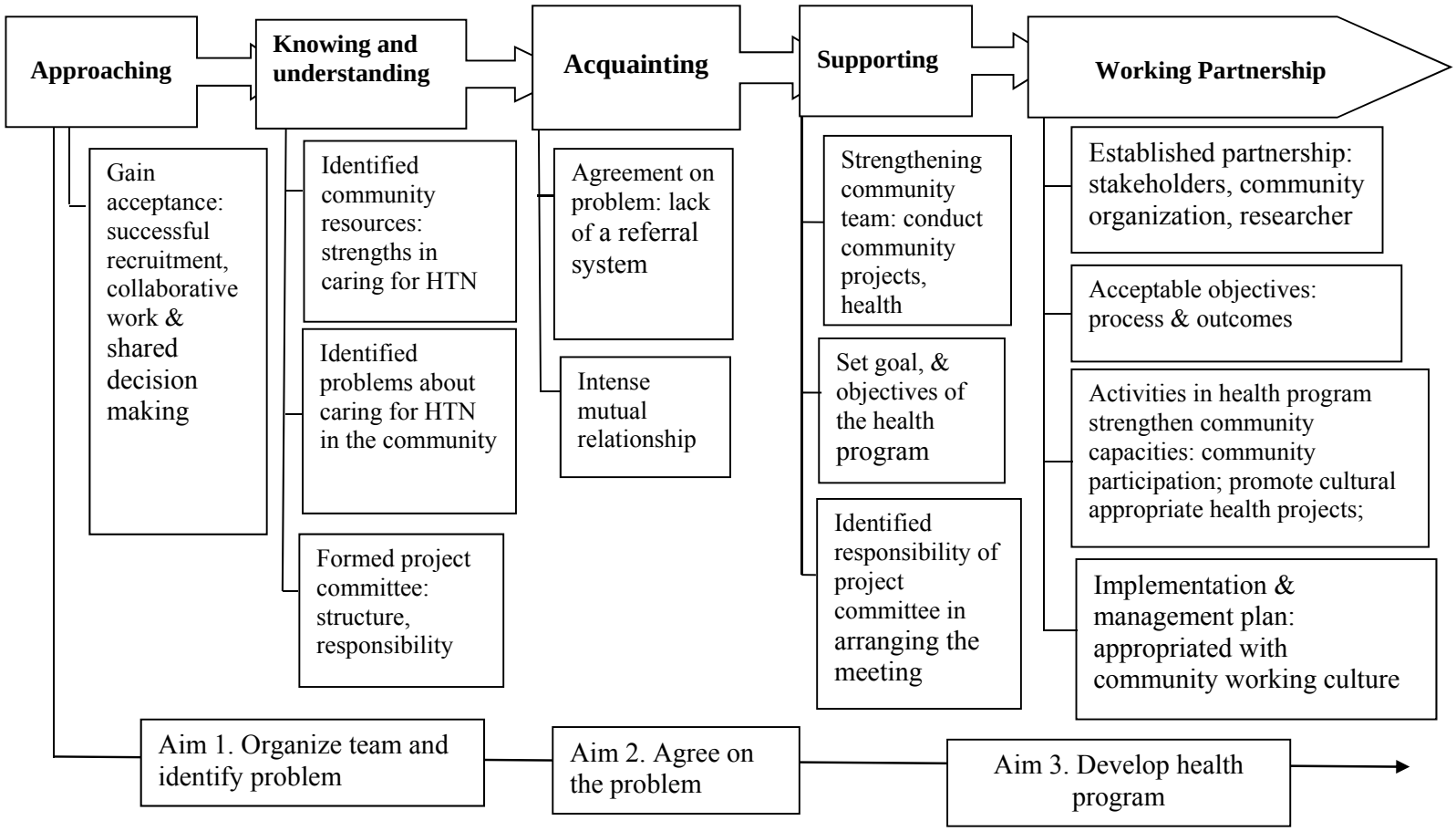

Figure 2. Process and Outcomes of Engaging Community in Developing a Community Health Program to Improve Early Detection and Treatment of Hypertension.

AIM 2 - *Using CBPR principles, describe the process and activities with the community to agree on the problem and to develop a sustainable health program to improve early detection and treatment of hypertension.*

The processes and activities used to reach agreement with the community on how to address the problem and to develop a health program (step 2 in Figure 1) are described according to the two objectives of Aim 2 as follows:

Objective 1. Get agreement on the problem.

Research questions: 1) What is the evidence of the identified problem? 2) How did the stakeholders identify the problem at the second meeting? 3) How did the stakeholders describe the causes of the problem?

For many years, the community has been devoted to community BP screening, hoping to achieve screening of at least 60% and ideally 90% of its population. However, no records were kept of newly detected high BP cases or community blood pressure control rates, and there was no referral system to encourage patients to seek appropriate HTN management. The stakeholders paid less attention on uncontrolled high BP in the community due to routine and job policies. In the second meeting, stakeholders identified issues and problems related to prevention and control of HTN in the community. The researcher challenged the group to develop and clarify goals for dealing with HTN in the community; then, the group used a flow chart technique to analyze the problems and identify a gap in a community BP screening system (see Figure 3). There was no referral system to convince people with elevated BP to access the hospital care that was available to them. Therefore, the stakeholders agreed to develop a referral system (shown in the dashed lines of Figure 3) to improve early detection and treatment of HTN in community BP screening. Then, the group

asked the project president to have stakeholders attending the meeting voted for accepting the solution of developing a referral system.

Objectives 2. Develop a health program.

Research questions: How do the stakeholders develop a health program in the third, fourth, and fifth meetings?

The process of developing a health program included:

1) Increasing relevant knowledge about community developed health programs. In the third and fourth meetings, speakers from each stakeholder group presented and shared experiences on health program development, advanced roles of VHVs, community strategic plans, and the health care system in Thailand, primary and secondary prevention of HTN, and community participation. The researcher shared field work experiences, including the daily responsibility and activities of the VHVs and hospital staff, their happiness and satisfaction with the work, and their capacities and resources in caring for HTN in the community to encourage the group set an appropriate objective.

2) Worked with the group in the meeting or with assigned relevant stakeholders to design, review, and revise activities in order to continually improve them. Some of the activities including showing the group the issues they needed to solve from the second meeting in the current system for HTN care; asking the group to design activities and plan for evaluation; and emphasizing to the group the processes of the CBPR approach, in which the community takes part in every step and can react and revise the goals and processes at each meeting in order to develop the best possible health program.

3) Used issues identified from community practice to design each component of the program and plan its implementation. Activities included setting the second

session of the fourth meeting to plan the implementation of the health program, and asking the group who/which organization would take responsibility for the program, and how to go about it.

4) Considered political and policy issues and the balance of power among community organizations. Arranged the fifth and sixth meeting to get feedback from the community.

5) Evaluated the feasibility and implementation plan of the health program from both outside and inside community resources. The researcher: 1) documented, observed, and participated in community activities, projects, and BP screening; 2) evaluated the developed health program to determine whether it can solve the previously identified problems; and 3) held discussions with the experts about (A) a sustainable community health program with community health nurse expertise's in Thailand and the U.S., and (B) the reliability of community BP screening techniques with physician who experienced in community BP screening and treatment of hypertension. The researcher collaborated with the HDHP and a nurse who is responsible for the hospital's chronic disease management to get the VHVs' opinion about the referral system by asking the VHVs in their monthly meeting whether activities were practical and will enable effective outcomes or not. The researcher summarized issues identified when evaluating the health program and discussed them with the group in the sixth meeting.

AIM 3 - *Describe elements of a culturally appropriate health Program including components and management of the program.*

The elements of the developed health program are described according to program's components and management under Aim 3.1 and 3.2 as follow:

Aim 3.1 *Components of the program are objectives, activities, how, and when it will be implemented and evaluated.*

Components of the program. The goal of the program was to increase access to care for people with new or previously diagnosed cases of HTN during a community BP screening program. The objectives were**:** 1) have VHVs recheck all elevated BP cases detected in a community BP screening before referring those patients to hospital care; and 2) achieve a seventy percent access rate of referral cases to hospital care in one year.

The program's activities included:

1) managing the data (correctly count and list the target population and analyze the successful rate of referral cases);

2) developing a community workshop and training for VHVs that would cover the implementation of a referral and tracking system, refresh knowledge and skills of standard BP measurement, and provide health education with an emphasis on early detection and treatment of HTN;

3) creating a referral system by opening a new OPD clinic for referral clients and developing a tracking system;

4) using a "Chronic Disease Map" during community health education events to show prevalence of HTN, coronary heart disease, and diabetes in the community and increase community awareness of uncontrolled HTN;

5) assisting the community organizations, village leaders and VHVs to create or carry out the community projects and integrate community education to increase people's health awareness and create healthy behaviors. Examples of these community projects included the Thai dancing projects of villages 3 and 5, the bike

club of village 5, the Thai drum of the elder club of village 8, and the Buddhist project of village 3; and

6) advertising a community BP screening campaign by using the community wireless radio broadcast to increase community collaboration;

7) providing data to the community in the municipal's monthly meeting, community project campaign, VHVs' monthly meeting, and some villages' monthly meetings to increase community awareness of HTN and community collaboration;

8) buying BP measurement machines (if needed) and having the DHP take responsibility for calibrating the digital machine; and

9) developing a recording system.

Figure 3 represents the current BP screening system modified to include the new referral system (the dashed line in Figure 3). Methods and activities in the health program will be undertaken to overcome problems found in each step of the current system. The high risk population for HTN (age ≥ 35 years) will have BP measured in an annual community BP screening program. For those diagnosed with HTN, the VHVs will check their BP every month and will submit the results to the DHP as one part of their monthly report to receive a monthly allowance payment for their work. The DHP will summarize and list the names of those with elevated BP and then distribute the list to VHVs to check the BP again. The referral and tracking process is currently being reviewed in order to decide whether the cards will be issued by VHVs or the DHP. The goal to have the OPD clinic open a new clinic for the referral of elevated BP clients has been achieved. There are six other diseases in a community yearly health screening program. The OPD clinic included these diseases in a referral system so that the hospital can open the referral clinic every day. The VHVs will follow up for three months to ensure that the BP cases go to the hospital within that

timeframe. When these patients come to have their BP checked at the OPD clinic, the nurse will communicate the results to the VHVs by telephone. The developed referral card is comprised of personal information (name, age, gender), address, contact information, reason for the referral, screening health check (body weight, height, two BP measurements, blood sugar level, family history of HTN or diabetes (DM)), and name and contact number of the VHVS referring the clients. The card was stamped with the BPH logo to increase confidence of fast access to hospital care.

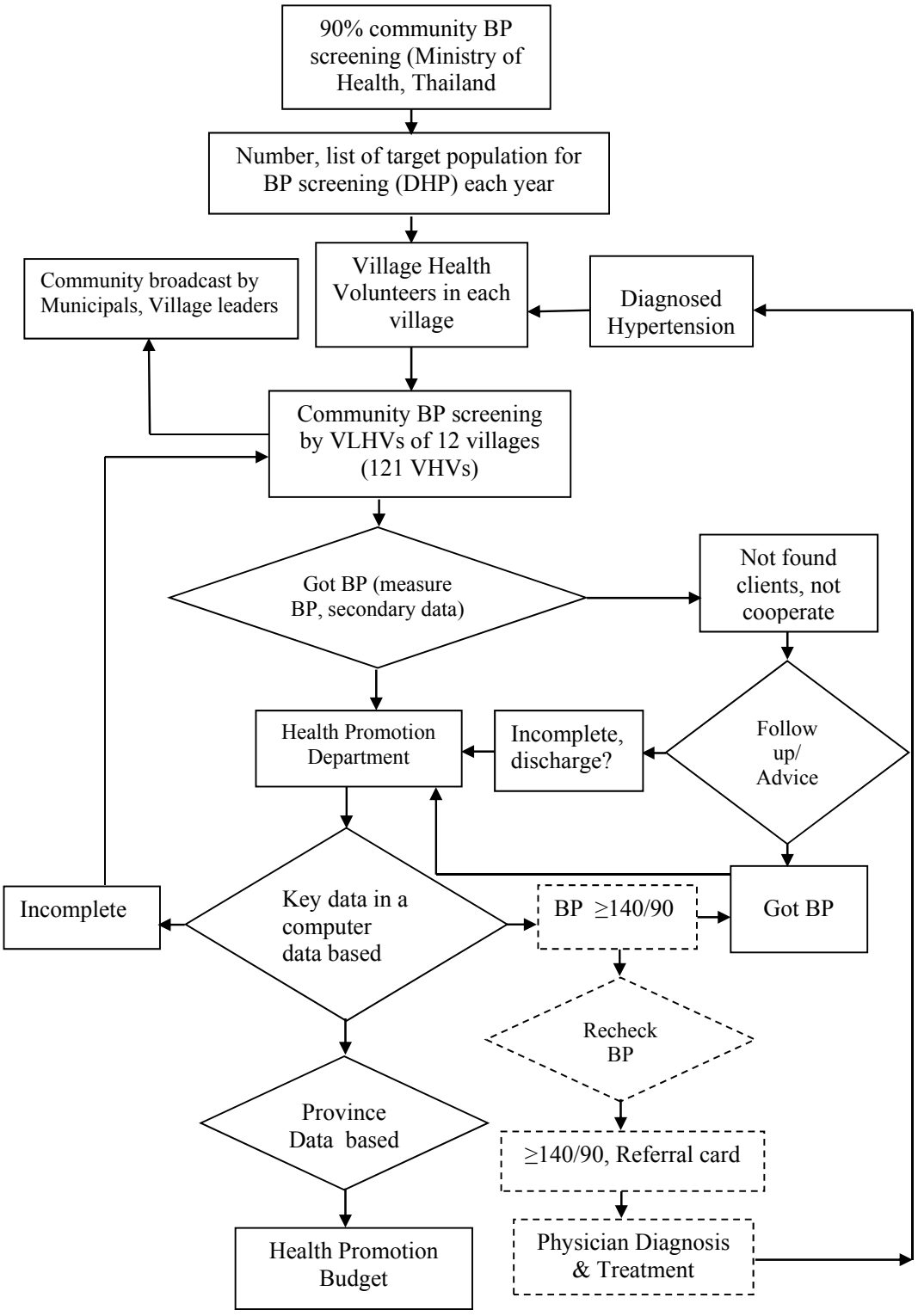

Figure 3. Process of Kokkram subdistrict Community Blood Pressure Screening with New Referral System (in dashed line).

Aim 3.2 *Program management includes community organization (strategies applied to facilitate a community to succeed in implementing health program; members, resources, organizational structure and functions).*

Plan to implement and evaluate. The group planned to evaluate the developed health program every three months. Using the same principle of community participation that was used in developing the health program, the referral and tracking system will be revised during the VHVs' monthly meetings until the program's objectives are achieved. In the sixth meeting, the researcher summarized the community stakeholders' roles and activities in caring for HTN in the community that were identified while determining the program's feasibility. These roles and activities emphasized the idea of community as a system; all health and community activities, as well as personal and family factors, add up and influence patients' medical care decisions. The group determined that the 70% successful referral rate listed in the program's objectives will arise from the cooperation between four stakeholders' groups and the patients themselves. The first phase of implementation will implement a referral and tracking system. The group will consider reviewing and implementing each activity in the program and will work on the policy level (if needed) to recruit more stakeholders in taking direct responsibility or creating activities in the program.

Program management. Based on the idea that VHVs have a direct role in screening BP in their community, the group suggested that the Kokkram subdistrict Village Health Volunteer Association (VHVA) take responsibility in implementing the developed health program. Other stakeholders will provide cooperation with the new project committee to conduct activities under their responsibility. The HDHP and the President of the VHVA will arrange a meeting among Head of Village Health

Volunteers of 12 villages to form a new committee in implementing the program; then, the new project committee can take responsibility in carrying out the program. The President of VHVA will sign on as the project's responder, and the HDHP, which approved the project's application for funding from the Subdistrict Health Fund, will work as the project collaborator and support the VHVA. The group revised the information contained in the referral card. Instead of putting the logo of the four stakeholders' organizations on the card, only Bangplama Hospital's logo was stamped in the card, in order to avoid a political conflict. With the hospital's logo, people can assume they will receive the referral care.

Discussion

The steps of building a community partnership (AIM 1) correspond with a process of building community capacity and community partnership found in other projects (Courtney, Ballard, Fauver, Gariota, & Holland, 1996; Moyer, Coristine, MacLean, & Meyer, 1999; Kretzmann & Mcknight, 1993). The first step aims to invite potential partners to work on an issue of interest. The next steps aim to develop a cooperative working relationship, especially on building trust while the partnership is in its early formation. The stakeholders' knowledge of and skills related to community organization and HTN health program development were increased throughout the research cycle. The community actively engaged in all three steps: identifying the problem, agreement on what action to take, and development of the health program. The developed health program has demonstrated the sustainable characteristics. It fit with the community working culture (balance power and collaboration) and it strengthened community capacity in a primary care team.

Each prior step in building a partnership supports the next step in an ongoing process to achieve the partnership's goal. Building a partnership is a time consuming

endeavor, and the CBPR approach requires community participation throughout the entire research process. Therefore, the first step of building the partnership in this study involved not only a successful recruitment of study participants, but also community participation in order to prepare the community to engage in the partnership. Preparing community or stakeholders to engage in a partnership is important (Kendall, Muenchberger, Sunderland, Harris, & Cowan, 2012).

In the second step, learning and understanding community structure and community systems, the researcher obtained fundamental information to work with the group from field work as well as the first meeting. The members and structure of the project committee fit with personnel resources, the collaborative working culture of this community, and community participation in country's primary care level policy. In addition, the collaboration of the project committee and a community health leader as a research team contributed to the research process. In building the partnership, the leadership process and the leaders play important roles in facilitating community engagement and collaboration (Barnes, Sullivan, and Matka, 2004 in Kendall et al.; Stewart, 2002 in Kendall et al.; Kendall et al., 2012).

Getting acquainted is very important in building a partnership with community stakeholders. Jagosh et al. (2015) illustrated that getting acquainted is a first step in a pathway of building a partnership under the context of commitment to working together, skill in resolving conflicts and pre-existing community trust in the researcher. Bonding is important to be accepted by the community. Strong relationships are important antecedents in successful building partnership (Cheadle, et al., 2008; Lasker, Weiss, and Miller, 2001). Moreover, the researcher has created a good relationship with the community in previous work, such as conducting a qualitative study and working with the DHP, Tonkram municipals and some villages

in the community projects. These benefits helped create a pre-existing community trust.

Familiarity with stakeholders and local organizations provided the opportunity for the researcher to participate and support community projects. The researcher must take a role in supporting community projects, especially when working with a personnel shortage in a primary care setting to prevent work overload of the project coordinator as well as contribute to the community. Building a partnership adds more responsibility for stakeholders along with time conflict and attention in a scholarly work (Khodyakov et al., 2011). Personnel shortage is an important issue at the primary care level in Thailand (Hughes, Leethongdee, & Osiri, 2010; Tangcharoensathien et al., 2013). Providing scholarly work to the stakeholders and help in routine jobs strengthened the community team. Within this collaboration, the communities welcome all contributions from the outsider (Kretzmann & McKnight, 1993).

In addition, the CBPR increased community capacities. The steps of building a partnership work well in strengthening stakeholders' capacity and participation throughout the research process. Community actively engaged in all three steps of CBPR action research cycle that were identified in Figure 1. Characteristics of working together as a volunteer system in this research setting are commitment to goals, shared responsibility, and the for need mutual trust. The five steps of building a community partnership can address a culture of working together of the group which made a successful partnership. Addressing on culture of collaboration and facilitation made partnership successful working (Kendall et al., 2012).

As a result, applying the five steps of building partnership in a CBPR research cycle yielded a sustainable outcome for the community.

The group and the researcher learned about the problem of detecting and controlling HTN in the community (AIM 2) through an inductive learning process. We began with a small part of caring system for HTN by analyzing the community BP screening system in order to design a referral system. This allowed us to see the big picture in terms of the caring and treatment system for HTN in the community. We learned how each component, such as community resources, other community systems, and social determinant factors influenced HTN health. The CBPR action research cycle allowed the group to reflect upon information from each meeting and from field work in order to achieve the goal of each step, particularly that of determining the feasibility of the health program. Understanding the caring system was beneficial in setting goal and creating activities for the health program, planning the implementation, and developing ideas for the next phase of the program to overcome uncontrolled hypertension in the community.

Community resources and evidence based information were used in developing the health program. Community stakeholders actively engaged in identifying the problems and developing the program. Community intervention was developed based on evidence, and fit with the need of community to show a more sustainable outcome (Israel, 2013; Minkler, 2003). Community engagement in research has a positive relation with political and community impact of mental health services projects (Khodyakov et al., 2011). The program corresponded with Thailand health policy and the ultimate goal of improving service at the primary care level found in community health system analysis in Thailand (Bureau of Policy and Strategy, 2009; Nunthaboot, 2010). For the social determinants on health (SDOH) approaching, an attempt to focus on a small group or an individual will be a good start of partnership actions to gain short term results, which in turn help in building

partnerships and mutual commitment to make further change at the community level (Jagosh et al., 2015; Schulz, Krieger, and Galea, 2002).

The hypertension control program that was developed (AIM 3) are culturally appropriate. The referral system in the developed program is similar to those in other programs. In the U.S., where there were barriers to health insurance coverage, two studies found that 65.1% of people with elevated BP completed a medical care visit in 90 days using enhanced referral and tracking services by CHWs client's education (Krieger et al., 1999) and 63% within six weeks using referral letters (Velez, Anderson, McFall, & Magruder-Habib, 1985).

Activities in the developed program correspond with activities in successful hypertension control programs. Activities that aim to make the community aware of HTN and promote health in the program can lead to a more successful F/U rate. In primary care, an appointment reminder system was associated with F/U improvement (Fahey et al., 2005; Glynn et al., 2010). Easy access to BP monitoring and counselling influenced a systolic BP reduction (Artinian et al., 2007). In developing countries, getting access to hypertension screening by medical care providers increase hypertension awareness (Maurer J. & Ramos A., 2015). Village health volunteers who provide BP screening, health education, social support, home visits, and follow up can increase access to care in ethnic minority groups (Fulwood et al., 2006). An enhanced outreach and tracking service by CHWs significantly increased F/U rate to medical care by 39.4% (Krieger et al., 1999).

Not only can the designed F/U and tracking services decrease barriers to care, but they can also increase awareness of HTN. The lack of a usual source of care is a barrier for BP screening and follow-up care (Maimaris et al., 2013; Moy, Bartman, and Weir, 1995). Awareness of HTN was significantly associated with appointment

completion (Krieger et al., 1999). Enhanced access care contributes to population health (Aday, Begley, Lairson & Balkrishnan, 2004). A referral system to improve BP monitoring and counselling was associated with a systolic BP reduction (Artinian et al., 2007).

The program management plan is likely to enable a positive result. It is suitable to how the community works together. In this community, collaboration is a major element of working for community health development and also it is one of the community's strengths. The community health team has learned a paradigm shift of caring for HTN in the community, HTN control, by themselves through community participatory process. They can use the VHVs' monthly meetings to discuss implementing the program. Partnerships that build in-depth relationships over time among community organizations increase sustainable impact (Shalowitz et al., 2009). Results of the study correspond with other CBPR and action research approaches that have found that engaging the community in research is an essential strategy for success in developing, implementing, and sustaining health programs for chronic disease (Balcazar et al., 2009; Dodani, Sullivan, Pankey, & Champagne 2011; Feathers et al. 2007; Getpreechaswas et al., 2007; Jones et al., 2013; Mendenhal et al., 2010; Oba, McCaffrey, Choonhapran, Chutug, & Rueangram, 2011).

In conclusion, elements and management of the developed health program were acceptable and appropriate for the community' culture of working together. Activities in the program support the community and help it continue to develop culturally appropriate health projects.

Recommendations

Recommendation for Implementation

Community health nurses working with other community health personnel can use community participation methods to develop and implement a program for hypertension control.

Recommendation for Further Research

Further research should be conducted to evaluate the effectiveness of the program on screening and referral services, and on hypertension control.

Conclusion

The study AIMS were met. Applying the process of building a community partnership (approaching; knowing and understanding; acquainting; supporting; and partnership working) using the CBPR approach was successful in engaging the community to agree on the problem and to develop a health program. Building the partnership will hopefully enable future efforts to implement and evaluate the Hypertension Control Program. The developed program is comprised of acceptable objectives, method and activities that account for strengthening capacities through community participation, education and training.

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Appendix A

University of Texas Health Science Center at Houston

Committee of the Protection of Human Subjects

Appendix A

University of Texas Health Science Center at Houston
Committee of the Protection of Human Subjects

UTHealth
The University of Texas
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Committee for the Protection of Human Subjects
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Chuncharaporn Sinsiri
School of Nursing
University of Texas Health Science Center at Houston

NOTICE OF APPROVAL TO BEGIN RESEARCH **June 03, 2014**

HSC-SN-14-0219 - Community-Based Participatory Research to Improve Early Detection and Treatment of Hypertension in Suburban Thailand

Number of Subjects Approved: Target: 53 **/Screen:** 53

PROVISIONS: This approval relates to the research to be conducted under the above referenced title and/or to any associated materials considered by the Committee for the Protection of Human Subjects, e.g. study documents, informed consent, etc.

APPROVED: By Expedited Review and Approval

REVIEW DATE: 04/15/2104

APPROVAL DATE: 06/03/2014

EXPIRATION DATE: 03/31/2015

CHAIRPERSON: John C. Ribble, MD John C. Ribble

Subject to any provisions noted above, you may now begin this research.

CHANGES: The principal investigator (PI) must receive approval from the CPHS before initiating any changes, including those required by the sponsor, which would affect human subjects, e.g. changes in methods or procedures, numbers or kinds of human subjects, or revisions to the informed consent document or procedures. The addition of co-investigators must also receive approval from the CPHS. **ALL PROTOCOL REVISIONS MUST BE SUBMITTED TO THE SPONSOR OF THE RESEARCH.**

INFORMED CONSENT DETERMINATION:
Signed Informed Consent Required

INFORMED CONSENT: When Informed consent is required, it must be obtained by the PI or designee(s), using the format and procedures approved by the CPHS. The PI is responsible to instruct the designee in the methods approved by the CPHS for the consent process. The individual obtaining informed consent must also sign the consent document. Please note that only copies of the stamped approved informed consent form can be used when obtaining consent.

HEALTH INSURANCE PORTABILITY and ACCOUNTABILITY ACT (HIPAA):

Exempt from HIPAA

UNANTICIPATED RISK OR HARM, OR ADVERSE DRUG REACTIONS: The PI will immediately inform the CPHS of any unanticipated problems involving risks to subjects or others, of any serious harm to subjects, and of any adverse drug reactions.

RECORDS: The PI will maintain adequate records, including signed consent and HIPAA documents if required, in a manner that ensures subject confidentiality.

Appendix B

Thammasat University

Institutional Review Board of Thammasat University Approval

Appendix B

Thammasat University

Institutional Review Board of Thammasat University Approval

Human Research Ethics Committee of Thammasat University (No.2)

Number of COA 052 /2557

Project No. 068/2557

Title of Project: Community-Based Participatory Research to Improve Early Detection and Treatment of Hypertension in Suburban Community

Principal Investigator Assistant Professor Chuncharaporn Sinsiri

Study Center Faculty of Nursing, Thammasat University, Rangsit Campus

Responsible Department -

Documents Reviewed

1. Research Protocol
2. Information Sheet
3. Consent Form

The Human Research Ethics Committee of Thammasat University (No.2) approved the protocol and appendices including exemption of parental consent in the EC meeting No 5/2014 dated May 20, 2014.

Approval period 1 year
Progress report deadline May 6, 2015.

Signed : .....
(Dr.Wimolpak Sriwai)
Secretary of the Human Research Ethics
Committee of Thammasat University (No.2)

Signed:.....
(Assoc. Prof. Dr. Thaval Rerksngarm)
Chairman of The Human Research Ethics
Committee of Thammasat University (No.2)

Appendix C

Informed Consent Protocol

Appendix C

Informed Consent Protocol

1. Researcher and Head of Department of Health Promotion Bangplama hospital go to the Municipal Organization office to meet with or a meeting room of Bangplama hospital to meet with the participants

2. Head of Department of Health Promotion introduce the researcher to the participants

3. Researcher reviews purpose of getting informed consent with the participants using the following scrip: " I am asking you to participate in a study aims to describe: 1) the process of building a partnership with a community; 2) the planning process and activities with the community to develop a sustainable health program to improve early detection and treatment of high blood pressure in the community; and 3) to describe components and management of the program. If you agree and are able to take part in this study you will be invited to participate in the meeting, and/or be interviewed, and/or be observed in your work environmental, and/or provide documents that report health statistics in the subdistrict. The potential benefits of taking part in this study are that you gain knowledge in a developing community health program. The community developed health program will benefit in improving health services for high blood pressure patients in community. This study has no risk except it will take time to participate in the meetings. Activities will be set up and scheduled based on agreement and convenience of members. You may withdraw from the study at any time. Your opinions or ideas that you have contributed will continue to be available for use in the study. If you decide to take part in this research study you will not incur any additional costs. You will not be paid for taking part in this study. Lunch will be provided in the meetings that take time longer than half of a day.

4. Researcher opens informed consent envelop and removes the Informed Consent Form and pen from a packet

5. Researcher place the Informed Consent Form and pen on table directly in front of study participants

6. Researcher explains to study participants how to complete the Informed Consent by using the following scrip: “There are a total of three pages document that explain about the study called “Community-Based Participatory Research to Improve Early Detection and Treatment of Hypertension in Suburban Thai Community”. Please read information thoroughly. If you have any questions, please ask me to clarify it. If you are agree to participate in the study, please put your printed name, sign in , put date and time on the third page of the document. When you have completed the Informed Consent, please place it in the envelope provided to you. Please use the seal attached to the back of the envelope to close the envelope. When the envelope is sealed, please turn in the envelope and your pen to me. Thank you for participate in the research project.”

7. Researcher asks study participants whether he/she has any questions

8. Researcher answer study participant’s questions

9. Researcher retrieves all envelopes contain the Informed Consent, and pen from the participants

10. Researcher and the Head of Department of Health Promotion Bangplama hospital express warm admiration the participants before leaving

11. Researcher put her printed name, date and time, and sign

12. Researcher check completeness of informed consent and keep them in a lock locker

Appendix D

Informed Consent Form

Appendix D
Informed Consent Form

INFORMED CONSENT FORM TO TAKE PART IN RESEARCH
Community-Based Participatory Research to Improve Early Detection and Treatment of Hypertension in Suburban Thailand
HSC-SN-14-0219

Dear Director of Bangplama Hospital or physician;Nurses; President of Kokkram 's Village Health Volunteer Association;Village Health Volunteers;Community Leaders;Directors of Municipal Organization; Heads of Division of Health and Environment; and members of Municipal Committees,

You are invited to take part in a research project called, Community-Based Participatory Research to Improve Early Detection and Treatment of Hypertension in Suburban Thai Community, conducted by Chuncharaporn Sinsiri, RN., M.S.N., PhD student of the University of Texas Health Science Center at Houston, the United States. For this research project, she will be called the Principal Investigator or PI.

Your decision to take part is voluntary. You may refuse to take part or choose to stop taking part at any time. You may refuse to answer any questions asked or written on any forms or in any discussions or meetings.

This research project has been reviewed by the Committee for the Protection of Human Subjects (CPHS) of the University of Texas Health Science Center at Houston as HSC-SN-14-0219, and the Institutional Review Board of Thammasat University, Thailand as COA 052/2557

The purpose of this research study is to describe: 1) the process of building a partnership with a community; 2) the planning process and activities with the community to develop a sustainable health program to improve early detection and treatment of high blood pressure in the community; and 3) to describe components and management of the program.

This is a local study. The study will enroll a total of 41 to 53persons from KokkramSubdistrict. These persons will represent village leaders, municipal members, village health volunteers, and health personnel. A smaller Community Advisory Group

(CAG) will be formed by representatives from the 41 to 53 members. The CAG will collaborate with the PI in conducting the project.

If you agree and are able to take part in this study you will be invited to participate in the meeting, and/or be interviewed, and/or be observed in your work environmental, and/or provide documents that report health statistics in the subdistrict following activities during a six month period of time:

- One three-hour orientation meeting held at the beginning of the project
- Two to three meetings during a three to four month period to analyze the problem of untreated high blood pressure in Kokkram Subdistrict and to plan a health program of intervention
- Be interviewed, if needed, by the Principle Investigator or other members of the CAG or the group
- Be observed in your work environmental by the PI or members of the CAG
- Provide documents that reporthealth statistics in the subdistrict such as numbers of people who received screening services and/or referrals to health care
- One three-hour meeting at the end of the project to summarize progress during about six months in implementing the project and to plan the next steps in the process

The meetings, small group discussions or interviews will be recorded by tape recording. Transcribed recording will be stored on encrypted discs. All tapes, discs and written materials will be stored safely in a locked locker that only the PI and the CAG can access in order to review data in data analysis process. The tape recordings will be kept until all the data has been analyzed. The tapes and the discs will be shredded after the data has been analyzed.

You may or may not receive any benefit from taking part in this study. The possible benefits of taking part in this study are that you may gain knowledge in developing a community health program. The community developed health program will be benefit in improving health services for high blood pressure patients in the community.

This study has no known risk except it will take time to participate in the meetings. Activities will be set up and scheduled based on agreement and convenience of the members. There is always the risk of possible breach of confidentiality.

You have the alternative to choose to not take part in this study. You may withdraw from the study at any time. Your opinions or ideas that you have contributed will continue to be available for use in the study.

If you decide to take part in this research study you will not incur any additional costs.You will not be paid for taking part in this study. Lunch will be provided in the meetings that take time longer than half of a day.

You will not be personally identified in any reports or publications that may result from this study. Any of your personal information gathered during this study will remain confidential to every extent of the law. A special name (code) will be used to identify you in the study.

If you have questions at any time about this study, please feel free to call ChuncharapornSinsiri, the PI, at 24 hour phone number 080-334-7718 or email chuncharaporn.sinsiri@uth.tmc.eduor send a letter to the following address

Chuncharaporn Sinsiri

37/137 Moo. 4., Klong 3 Subdistrict, Klongluang District

Pathumthani Province 12121

orcall UbolwannaReunthongdee, the study coordinator , at 24 hour phone number 081-684-3267 or 035- 400578 connect 142 or send a letter to the following address

UbolwannaReunthongdee

Department of Health Promotion, Bangplama hospital

KokkramSubdistrict, Bangplams District, Suphanburi Province 72150

They will be glad to answer your questions. Youcan discuss problems, voice concerns, obtain information, and offer input in addition to asking questions about the research.

Sign below only if you understand the information given to you about the research and choose to take part. Make sure that any questions have been answered and that you understand the study. If you have any questions or concerns about your rights as a research subject, callthe Institutional Review Board of Thammasat Universityatphone number 0-2564-4440-79 connect 1816or emailjum_benjawan@yahoo.com.

You may also call the Committee if you wish to discuss problems, concerns, and questions; obtain information about the research; and offer input about current or past participation in a research study. If you decide to take part in this research study, a copy of this signed consent form will be given to you.

_____

Printed Name of Subject

_____ _____ _____

Signature of Subject Date Time

_Chuncharaporn Sinsiri_____

Printed Name of Person Obtaining Informed Consent

_____ _____ _____

Signature of Person Obtaining Informed Consent Date Time

CPHS STATEMENT:

This study (HSC-SN-14-0219) has been reviewed by the Committee for the Protection of Human Subjects (CPHS) of the University of Texas Health Science Center at Houston and the Institutional Review Board of Thammasat University.For any questions about research subject's rights, or to report a research-related injury, call Chair of Human Right Committee, Thammasat University at phone number 0-2564-4440-79 connect 1816Bangplama hospital at phone number 035- 400578 connect 142

Appendix E

Data Collection Tables

Appendix E
Data Collection Tables

Table 2. Specific Aim 1: Describe the process of building a community partnership to develop a community health program to improve early detection and treatment of hypertension: Objectives, research questions, data to answer the questions and researcher's activities to achieve Specific Aim 1

Objectives	Research questions	Data to answer the questions	Researcher's activities
1. Describe process and activities of approaching community	1) How does the researcher enter/reach the community to invite all stakeholders to work together?	1) Documentation (field notes) of the researcher's activities, steps and resources used to contact Head of the Department of Health Promotion, key community representatives and other stakeholders and their stakeholders' responses	1) Contact the Heads of the Department of Health Promotion (DHP), Primary Care Unit (PCU) and Out Patient Department (OPD) to discuss the research project and the CBPR approach 2) Work collaboratively with Head of the Department of Health Promotion to recruit all stakeholders in the study 3) Meet 4 chief executive organizations(CEOs): Director of Bangplama hospital or physician representative, Director of Kokkram Municipal, Director of Tonkram Municipal, and President of Bangplama's Village Health Volunteer Association to introduce herself and the project with these key stakeholders, ask for their collaboration and invite them to group meetings to provide informed consent
	2) What are the indicators that the researcher has gained acceptance to conduct the project from the community?	1) Documentation (field notes, meeting minutes) that stakeholders meet with the researcher, and attend the meetings (meeting #1 in Table 1) to get informed consent 2) Number of potential participants decided to participate in the project and provide informed consent 3) As the organizational representatives, 4 CEOs agree to organize the team and support the study 4) Documentation (field notes, list of stakeholders attending 1st meeting) that stakeholders attend the 1st meeting in Table 1 to organize the team and identify problem	1) Arrange 4 group meetings to get informed consent to recruit stakeholders in the study 2) Invite all stakeholders to attend 1st meeting to organize the team and identify problem 3) After getting informed consent, conduct field work by visiting and/or observing the village health volunteers (VHVs), community leaders (CLs) in their community to learn about their role's and responsibility in developing community health program and encourage them to attend the 1st meeting and prepare necessary information to share in the meeting 4) Work with Head of the Department of Health Promotion to arrange the 1st meeting and provide information about CBPR approach

Objectives	Questions	Data to answer the questions	Researcher's activities
2. Describe process and activities of knowing and understanding	1.1) What do the community representatives think of the possibility of collaboration and support in conducting research applying CBPR approach in this setting? Who/Which organizations were recruited? What are the criteria to select the CAG members, and roles of the CAG? When will the stakeholders ready to form the CAG? 1.2) What are the activities and how long does it take to organize the Community Advisory Group (CAG)?	1) Documentation (field notes) of the researcher's activities that stakeholders openly participate in discussions; share their opinions about CBPR; make suggestions about implementing CBPR; and describe how they will participate in the process 2) The documentation of the researcher's activities and time in forming the CAG with all stakeholders 3) List of the members by title and position of the CAG, and the CAG's role	1) Discuss and develop a timeline of the project with the Head of DHP who has been accepted as the leader of Kokkram subdistrict primary health care team, propose and revise with all stakeholders in the 1st meeting 2) In the 1st meeting; present the CBPR principles and get agreement among all stakeholders of how it can be applied in this project and encourage stakeholders to think about: forming the CAG to take responsibility in carry out the project; the CAG's role 3) In the activities #1) of objective 1, ask the Head of the three Departments and three Directors who/how to have a group how/who will take responsibility in caring for HTN or collaborative work with the researcher through the project, then apply these suggestion with the suggestion of the key stakeholders in the meeting
	2) How do the researcher and all stakeholders learn to know and understand each other?	1) The documentation of the researcher's activities and time in understanding stakeholders' organizational structure and functions, their strength and weakness, their priority of interest 2) Document (field notes) of the researcher's activities that the stakeholders meet with the researcher, attend the 1st meetings in Table 1. openly participate in discussions, share their opinions, and make suggestions about community resources for caring of HTN in community, timetable to implement the CBPR project; identified outside and existing community resources in the resources file	1) Review documents and conduct field work to understand the real situation about health services provide for HTN in community by the VHVs and health personnel 2) Present community's strength and resources in caring for hypertensive patients in the community in the 1st meeting to hear from stakeholders' viewpoint 3) Summarize the final information to present in the meeting among all stakeholders in the next step

Objectives	Questions	Data to answer the questions	Researcher's activities
3. Describe process and activities of acquainting	1) What are the role and responsibilities of CAG members?	1) The documentation (field notes, meeting minutes) of the researcher that stakeholders identify the CAG members' role and responsibilities, structure of the CAG, and management of the CAG (team leader, administration, activities, responsibilities, and communication: channel and methods that the CAG provide or allow to be contacted	1) Arrange 2nd meeting and/or the CAG meeting to figure out how to organize the team (the CAG): team leader, structure management, responsibilities and communication/ the CAG
	2) What are the activities that the researcher, the CAG and other stakeholders do to become familiar with each other	1) the research timetable: activities list, timeline, and responsible persons or groups to the jobs; document of the researcher's activities, method, time in participating with formal or informal activities with the CAG; and topic of the conversation 2) The researcher's documentation of the meeting: suggestion; atmosphere; openly and widely discussion; schedule and management for the meeting to: 1) identify problem about early detection in step 1 of research cycle in Figure 1 and treatment of HTN and 2) get community's to agreement on the problem in step 2	1) Plan research activities with the CAG according to the research timetable; collaborative work with the DHP and the CAG to develop a community resource file for caring of HTN; distribute HTN resource file to CAG; open for formal and informal contact with the CAG; open the discussion occasionally; have some small talk with the CAG before and after meeting / the CAG, some of the nurses and staff of DHP 2) Collaborative work with the CAG, DHP and 24-36 key representative of VHVs in scheduling the meeting; encourage them to provide their experiences, special capacities, interest; and community resources
	3) How do the stakeholders understand the problem of uncontrolled hypertension?	1) The documentation (field notes) of the researcher about health status, health problem of HTN in community, information about control HTN in the community 2) Issues about caring for HTN discussed in the key persons meeting 3) The meeting's agreement on the topic: using CBPR approach to improve early detection and treatment of hypertension in community;	1) In the meeting #3 of objective 1, ask stakeholders' interest about collaborative working to improve early detection and treatment of hypertension in community for this CBPR project 2) Conduct group interview among nurses and staff of DHP, OPD, and PCU about: their experiences in working with the two Municipals, the VHVs Association, the VHVs, CLs and the Municipals; how to plan and organize the CAG for this CBPR project; who will be invited to participate in the meeting among stakeholders to analyze data and get community agreement on the problem

Objectives	Questions	Data to answer the questions	Researcher's activities
4. Describe process and activities of supporting	1) What is the information and activities that the researcher and other CAG's members provide to each other or provide to VHVs in each step of CBPR research cycle?	4) A planning of the 2nd meeting in Table 1 among the CAG and VHVs to get agreement on the problem 5) The researcher's conclusion from the group interview: methods and strategies to work with community organization; how to organize the CAG in carry out the project	1) Participate in providing health services for HTN in community with the VHVs, the DHP, participate in community development program and share experiences, give advice if needed, give suggestion for VHVs in their routine jobs and site visit in community to cheer them up if needed 2) Distribute community resources file for caring of HTN in community to the CLs, the leader of VHVs in each village who participate in the meeting#3 of objective 1 3) In the meeting to get community agreement on the problem: 2nd meeting in Table 1, the researcher provide information about the previous research for HTN in this community; Head of DHP and the VHVs will provide information about health problems, the outcome of blood pressure screening in the community 4) In the meeting to develop health program: 3rd and 4th meeting in Table 1, the researcher provide information about components of health program and how to develop health program
		1) Documentation of the researcher's activities, information share in the meeting; type and frequency of activities that the researcher participate in providing health services for hypertensive patients in community or other community projects	
	2) How well stakeholders and the CAG are sharing available resources?	1) Documentation of resources pooled and shares from the CAG, each stakeholder, organization 2) Documentation of the personal resources, materials, budget used in the CBPR project; time spent in each step of the project; outcome of the project	1) Find outside community resources that benefit for VHVs, the municipal to care for HTN in community 2) Promote the using of existing community resources in any activities appropriately
	3) How does each stakeholder support and/or seek help from each other?	1) Documentation (field notes, meeting minutes, summary of group discussions) of how each stakeholder share resources and help each other	1) Promote cooperative working among stakeholders: outline the way for communication; training of the necessary skills to increase stakeholders' capacities (if needed); provide education for stakeholders about the role of community organization in HTN controlled, team management: members, organizational structure and function

Objectives	Questions	Data to answer the questions	Researcher's activities
5. Describe process and activities of a working partnership	1) How does the researcher, the CAG, and stakeholders get involved, collaborate, share resources, make decisions, share responsibility, share benefit with each other in CBPR project?	1) Documentation of the researcher, the CAG, the VHV and other stakeholders' activities, role, responsibility, stakeholders in developing health program, plan for implementation	1) The researcher take responsibility in the job being assigned or invited, take part in: create activities, policy making, implement health project, share vision, experiences
		2) Documentation (field notes) of how stakeholders organize the team; members; organizational structure and functions	2) Collaborate with the CAG, the DHP and the VHVs in arranging the meetings, activities according to the research project, and record meeting minutes.
	2) What are the activities that they do to build a partnership?	1) Documentation of how the researcher participate in the partnership (share responsibility, resources, benefit in the activities; number of individuals, groups, organizations participate in the meeting, group discussions; the mutual agreement of the CAG, time devoting to the project, list of attendees, project progress, discussion topic and issues)	
	1) How do the stakeholders know they have a partnership?		
6. Describe the characteristic **of partnership**		1) Documentation (field notes, meeting minutes, transcripts of small group discussions or interviews) of the researcher's that indicate partners can identify new and/or creative ways to solve problem, include the views and priorities of all partners	1) Conduct group discussion: the CAG, two group of VHVs about the process the group have been used to work together and its outcomes; how to know they are the partners
	2) What are the evidences of how partnership has been formed or really work?	2) The CAG has been successfully formed; all stakeholders work together with characteristics of partnership in developing health program; can develop a sustainable health program to improve detection and treatment of hypertension	2) Arrange a community forum or meeting to return data (health program that was develop) to all stakeholders to get feedback and open the discussion about building partnership in this project
	3) How does each step of building partnership relate to each other?	3) Factors that stakeholders set or use as the criteria to move to next step in research project	

Objectives	Questions	Data to answer the questions	Researcher's activities
6. Describe the characteristic **of partnership** (cont.)	3) How does each step of building partnership relate to each other?; How to know partners could go to the next phase?; How will the partners know they are ready to design the program? (cont.)	4) Evidence of achieving outcome of each step	
	5) What activities help in building partnership with community to develop health program?	5) Techniques of building partnership used in each step of project	

Table 3. Specific Aim 2: Describe the process and activities with the community to agree on the problem and to develop a sustainable health program to improve early detection and treatment of hypertension: Objectives, research questions, data to answer the questions, and researcher's activities to achieve Specific Aim 2.

Objectives	Research questions	Data to answer the questions	Researcher's activities
1. Get agreement on the problem	1) What is the evidence of the identified problem? 2) How do the stakeholders identify the problem at the 2st meeting? 3. How do the stakeholders describe the causes of the problem?	1) Documentation (the meeting summary, minutes of meetings) of the issues of interest, agreement on the problem in the 2nd meeting, and information needed to prepare for the next meeting to develop health program 2) List of attendees in the 2nd meeting in Table 1 3) Documentation (field notes) that summarized current health service or system of caring for HTN in community and its outcome from reviewing documents, participating observation prepare to present in the 2nd meeting	1) Conduct field work to assess the current system and its effectiveness: observe hypertension (HTN) clinic at the OPD, blood pressure (BP) screening and referral by VHVs in community 2) Review documents about follow up (F/U) and controlled of BP from hospital report and record, VHVs workbook 3) Keep contact with the CAG to reflect information 4) Collaborative work with Head of DHP to summarize the current health service to detect and treat HTN in community and relevant community resources 5) Arrange the 2nd meeting in Table 1 to know which issue relevant to detection and treatment of HTN will be selected to solve 6) Provide information from previous researches about HTN done in the community 7) Work with the Head of DHP and the VHVs to provide information about health problem of hypertensive patient in community; BP screening in community 8) Summarize current health services for HTN in community with stakeholders 9) Use small group discussion, mind mapping technique to analyze the problem 10) Set priority of the problem and ask the stakeholder's top interested issues to improve early detection and treatment of hypertension in community such a screening and referral of newly detected high blood pressure 11) Prepare the next meeting to develop health program

Table 4. Specific Aim 3: Describe elements of a culturally appropriate health program including components and management of the program: Objectives, research questions, data to answer the questions, and researcher's activities to achieve Specific Aim 3.

Objectives	Research questions	Data to answer the questions	Researcher's activities
1.Describe component of health program to improve early detection and treatment of hypertension; raise the issue about sustaining health program	1) Do the stakeholders use information provide in the meeting regarding sustainable health program to develop such a program?	1) Documentation (meeting minutes, summary of group discussion) that show stakeholders include sustainable components in a developed health program. Such components may include screening, referral to medical care, follow-up and tracking, education and support, and evaluation	1) Collaborative work with the Head of DHP, PCU, OPD, and the CAG to summarize and analyze: 1.1) process and outcomes of the previous hypertensive health programs in community: screening and referral system, continuing of care 1.2) resources: personnel resources and funding review documents to evaluate community resources and policies: the Municipal five Years Strategic Plan, the Village Development Plan, the hospital plan and community health project
	2) Do stakeholders develop a health program that fits with a community context?	2) Documentation (meeting minutes) of the detail of the health program to include target population, objectives or purposes, activities, who or organization take responsibility to the program, personnel, material and resources use in the program	2) Arrange the 3rd and 4th meeting in Table 1 to develop health program: the researcher, the Head of DHP and the CAG provide information about the evaluation of previous health project for HTN in community and the available resources; encourage stakeholders to share their experiences and viewpoints; the researcher provide or educate and share information about health program development specifically for HTN in community: emphasizing on cultural appropriate and sustainability of the program; encourage stakeholders to share experiences in providing care for hypertensive patients in community
	3) Do stakeholders develop an organizational structure for the health program?	3) Documentation (meeting minutes) that the health program has the community organization: organizational structure; policy and job descriptions for how all stakeholders will carry out the policy ; and the policy and job description for the village health volunteers	3) Work with all stakeholders summarize the process to develop health program: relevant information, knowledge, skills, timeline, evaluate of the health program; the researcher, the HPD, the CAG support information, knowledge, training that the stakeholders need or need to develop their capacities in order to develop health program

Objectives	Questions	Data to answer the questions	Researcher's activities
1.Describe component of health program to improve early detection and treatment of hypertension; raise the issue about sustaining health program (cont.)	4) Do stakeholders plan the appropriate role and function to carry out the health program?; How do the stakeholders plan to organize and manage the health program?; What resources will be used?; How to evaluate the program?	4) Documentation (meeting minutes) that the health program has included collaboration among stakeholders, plan to implement and evaluation of the health program, integration of health program to organizational plan and funding usage	4) Work as a partner with stakeholders to develop health program: set component of the program (objectives, activities and implementation plan); management of the program; and community organization (team leader, members, organizational structure and function, and resources: materials, budget); and evaluation plan
	5) How do the stakeholders think about a health Program that was developed in this project?	1) Feedback from community forum 2) Documentation (meeting minutes) that show the components of health program fit with community context	1) Arrange a 5th meeting in Table 1 or a community forum to return data (health program develop by stakeholders) to community

Appendix F

Minutes of Meeting

Appendix F

Minutes of Meeting

Meeting date and time: ……

Place: ……

Participants: ……..

...…...……

Purposes of meeting: ……

...…...……

...…...……

...…...……

Agenda items	Discussion issues	Recommendations/ Decisions
1. Issue……	……..	……
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2. Issue ……	……..	……
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3. Issue……	……..	……
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4. Issue ……	……..	……
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Appendix G

Example of the Excel Tables

Appendix G

Example of the Excel Tables

Specific Aim 1: Describe the process of building a community partnership to develop a community health program to improve early detection and treatment of hypertension				
:Research questions, Data to answer the questions, activities, outcomes to achieve Specific Aim 1				
Table 1A: Objective 1: Describe process and activities of **approaching community**				
Objectives	**Research questions**	**Data to answer the questions**	**Activities**	**Outcomes/data needed to answer research questions**
1. Describe process and activities of approaching community	1) How does the researcher enter/reach the community to invite all stakeholders to work together?	1) Documentation (field notes) of the researcher's activities, steps and resources used to contact Head of the Department of Health Promotion, key community representatives and other stakeholders and the stakeholders' responses	Made a phone call the HDHP when getting Thai IRB approval on 6th May 2014 and made appointment to meet with her at her office. Made copies of research proposal approved by the Thai IRB to give to the HDHP. Met with her at her offfice on the appoinment date (June 4, 2014); presented proposal,Thai IRB Informed Consent forms, and group of research participants shortly. Asked her openion about the possibility of the study, and recruiment plan. Asked her plan to figure out and invite potential participants. During that period of time (June 4-8th), she and other three staffs in the DHP had to attend several conferences in nearby provinces and Bangkok. The researcher changed a plan to follow her to attend the meeting. In a car while the researcher followed her to attend a 3 day workshop, she discussed with another nurse who work like her secretary about setting criteria to select the village health volunteers (VHVs), village leaders (VLs), and Municipal members. Her secretary listed all potential participants' names and planned to call them and invite them to attend the informed consent meeting. Observed how the Head of the Department of Health Promotion (HDHP) and hersecretary: 1) organized and planned to take part in conducing the project; 2) contacted the potential participants; 2) prepared and an Informed Consent meeting. Discussed with them and stood by to clarified any questions or participartory process in creating research activities. Met with 4 chief executive organizations(CEOs): Director of Bangplama hospital , Director of Kokkram Municipal, Director of Tonkram Municipal, and President of Bangplama's Village Health Volunteer Association to introduce herself and the project with these key stakeholders, ask for their collaboration and invite them to attend group meetings to provide informed consent.	The researcher was welcome to conduct the study;got support from the CEOs, VL, DHP. Research changed her plans by following the HDHP and staff in the DHP to attend the meeting. Then, we could set an approate time to discus about implementing the project after the conference. Researcher learned that the HDHP and staff of the DHP had to participate communities, attend the many conferences and work outside the hospital. Their office can be considered as a "Mobile Office".

Specific Aim 1: Describe the process of building a community partnership to develop a community health program to improve early detection and treatment of hypertension

:Research questions, Data to answer the questions, activities, outcomes to achieve Specific Aim 1

Table 1A: Objective 1: Describe process and activities of **approaching community (cont.)**

Objectives	**Research questions**	**Data to answer the questions**	**Activities**	**Outcomes/data needed to answer research questions**
1. Describe process and activities of approaching community	1) How does the researcher enter/reach the community to invite all stakeholders to work together?	1) Documentation (field notes) of the researcher's activities, steps and resources used to contact Head of the Department of Health Promotion, key community representatives and other stakeholders and the stakeholders' responses	Presented in the research field: 1) observed the working environment of the DHP and how they contacted and worked with other departments and organizations, 2) asked for statistical information of HTN in the subdistrict and any projects of caring and treatment for HTN in the community. Opened mind to learn and practiced leadership and facilitator skills from HDHP and other staffs of the HPD. Shared concepts and experiences with experts or others who were experiences in collaborative works with community organization such as a Planning Consultant or Strategic Planner. Participatory observation a monthly meeting of the VHVs, relevant community and hospital's health projects; met with the CEOs, VLs.	Had some information and understood about community resources, HTN health situations, workloads of the DHP and the VHVs; learn about culture in working with local organizations and groups in the community: cultural and political issues; known formal and informal key informants relevant to the study ;gain acceptance and no conflict in working in the research field
			After entered the community on June 3rd until arranged each Informed Consent meeting (June 10, 12, 17.), discussed the participatory issues of the study: purposes of the study, and CBPR. Provided time for the HDHP as a research coordinator and staffs in the DHP, and the researcher to learn about research's roles of each others in the study. Provided time for the HDHP as a research coordinator and staff in the DHP, and the researcher to learn about research's roles of each others in the study. Provided opportunity and time to the HDHP and her secretary to set criteria and methods in selecting potential participants. Made decision based on community situation and time. Accepted and discussed the criteria using in identifying potential participants by the HDHP and her secretary. Discussed how the HDHP and her secretary invited them to attend the meeting to get informed consent.	The HDHP understoodd the objectives , process of the study. She agreed with the recruitment methods and worked with her secretary to invite all potential participants. She planned the meetings to recrute the study participants with other staffs in her department, and assigned staffs to book a meeting room, copy the documents, and prepare coffee break. The dates of 4 group meetings to get informed consent were set based on the available time of relevant persons. Researcher got really understanding and gained a new mindset to work in the fields: insider status of the study for each stakeholder; jobs; set acceptable objectives; expectation and activities; accepted community restrictions ; flexible; set research activities that collaborate with community calendar.

Specific Aim 1: Describe the process of building a community partnership to develop a community health program to improve early detection and treatment of hypertension

:Research questions, Data to answer the questions, activities, outcomes to achieve Specific Aim 1

Table 1A: Objective 1: Describe process and activities of **approaching community (cont.)**

Objectives	Research questions	Data to answer the questions	Activities	Outcomes/data needed to answer research questions
1. Describe process and activities of approaching community	2) What are the indicators that the researcher has gained acceptance to conduct the project from the community?	1) Documentation (field notes, meeting minutes) that stakeholders meet with the researcher, and attend the meetings (meeting #1 in Table 1) to get informed consent; 2) Number of potential participants decided to participate in the project and provide informed consent; 3) As the organizational representatives, 4 CEOs agree to organize the team and support the study; 4) Documentation (field notes, list of stakeholders attending 1st meeting) that stakeholders attend the 1st meeting in Table 1 to organize the team and identify problem	Discussed with the Head of DHP: 1) the solution of criteria and methods in selecting potential participants; 2) how the HDHP and the research reached, entered the research setting. Researcher; 1) learned about the hypertension screening project and computer program; 2) available to work and met with the CEOs or others head of Department to invite them in attend their group to get inform consent. Arranged 4 group meetings to get informed consent to recruit stakeholders in the study. In the Informed Consent meetings, invited all stakeholders to attend the 1st meeting to organize the team and identify problem. Worked withHDHP to arrange the 1st meeting and provide information about CBPR approach. After getting informed consents, discussed with the HDHP and staffs of the DHP to conduct field work by visiting and/or observing the village health volunteers (VHVs), one village leader in their community to learn about their role's and responsibility in developing community health program and encourage them to attend the 1st meeting and prepare necessary information to share in the meeting. The HDHP suggested to prospone activities in a community and could do those fieldworks after informing the participants in the first meeting.	The potential participants were identified, invited to attend the meeting to get informed consent by the collaborative work among the HDHP, her secretary, and the researcher. Researcher gained some information about community BP and diabetes screening project. Research participants were successful recruited and the 1st meeting to identify problem was set. Research participants comprised of 41 participants which were recruited from four stakeholders' groups: 1) community representatives, 2) Chief Executives Organizations (CEOs), 3) health personnel, and 4) Municipal organizations. The community representatives were comprised of 24 village health volunteers (VHVs) and three Village Leaders (VLs). Thirty-six VHVs were invited to attend the meeting to provide informed consent. Twenty-seven of them (75%) attended the meeting and 22 (84.6%) provided informed consent to participate in the study. Two VHVs couldn't attend the meeting because they had a volunteer activity in their villages but they were willing to participate in the study. They provided consent at a Village Health Volunteer monthly meeting at the Bang plama hospital. Four CEOs welcomed the researchers to conduct the project and provided support to implement the project. Due to a timing conflict, two CEOs provided informed consent separate from their group members.

Specific Aim 1: Describe the process of building a community partnership to develop a community health program to improve early detection and treatment of hypertension

:Research questions, Data to answer the questions, activities, outcomes to achieve Specific Aim 1

Table 1A: Objective 1: Describe process and activities of **approaching community (cont.)**

Objectives	**Research questions**	**Data to answer the questions**	**Activities**	**Outcomes/data needed to answer research questions**
1. Describe process and activities of approaching community	2) What are the indicators that the researcher has gained acceptance to conduct the project from the community?	1) Documentation (field notes, meeting minutes) that stakeholders meet with the researcher, and attend the meetings (meeting #1 in Table 1) to get informed consent; 2) Number of potential participants decided to participate in the project and provide informed consent; 3) As the organizational representatives, 4 CEOs agree to organize the team and support the study; 4) Documentation (field notes, list of stakeholders attending 1st meeting) that stakeholders attend the 1st meeting in Table 1 to organize the team and identify problem	Met with 4 CEOs. The director of BPH: the secretary of the DHP called and met his secretary to make an appoinment); on that day, the researcher had to wait for his available time since he had an OPD clinic untill noon and other urgent managing issue; met with him at his office around 3 p.m. when he had short available time to meet. Directors of Kokkram Municipal: 1) HDHP assign her secretary in addition of herself to help in collaborating with the two Head of Division of Health and Environment; 2) secretary nurse made a phone call to set a meeting with Director of each Municipal at their offices. Met CEOs, asked for their collaboration in implementation, got their opinion how the project fit with their organizational agendas. Discussed with the HDHP about the hospital plan and met with VHVs in their monthly meeting.	Collaborative work and share decision making were made to create activities: The Head of DHP worked as a research coordinator with the researcher to create research activities. Initial community need assessments as well as the feasibility to conduct a community developed health program to increase hypertension control were obtained through discussions with key stakeholders. Resources from Bang Plama hospital were used as in-kind support along with meeting rooms, cars, and monies for the coffee break and materials. Thirty participants out of 41(73.17%) attended the 1st meeting. They were from all stakeholders' group, 22 VHVs, 3 VLs, 1 CEO, 2 nurses form Bang Plama hospital, and 2 Heads of Division of Health and Environment. The study activities were integrated with a development of HTN and DM screening projects, quality assurance of the hospital; 2) research activities: observation,4 groups of informed consent meeting were set according to a community calendar; 3) Participants attended the 1st meeting to identify problem

CURRICULUM VITAE

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EDUCATION:

University of Texas Health Science Center at Houston, Texas	2015	PhD	Nursing
Mahidol University, Bangkok, Thailand	2001	MSN	Community Health Nursing
Khon Kaen University Khon Kaen, Thailand	1995	BSN	Nursing

PROFESSIONAL POSITIONS:

Department of Community Health Nursing,
Faculty of Nursing, Thammasat University, Thailand
Assistant Professor 2006-present

Department of Community Health Nursing,
Faculty of Nursing, Thammasat University, Thailand
Lecturer 2001

Intensive Care Unit (ICU), Bumrungrat Hospital, Bangkok, Thailand
Register Nurse (RN) 1995-1999

PROFESSIONAL MEMBERSHIPS:

Thailand Nursing Council Member 1995-present

The Nurses' Association of Thailand Member 2013- present

Sigma Theta Tau International Zeta Pi Chapter Member 2015

Curriculum Vitae
CHUNCHARAPORN SINSIRI
Page 2

PUBLICATIONS:

Reunthongdee, U. & **Sinsiri, C**. (2009). The development of instrument to protect human right in a pap smear procedure: wonderful trouser. *Thai Nursing Time, 1*(5),15-16.

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Curriculum Vitae
CHUNCHARAPORN SINSIRI
Page 3

PUBLICATIONS (Cont'd.):

Globalization, Development, and Human Security in the Asia-Pacific Region, Chonburi, Thailand.

Charoenyooth, C., Oojarat, P., Toasakulkaew, T., Youngpradit, A., Jewpatakul, Y., Petchruang, N., **…**Sangwandech, D. (2006). *The development of community health promotion model by strengthening cooperative network.* Bangkok, Thailand: Mahidol University.

AWARDS AND RECOGNITION:

Scholarships

The Thai Strengthening Scholarships (ทุนไทยเข้มแข็ง [TKK 2555], ทุนพัฒนาอาจารย์โครงการผลิตและพัฒนาศักยภาพแพทย์และบุคลากรทางด้านสาธารณสุข), The Loyal Thai Government for a PhD in Nursing — 2011-2015

The Mary Klein scholarship, School of Nursing, The University of Texas Health Science Center at Houston ($1,500) — 2015

The Local Graduates Scholarships, National Science and Technology Development Agency; Thammasat University for a Master degree — 1998- 2001

The Short Course Training/Visiting Scholarships in Foreign Country, Thammasat University, Thailand — May 29- July 12, 2009

Curriculum Vitae
CHUNCHARAPORN SINSIRI
Page 4

AWARDS AND RECOGNITION (Cont'd.):

Research Awards

2010	Award of Admiring for having Petty Patent on The Research Day 2010, Thammasat University
2010	Reunthongdee, U. and Sinsiri, C. Popular vote on a poster presentation of the Development of Instrument to Protect Human Right in a Pap smear Procedure "Wonderful Trouser" in the Seventh Health Promoting Hospital Annual National Conference, June 30- July 2, 2010
2008	Young Researcher Award, Faculty of Nursing, Thammasat University The Research Day 2008, Thammasat University
2008	Reunthongdee, U. and Sinsiri, C. Routine to Research (R2R) Award in the Secondary Care Level, Thai Health Research Institute (THRI) on the topic of the Development of Instrument to Protect Human Right in a Pap smear Procedure, Wonderful Trouser