PARTICIPATION OF VILLAGE HEALTH VOLUNTEERS IN NUTRITIONAL ACTIVITIES PROGRAM, MUANG DISTRICT, SAKEO PROVINCE, THAILAND

ROUMANY YENN

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PARTICIPATION OF VILLAGE HEALTH VOLUNTEERS IN NUTRITIONAL ACTIVITIES PROGRAM, MUANG DISTRICT, SAKEO PROVINCE, THAILAND

.....
Mr. Roumany Yenn
Candidate

.....
Lect. Nate Hongkrailert
Ph.D.
Major-Advisor

.....
Lect. Shafi Ullah Bhuiyan
Ph.D.
Co-Advisor

.....
Prof. M.R. Jisnuson Svasti
Ph.D.
Dean
Faculty of Graduate Studies

.....
Assoc. Prof. Sirikul Isaranurug
M.D., Dip. Thai Board of Pediatrics
Chair
Master of Primary Health Care Management
ASEAN Institute for Health Development

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on
March 14, 2006

.....
Mr. Roumany Yenn
Candidate

.....
Lect. Nate Hongkrailert
Ph.D.
Chair

.....
Lect. Nipunporn Voramongkol
M.D., Dip. Thai Board of Pediatrics
Member

.....
Lect. Shafi Ullah Bhuiyan
Ph.D.
Member

.....
Prof. M.R. Jisnuson Svasti
Ph.D.
Dean
Faculty of Graduate Studies
Mahidol University

.....
Assoc. Prof. Sirikul Isaranurug
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Director
ASEAN Institute for Health Development
Mahidol University

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Roumany Yenn

PARTICIPATION OF VILLAGE HEALTH VOLUNTEERS IN NUTRITIONAL ACTIVITIES PROGRAM, MUANG DISTRICT, SAKEO PROVINCE, THAILAND

ROUMANY YENN 4837992 ADPM / M

M.P.H.M. (PRIMARY HEALTH CARE MANAGEMENT)

THESIS ADVISORS : NATE HONGKRAILERT, Ph.D.,
SHAFI ULLAH BHUIYAN, Ph.D.

ABSTRACT

This cross-sectional study was conducted on participation of village health volunteers in a nutritional activities program in Muang district, Sakeo province, Thailand. The aim was to assess their level of participation in the nutritional activities and determine the factors related to their participation. A total of 280 volunteers, randomly selected from four sub districts in Muang district, were interviewed by using structured questionnaire during January and February 2006. Results were presented in frequency and percentage, and Chi-square was applied to show the association between independent and dependent variables.

The results of the study revealed that the prevalence of good participation among the volunteers in nutritional activities was 19.64%. More than half (52.86%) and 27.50% of the volunteers had fair and poor participation, respectively. The majority of respondents (more than 50%) were involved actively in seven activities: weighing children under five years old, checking growth curve, informing and discussing with mothers about their children's nutrition status, providing health education about breast feeding, reporting on nutrition status in the village to the health center, discussing with health staff about nutrition problems and cooperating with village committees to solve the nutrition problems in their village. The finding showed that there was significant association between higher participation and socio-demographic and psychological characteristics of the volunteers such as older age, higher level of education, higher family income, and good attitude towards the nutritional activities (p-value < 0.05). There was also a significant association between participation and long duration of work, being recruited by selection by the villagers, training and number of training courses attended, having attended training courses recently, material support, support from local leaders, support from health staff, support from villagers and receiving a number of different incentives (p-value < 0.05).

This study indicated that type of volunteer recruitment, refresher training and motivational and material supports are essential for improving the participation of volunteers in nutritional activities.

KEY WORDS : PARTICIPATION / NUTRITIONAL ACTIVITIES / VILLAGE HEALTH VOLUNTEERS / MUANG DISTRICT

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LIST OF ABBREVIATIONS

VHV	:	Village Health Volunteer
VHC	:	Village Health Communicator
CHW	:	Community Health Worker
HFA	:	Health For All
PHC	:	Primary Health Care
MOPH	:	Ministry of Public Health
WHO	:	World Health Organization
UNICEF	:	United Nation Children's Fund
PEM	:	Protein-Energy Malnutrition
HIV	:	Human Immuno-deficiency Virus
AIDS	:	Acquired Immune Deficiency Syndrome
BMI	:	Body Mass Index
IEC	:	Information Education Communication

CHAPTER 1
INTRODUCTION

1.1 Rational and justification of the study

The Declaration of Alma –Ata in 1978 required the commitment of the Member State of the World Health Organization to the target of Health for All by the year 2000 (WHO, 1979). This target was to be achieved by strategy of primary health care (PHC), which was intended to revolutionize the practice of health care and health development. An important element of this strategy was the promotion of greater and more effective community participation in services and structures designed to bring better health care to the millions of people who lacked even basic access to such facilities (1).

The definition of PHC embodied term such as "self reliance" and "self determination" and full participation of the community was considered among the prerequisites of the approach. Participation of people, either individually or collectively, in the planning and implementation process was considered both as a right and a duty (27).

Since 1978 when the Alma Ata Conference reactivated concern for primary health care (PHC), many countries have renewed their interest in the use of selected villagers to provide PHC services to their own communities. The most realistic solution for attaining total population cover with essential health care is to employ community health workers who can trained in a relatively short time to perform the most important tasks required to respond to people's most pressing health need (2).

In 1980s, they start use the term 'community health worker (CHW)', but in many countries still know by other names (2). Example, in India named 'village health guides (VHGs)', in Indonesia named 'health cadres', in Korea named 'Sanitation

Monitor'. In Thailand that CHW was named 'village health communicator' (VHC) and 'village health volunteer' (VHV) (3).

Developing quality of life has been considered as a major policy of the government to ensure the people's well-being and stability of life and property. Nutrition is one of the components of quality of life and also an important determinant for the health status of the people. Nutrition and health are not synonymous, but without good nutrition, health cannot be optimum. For children, especially, nutrition plays a vital role in their survival, growth and development. In general, children with good nutrition hold the key to good health, which may leads to the future development of families and societies that have ability to overcome many of the world greatest health challenges (4).

Most developing countries of the world today still face problems of under nutrition. According to the World Health Organization (WHO), nutrition problems in these countries are protein-energy malnutrion (PEM), vitamin A deficiency, iodine deficiency disorder, and iron deficiency anemia (5).

Iron deficiency is the most common cause for anaemia in the Region, with over 600 million people affected. Predominant among those affected are young children, adolescent girls, and women of reproductive age (28).

The South-East Asia Region accounts for a large proportion of the world’s cases of iodine deficiency disorders. More people are affected with higher levels of severity compared to any other WHO Region. It is estimated that almost 600 million persons live in iodine-deficient areas and are at risk, and about 172 million of them are likely to suffer from goiter (28).

Vitamin A deficiency is a public health problem in many countries of the Region. It is estimated that 125 million children under five years are currently at risk, and 1.3 million are reported to be vitamin A deficient. They are therefore at 20 times greater risk of death from severe infections like measles, diarrhoea and pneumonia.

The countries are taking various public health measures, including health education, to encourage the intake of carotene rich foods, particularly green, leafy and yellow vegetables (28).

Nutritional status and health are, in fact, closely linked. Studies suggest that as much as 30% of the estimated per capita economic growth rate in the UK between 1870 and 1979 might be associated with improvements in health and nutritional status. Studies in the Region also support this close linkage. In Indonesia, for example, it was reported that anaemic men were 20% less productive than non-anaemic men (28).

Another nutritional aspect that merits attention is obesity. With new urban-based lifestyles, "fast food" diets, and low levels of physical activity, a higher occurrence of obesity is seen, as well as of related chronic disorders including coronary heart diseases, diabetes mellitus and hypertension. According to recent reports, 9-19% of children aged 19 years or less in Thailand were obese, and 20-30% of adults had a body mass index (BMI) of more than 25 - indicative of overweight. Surveys in India recently showed that 6.6% of adult women were overweight (28).

Table 1 Nutrition status among children under five years old in some countries

Countries and territories	Under- 5 mortality rank	% of infants with low birth weight 1995-2000*	% of children (1995-2001*) who are:			% of under-fives (1995-2001*) suffering from:				Vitamin A supplementation coverage rate (6-59 months) 2000	% of households consuming iodized salt 1997-2002*
			exclusively breastfed (<6 months)	breastfed with complementary food (6-9 months)	still breastfeeding (20-23 months)	underweight		Wasting	Stunting		
						moderate & severe	severe	moderate & severe	severe		
Bangladesh	58	30	46	-	87	48	13	10	45	85	70
Bhutan	52	15	-	-	-	19	3	3	40	93	82x
Botswana	42	11	34	57	11	13	2	5	23	-	66
Brazil	92	9	-	30	17	6	1	2	11	11	95x
Cambodia	30	9	12	72	59	45	13	15	45	63	14
China	85	6	67k	-	-	10	-	3	17	-	91
India	54	26	37k	44	66	47	18	16	46	22	49
Indonesia	77	9	42	81	65	26	8	-	-	71	64
Kenya	40	9	5	67	24	23	7	6	37	90	91
Lao PDR	49	-	23	10	47	40	13	15	41	58	76
Malaysia	158	9	-	-	-	18	1	-	-	-	-
Maldives	58	12	10	85	-	30	7	13	25	93	44
Mongolia	61	6	51	54	57	13	3	6	25	87	68
Myanmar	43	16	11	66	59	36	9	10	37	67	46
Nepal	55	21	69	66	92	48	13	10	51	82	63
Thailand	105	7	4k	71	27	19x	-	6x	16x	-	74
Viet Nam	88	9	31k	52	21	33	6	6	36	61	40

Notes

- \- Data not available.
- **x** Indicates data that refer to years or periods other than those specified in the column heading, differ from the standard definition, or refer to only part of a country.
- **k** Refers to exclusive breastfeeding for less than 4 months.
- ***** Data refer to the most recent year available during the period specified in the column heading.

Source: The State of World's Children 2003. UNICEF

In Cambodia, malnutrition among women and children is a major health problem. Chronic malnutrition among children is high. 15% of children less than 6 months old have stunted growth increasing to 53% of children aged 3 to 5 years. 21% of women aged 15-49 years old are underweight. There is a high prevalence of micronutrient deficiencies: 63% of children under five and 66% of pregnant women are anemic, and vitamin A and iodine deficiencies are widespread among women and children. Widespread nutritional deficiencies among children represent the biggest risk factor for childhood mortality. The underlying cause is poor infant and child feeding practices (WHO report – 2004) (6).

VHVs in Thailand, essentially, are community people who serve as 'mobilizers'. At present, VHV has used their activities to mobilize people in the community to participate i.e. Child growth monitoring, encourage mother to bring their children for immunization, identify pregnancy for mother and child health and antenatal care, involve in environment, sanitation which had bring about the good nutrition status of children (7). Then, they are shown success way on health of people in the village, for example, the immunization coverage was over 94% for all, except measles, which remained at 86.4%, and the coverage of drinking water was 95.5% and sanitary latrine of 98.2% in 1999 (8). As for nutrition among preschool children in Thailand that malnutrition (underweight) rate among the were remarkably reduced during the nine years from 1982 to 1991, from over 50% to under 20% virtually eradicating severe and moderate malnutrition in the process (9).

To mobilize people and to promote community participation for health are key strategies of PHC for HFA, and VHV usually takes this part of responsibility in their activities in the community. Then, malnourished children especially protein-energy malnutrition (PEM) in Thailand has dramatically reduced, including the virtual eradication of severe PEM (10). It is an evidence of achievement in community-based program on VHV and community participation. Adequate nutrition is an integrate part of the human development. Good nutrition leads to fitter and better-educated people.

However, malnutrition in childhood, even if later corrected, affects educability and eventual school achievements. Nutrition thus improves human capital (9).

The strategy of community-based nutrition program in Thailand, at first was growth monitoring for children under five years of ages by VHV in the village, which was introduced by Ministry of Public Health in 1981. It is a component of the larger rural primary health care program and it is implemented in Thailand's entire village. And, all children suffering second and third grade malnutrition are then weighted monthly and given food supplementation for 3 months. They are followed by or referred to the health service if they do not recuperate.

In order to improve the VHVs in carrying out their work, and to allow the mutual effort for the VHVs, it is crucial to assess how effective the VHVs are participating their job in promoting nutritional program. Moreover, it is well recognized that the effectiveness of these VHVs will depend on several factors. Previous studies in other countries showed the majors variables, which were possible causes such as personal characteristics, community socio-cultural factors and programmatic PHC system issues (11). Hence, this assessment allows ones to see what factors affect their participation; what further training and support they may need, what steps should be taken, and to help them acquire that support. This should be an encouragement to the VHVs to improve the services they can give.

1.2 Research questions

1. What are the levels of participation of VHVs in the nutritional activities?
2. What are the factors related to the VHVs' participation in the nutritional activities?

1.3 Research objectives

1.3.1 General Objective

To identify the levels of participation of VHVs in the nutritional activities and its factors related in Muang district, Sakeo province, Thailand.

1.3.2 Specific Objectives

1. To assess the levels of participation of VHVs in the nutritional activities.

2. To identify the predisposing factors, enabling factors and reinforcing factors related to the VHVs participation in nutritional activities.

3. To examine the relationship between the participation of VHVs and predisposing factors, enabling factors and reinforcing factors.

1.4 Research hypotheses

1.4.1 The socio – demographic factors including age, gender, marital status, education, occupation and income would be associated with the participation of VHVs on the nutritional activities.

1.4.2 There would be association between participation of VHVs and psychological factors such as knowledge and attitude toward nutritional activities.

1.4.3 There would be association between the participation of VHVs and the enabling factors including training experience, working experience and material support.

1.4.4 There would be association between the participation of VHVs and reinforcing factors (motivational supports and incentive).

1.5 Conceptual Framework

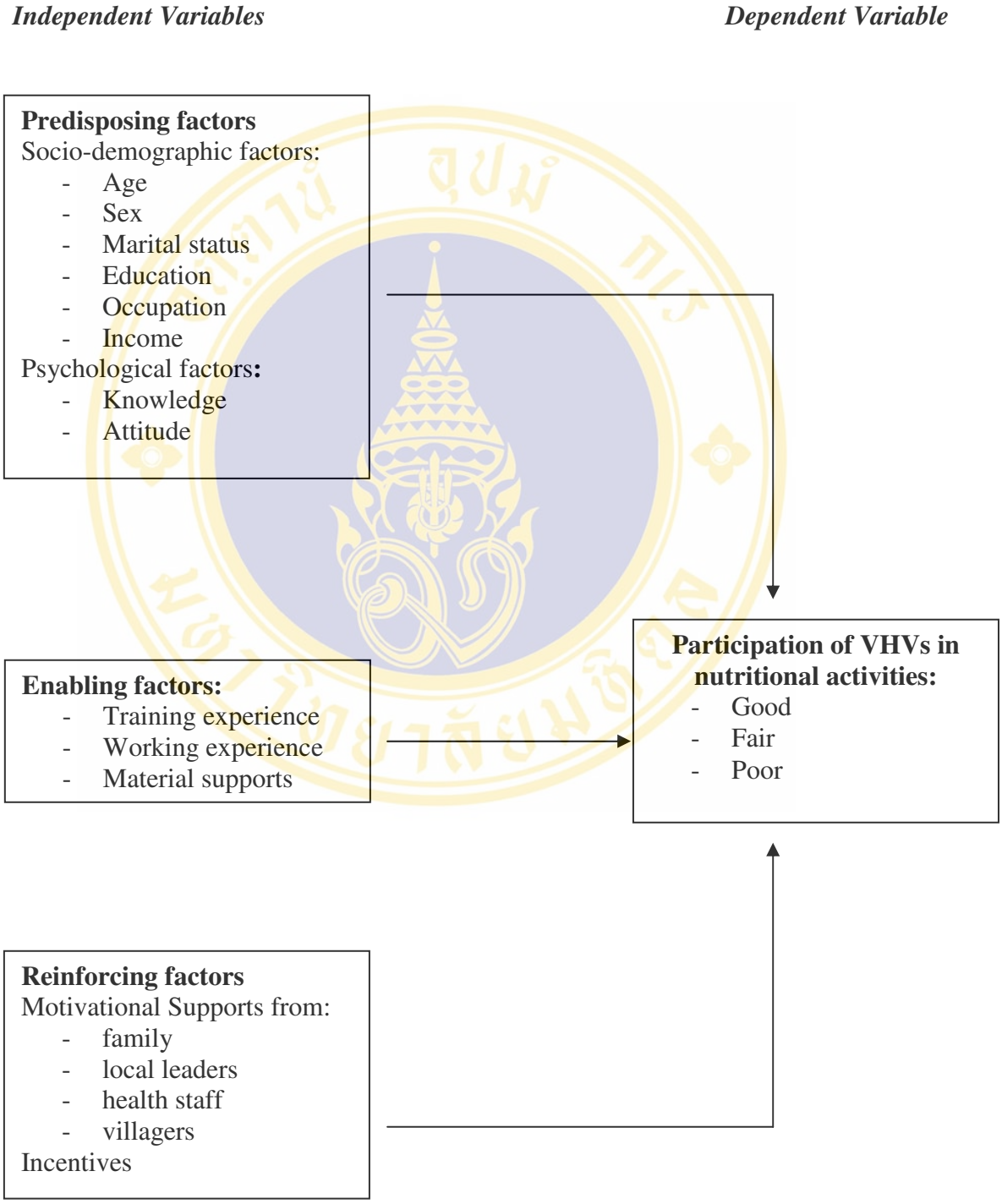

Figure 1 Factors correlate with VHVs participation

1.6 Operational definition

Participation: the VHVs participation mean that the VHVs were taking part or becoming actively involved in the nutritional program such as nutrition surveillance activities (weighing action) and nutrition education (basic foods, breast-feeding, food hygiene, proper dietary practices and supplementary feeding).

Knowledge: is defined as basic knowledge in nutrition, which includes nutrition surveillance activities and nutritional education.

Attitude: is defined as a feeling or opinion of willingness to do something. The VHVs show their willingness to support the nutritional activities.

Training experience: is defined by frequency of training courses related to nutrition and time of the last training that VHVs attended.

Working experience: is defined by number of years the VHVs have worked for nutrition program. In this duration, at least they already participated in the activities one year ago. The working experience is also including the type of recruitment of VHVs.

Material supports: referred to material that VHVs use in the nutrition activities such as a simple weighing scale, uncomplicated growth charts and IEC material.

Motivational supports: referred to the necessary factors that motivate VHVs to involve more and more in the activities. The motivational supports may come from family, local leader, health staff and villagers.

Incentives of VHVs: referred to incentive they have received in VHVs work such as free medical care, per diem, certificate, social recognition and self-satisfaction for being useful resource.

1.7 Scope and limitation of the study

The study had tried to assess the current Village Health Volunteers participation on nutritional activities in Muang district, Sakeo province, Thailand. It had also tried to describe the socio-demographic, psychosocial, enabling and reinforcing factors of VHVs on nutritional activities program. This study did not cover some activities such as the promotion of local agricultural food production and nutrition fund activity, which mentioned in Fig. 4. Therefore, these could be the limitation of this study.

CHAPTER 2
LITERATURE REVIEW

2.1 Primary Health Care

In 1978 the Declaration of Alma Ata sought the commitment of Member of the World Health Organization to the target of health for all (HFA) by the year 2000 (WHO, 1979) (1). The declaration identified Primary Health Care (PHC) as the key to attaint HFA as part of the global quest for social and economic development, in a spirit of social justice. The heavy burden of sickness, the high cost of health technology and inadequacy of health services coverage called for a bold new approach, PHC offered a rational and practical means for both developing and industrialized nations to work towards the Health for All goal (12).

The major concepts of PHC approaches consist of community participation, appropriate technology, intersectoral collaboration and the mobilization of local resources (13). For area of intervention, PHC concentrates on 8 elements: education concerning prevailing health problems and the method of preventing and controlling them; promotion of food supplies and proper nutrition; and adequate supply of safe water and basic sanitation; maternal health child care, including family planning; immunization against the major infectious diseases; prevention and control of locally endemic diseases; appropriate treatment of common diseases and injuries; provision of essential drugs (8).

PHC is people-oriented that it success must therefore rest with the people and it has a four-fold objective on PHC approach, both in developing and industrialized countries: (8)

(1) to enable people to seek better health at home, in schools, in fields and in factories;

(2) to enable people to prevent disease and injury, instead of relying on doctors to repair that damage that could have been avoided;

(3) to enable people to exercise their right and responsibility in shaping the environment and bringing about condition that make it possible, and easier, to live a healthy life;

(4) to enable people to participate and exercise control in managing health and related systems, and to ensure that the basic prerequisites for health and access to health care are available to all people.

2.2 PHC in Thailand

Since the 4th National health plan (1977-1981) in Thailand, it has continuously implemented PHC activities ranging from policy and implementation plan formulation, budgets allocation, and responsible organization and supporting factor identification. Thailand has implemented PHC with three majors components: PHC elements, PHC approach and PHC activities, and according to the country's needs such as population migration, change of family size, change of population pattern, increasing ratio teenagers, labor forces, aging and change of diseases pattern from communicable to non-communicable diseases, PHC has had extended areas of intervention to 14 elements of Thailand (13).

(1) education concerning prevailing health problem and the methods of preventing and controlling diseases

(2) promotion of food supply and proper notorious food

(3) maternal and child health care, including family planning

(4) adequacy of safe water supply and basic sanitation

(5) immunization against major infectious diseases

(6) prevention and control of locally endemic diseases

(7) appropriate treatment of common diseases and injuries

(8) provision of essential basic household drugs for the community

(9) promotion of oral hygiene and correct dental care

(10) provision of mental health care and promotion of appropriate community care for people with disabilities, drug addicts and alcoholics

(11) consumer protection by encouraging people to consume good with the logo of the Food and Drug Health Administration

(12) non-communicable disease control and accidental injury prevention

(13) environmental pollution control

(14) HIV/AIDS prevention and control.

The concept of PHC in Thailand has been developed from the country's experience in solving the health problems of underserved people in the rural areas. The concept of community participation consisting of the contribution of ideas, manpower, money, and materials by the community is fundamental and provide the key to the success of PHC program. Then, the Ministry of Public Health (MOPH) is aware that the strengthening of a health services delivery system and development of a referral system is essential to support the PHC activities (12). And the program's objectives were formulated on the basic of various concepts: (14)

(1) to expand the coverage of the health services, particularly among the underserved rural population, and to help the people help themselves.

(2) to utilize community resources and encourage community participation in order to solve individual health problems, and eventually to establish self-help program at the village level.

(3) to promote the dissemination of health information to local people, as well as to integrate all data that would reflect the needs and improve the health of the communities.

(4) to make basic health services available, accessible, and acceptable to the people.

(5) to promote better health for rural people as well as to enhance their awareness of health problems and problem-solving.

2.3 Participation

In the past decade, enormous efforts, both intellectual and practical, have been made to devise strategies to improve the lives of the many millions of disadvantaged people in the world. In these efforts, an important concept is the central importance of the people themselves participating in the decisions, and the implementation and management of development programs and projects. Participation has been widely recognized as both a basic rights of people and of central importance to the success of development efforts. In most developing countries, the formal health services are able to provide coverage for only small proportion of the people they are supported to look after. Community participation has therefore, come to be seen as a way of rapidly improving the health services available for the majority of world people (29).

Hongwiwat (1984) defined the definition of community participation as people or community developed their abilities in management and control resource distribution and input for the benefit in their economic living and society according to necessity with dignity as the member of society. The participation has developed knowledge and intelligent of people, which showed by the decision making for their life (30).

Taecharin (1984) said that community participation is the process of promotion, leading, support and creation opportunity for people and community in the form of individual, group of people, club, association, foundation and volunteer organization etc. to participation in any matter in order to achieve the objective and designed development policy (31).

Wuthimethee (1984) defined the meaning of people's participation as opening the opportunity for people to participate in creation, decision making, perform and responsible in any matters which would effect to them. The leader should accept the rural development philosophy that all human desire to live with other people happily and had got fair treatment and had been accepted by other people, ready to devote themselves for community activities. At the same time we should accept the reality

that human could develop if they had chance and had got the right recommendation (32).

Jamrik (1987) suggested the definition of local organization participation as the learning process of each other and it may be the stable fundamental for evolution to self-government of local area at the end. He also talked about the beginning of local organization that it began from the participation in the activities, which have benefit for the whole. It was the activities, which have relation with problem and the needs of community (33).

Rapeephat (1987) suggested the meaning of community participation that should let people find problems and does everything not determined by us. Every matter should be the idea of people (34).

2.3.1 Concepts of people's participation

In many ways participation has become an umbrella term for a new and more people-centered approach to development intervention; participation as collaboration, participation as specific targeting of project benefits, participation as empowerment. The following interpretations of people's participation in development have been identified (35).

1) Participation as collaboration: In this interpretation, people in less development countries voluntarily, or as a result of some persuasion or incentive, agree to collaborate with an externally determined development project, often by contributing their labour and other resources in return for some expected benefit. An external agency, either the government or some other development agency sponsors people's participation, and in many instances this participation is programmed as project input.

2) Participation as specific targeting of project benefit: Increasingly, one aim of people's participation has been to include previously exclude groups, such as small

farmers, landless people or the urban poor, in development activities by targeting benefits directly at them – the " project beneficiaries ". As a reaction, however, to a rather crude "participation = benefits" interpretation, emphasis is often put on direct involvement in different stages of project practice.

3) Participation as empowerment: Increasingly participation as an exercise in empowering people has gained widespread public support, and the term has entered the development vocabulary. However, empowerment is a term, which is difficult to define. Some see it the development of skill and ability to enable people to manage existing development delivery system better and have see in what is done. Other sees it as more fundamentally political, enabling people to decide upon and to undertake the actions that they believe are essential to their own development.

2.3.2 Characteristics and type of participation

Taecharin (1984) had mentioned the stage of participation for achieving the objective and development policy as: (31)

1) Participate in studying, searching the problems and causes of problem, which happened to community including the needs of community.

2) Participate in developing and creating development method, solving and reducing community problems for create new thing, which benefit to community or responding to the needs of community.

3) Participate in laying out policy or plan project or activity in order to abolish and solve problem and responding to the needs of community.

4) Participate in decision making on using limited resources for the benefits of all.

5) Participate in handling or improving development management system to have effective and efficiency.

6) Participate in project investment according to the capacity of themselves and organization development.

7) Participate in policy, plan, and project and activity implementation in order to achieve the goal.

8) Participate in controlling, follow up, evaluation and maintaining the project and activity which setting by private and government sector to make use of them forever.

2.3.3 Factors affect on the people participation

Reader (1980) summarized factors affect on the people participation as follows (36):

1) According to a basic belief that is person or group of people seem to choose practices in according to their basic belief.

2) According to standard, person or group of person seems to practice in his or her own standard.

3) Targets, person or group of people seem to enhance, protect and save their own targets.

4) The unusual experience, individual and group of people's behavior, sometimes come from a basic unusual experience.

5) Expectation, both individual and group of people would practice as they expect that they must behave according to such situation. They also fond of practices to any people in a manner of their expectation from other people.

6) Self-introverts, most people would like to do something that they should do.

7) Compulsory, people or individual should do what they feel that they force to do.

8) Habit and tradition, they should do with a feeling of their habit and tradition.

9) Opportunity of such people or individual usually dealt with them in term of social practice especially concerning them in such participation.

10) Ability that belongs to each individual or people may play the importance role in the participation. They usually take part in such activity according to their ability.

11) Good support could play a major role when individual or people receive such a good support to participate in the activity.

2.3.4 The participation measurement

Kasperson and Breibat (1985) suggested the 3 participation measurements as fellows:

1) Actions have been done by the individual not by in-group in the participation process would indicate to the social value or acceptance and behavior of each individual. That was the action of participation referred to the action that individual performed in directly response to such action.
2) The frequency of action by the frequency participation, a long duration of activity or the connection and incentive to the action.
3) The quality of participation in the examination resulted and affected on the primary action such as responsibility, decision-making, ability of acceptance, opinion of acceptance and evaluation (37).

2.4 Village Health Volunteers (VHVs)

VHV is Community-base health manpower. In order to achieve better health of the population through health promotion and prevention, VHVs were selected and trained as a key actor in Community-based Health Development. The word 'volunteer' has two important concepts in common; they all involve action or work of some kind, and crucially, the work is carried out willingly. The concept of free will is central of volunteering. A further feature of this concept of volunteering is that it is carried out for common good or interest, or the benefit of others (15).

The Government's PHC program in Thailand has been centered on system of VHVs and VHCs. Both of volunteers were villagers, were selected by villagers and the village committee based a set of criteria. VHCs were given five days training in PHC and then pass this knowledge on to their neighbors (nutrition, hygiene, immunization, prevention of communicable diseases, etc) under the supervision of the Tambon health personnel. Then the VHCs select one of their members in each village for further fifteen days training. Then VHVs organize immunization, administer first

aid, dispense basic drugs, ect. The government has also introduced drug co-operatives at the village level, which is called Community Primary Health Care Center (CPHCC) and the VHVs supervise them (16).

By 1994, such local health volunteers in Thailand have been evolved; only VHVs left and charged their roles for greater effectiveness by enhancing capacity with continuing learning techniques. Up to 2001 there were approximately 710,000 VHVs (18), and they are assigned 10 to 15 households per VHV. VHV has no salary or compensation but only allowances while on training course for 50 baths per days per person plus the incentive of free medical services.

Responsibilities of VHVs: (7)

(1) to inform the villagers in his/her respective area about information related to health.

(2) to collect information from the public regarding health and health related matters such as births, deaths, migration, pregnancies, problems and needs.

(3) to disseminate knowledge, advise and stimulate the public in the 8 elements of PHC.

(4) to carry out and coordinate health development activities and joint other inter sectoral development activities.

(5) to weigh pre-school children and distribute supplementary food for malnourished children.

(6) to provide simple symptomatic medical care by using home remedies or other medicines, which the Ministry of Public Health has given permission to use.

(7) to give first aid treatment for fresh wound, fractures, burns, etc.

(8) to distribute birth control pill and condom to the clients who have already examined by the government health staff.

As for nutrition activities, VHVs coordinate all food and nutrition activities within the village. Supervised by health staff, they carry out growth monitoring activities in the village. Simple beam balance and growth chart, which helped mothers

and caretakers to understand the nutritional status of their children were introduced. After each weighing session, the weigh-for-age of all children weighed was plotted on a village growth chart. This tool allowed the community to visualize the magnitude of its nutrition problem (10).

2.5 Nutrition activities of VHVs

Implementation of PHC programmes since 1977 depended on the activities of "medical cooperatives" at the village level. Villagers perceived this as serving their needs (felt needs), and it helped them gain managerial skills in establishing the village health fund. The stability of the cooperatives appeared to depend greatly on the involvement of villagers through their contributions both in cash and in kind. A similar strategy has therefore been applied to initiate nutrition in PHC, detailed as follows (26).

2.5.1 Problem Identification

A simple problem-identification procedure and a village nutrition surveillance system (Fig.2) have been launched and have successfully initiated community participation.

A simple weighing scale and uncomplicated, attractive growth charts, which could be calculated and interpreted by villagers, were used. Between 1979 and 1983, over 2 million infants and pre-school children were weighed at least once. A group growth chart was developed for VHCs and VHVs, and is used for the presentation of the results and as a monitoring tool. The addition of pictures of children in different nutritional states also helped the villagers to relate weighing to the appearance of the child.

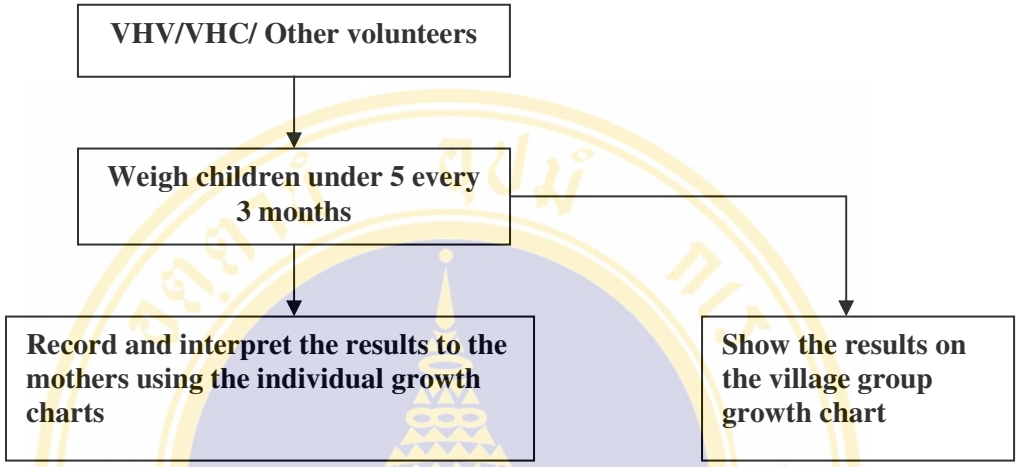

Figure 2 The village surveillance programme

2.5.2 Problem –solving alternatives

A food and nutrition problem-solving programme was developed to meet community needs in tackling problems.

Food Supplementation Action

Supplementary food, consisting of rice, legumes, and sesame, was formulated by the Nutrition Division and Institute of Nutrition, Mahidol University. The formulas vary depending on locally available raw ingredients. The purpose is to supplement calories and protein in the habitual diets of children of six months to five years old. Simple processing equipment and an easy method were developed. The food has been well accepted by the target groups and the processing can be done easily by villagers.

Creation of a Village Nutrition Fund

During the course of nutrition programme implementation, it was found that motivation was needed to promote food processing. Concern for the malnutrition

problem and its consequences was one such motivation. Another very effective incentive was the economic one, which is, selling the food produced to nearby communities where food processing did not exist. This led to the initiation of the village nutrition fund scheme.

The process starts with a government contribution of 3,000 baht ($1 = 18-23 baht) per village to buy supplementary food, which is given to the village committee for free distribution to second- and third-degree malnourished children. The organization is similar to "medical cooperatives." People are required to contribute in cash, raw food materials, or labour, in addition to the government endowment. The production of supplementary food is also promoted for sale to the general population. The income as well as the initial community and government contributions generate the "village nutrition fund" that will support the food supplementation programme as an ongoing process. The fund will also provide supplementary food free to severely malnourished children after the initial government support has ended. This is another important milestone in the Thai Primary Health-Care Programme Involving community welfare action.

The community can also generate feeding-station activities for searching for and testing appropriate supplementary food formulas. The most important step is to generate three essential elements at the village level in the nutrition programme, as shown in figure 3. Lack of any one of the three can lead to the failure of the programme.

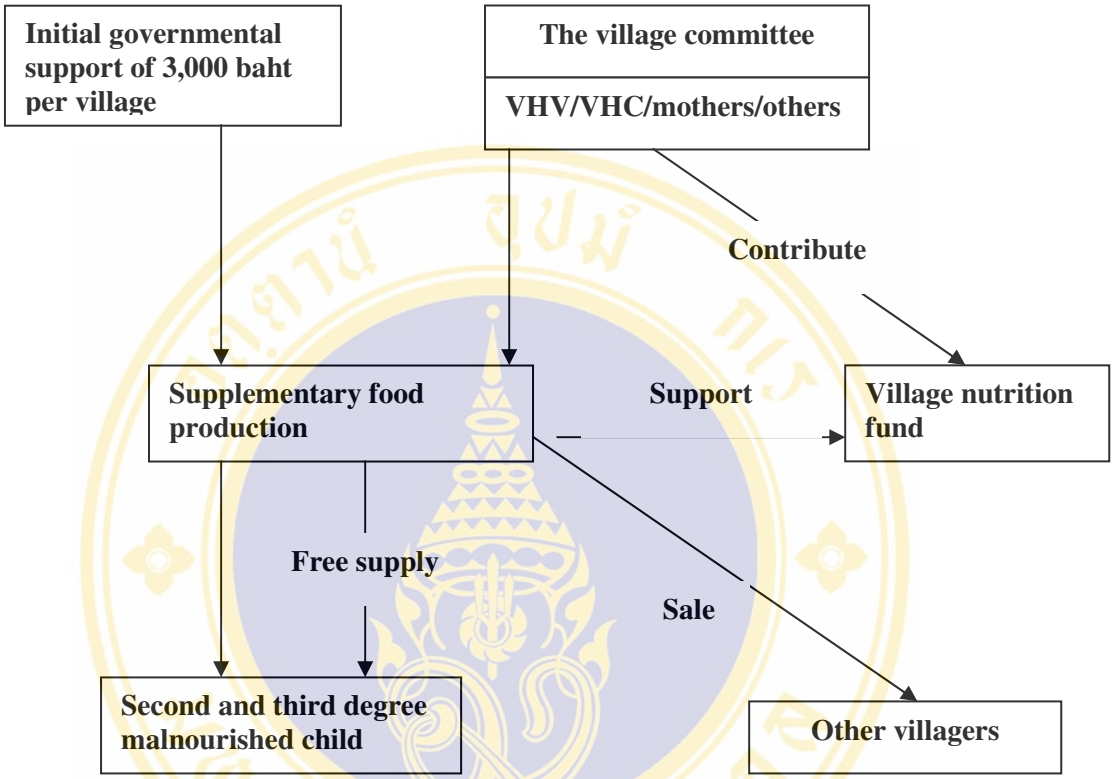

Figure 3 The essential elements for a village nutrition programme

Nutrition Education

The nutrition education objective has changed from attempting to teach all of the population basic nutritional knowledge to concentration on pregnant and lactating mothers to increase their management skills in the supplementary food programme.

The village committee, the VHV/VHCs, and other volunteers are trained and given the responsibility of spreading nutritional messages in the community by means of self-learning packages, manuals, posters, flip charts, and other printed materials.

Overall nutrition activities in PHC are summarized in figure 4.

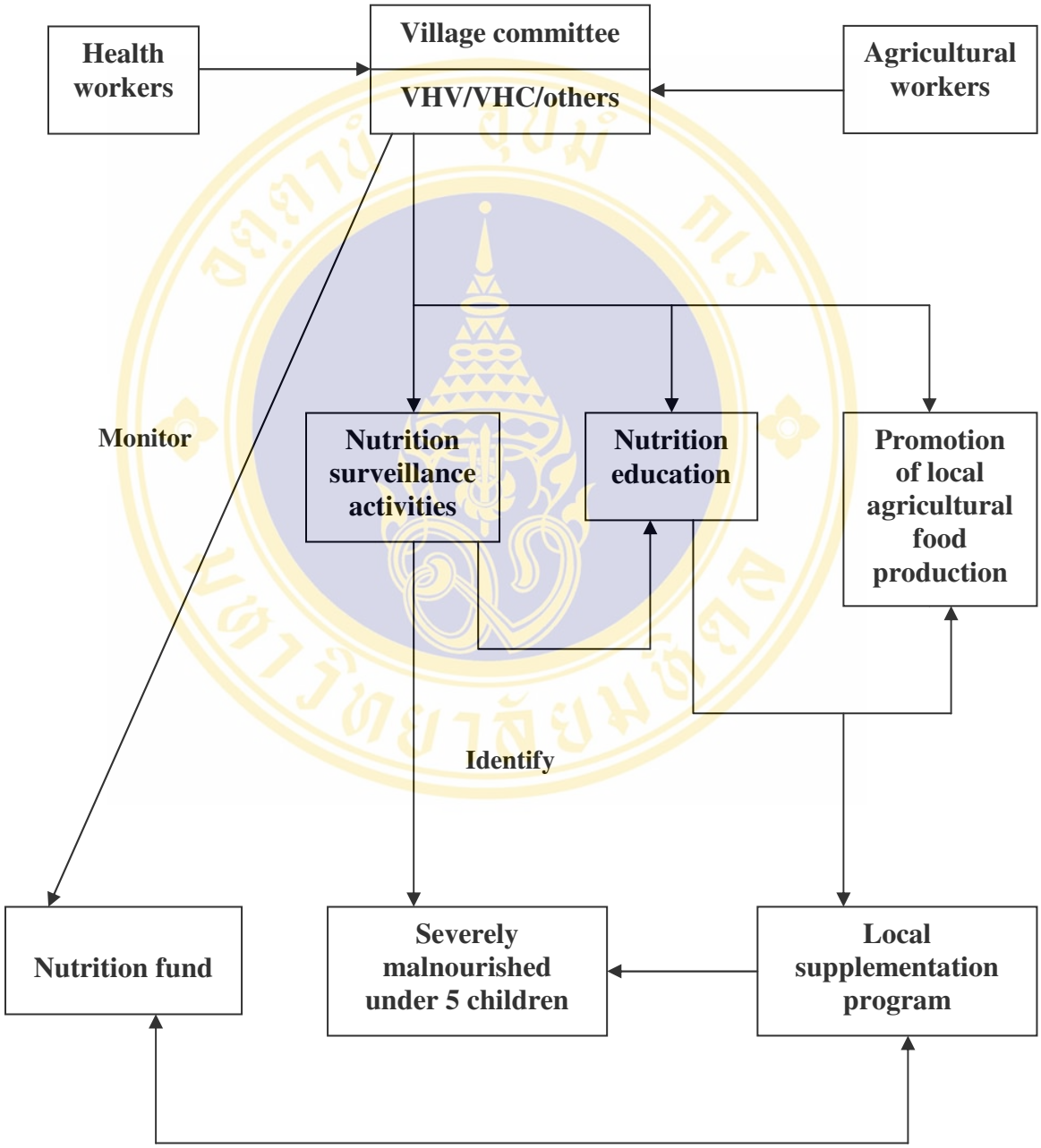

Figure 4 Village nutrition activities

2.5.3 The Multi-sectoral Collaboration Approach

The conceptual framework in food and nutrition activities for each of the four community development-related ministries was formulated and put into operation with multi-sectoral collaboration in 1981, as shown in table 2.

Table 2 Community food and nutrition activities

Sector	Major responsible area	Minor responsible area
Villagers	Attend the weighing activity Attend the feeding station Attend the food production activity Feed supplementary food to the malnourished child Share in the nutrition fund	
Village committee	Plan and monitor the village food and nutrition activities	
VHV/VHC/others	Organize and implement the village food and nutrition activities	
Tambon health officer	Supply and support nutrition surveillance action Give health/nutrition education Support in organizing the village nutrition fund and supplementary food distribution	Food processing
Tambon agricultural extension officer	Promote agricultural food production	Nutritional education
Home economist	Nutritional education Food-processing demonstration	
Primary education teacher	Nutritional education	

2.6 Review of previous studies

2.6.1 Village health volunteers' performance

Performance of VHVs can be defined as the total behavior of a health worker. It includes the whole range of knowledge, skills and attitudes acquired through training as well as their organization and integration in practice (Katz, 1980)(22). In Thailand, many performance researchers measured the ability of VHVs in carrying out in term of the VHVs performance. A positive correlation between VHVs' practice in nutrition surveillance and the achievement of nutritional status of children under five years old was revealed in the study conducted in Thailand. More children with a normal nutritional health status were found in the villages where the VHVs had a higher-level performance than in the villages where the VHVs had lower level of performance (38).

Table 3 Summary of finding on VHVs performance

Studies	Classification by performance of VHVs (%)		
	Low	Median	High
Tatisiritr (1981)	13.0	61.0	26.0
Sudsukh (1982)	63.9	0	36.1
Hongvivatana (1988)	76.0	0	24.0
Sulaiman Ratman (1991)	37.3	23.9	38.8
Khin Myintzu Han (2000)	0	67.4	32.6

Then they tried to determine some aspect of VHVs influencing their performance. The reasons for the problem above have been the subject of many studies, opinion and discussion (17).

2.6.2 Relationship between the predisposing factors (socio-demographic and psychosocial factors) and VHVs' performance

There were many studies showed that relation between the socio-demographic factors and VHVs' performance on some programs such as Village health funds, Maternal and child health, Tuberculosis control, etc. The study of Francis Wade Z. Gomez IV (18) showed that there were significant relation between the age, marital status and income of VHVs and their performance respectively. But the result of Sulaiman Ratman (25) showed that there was no significant relation between the age, sex and marital status of VHVs and their performance.

The study of Surendra Kumar Shrestha (46) showed that there was no significant difference between the two groups of VHVs clarified as the low active and the active, but some significant association between educational level and job satisfaction. It was recommended that educational background should be considered in selecting VHVs.

The study of Khin Myintzu Han (24) showed that there was significant difference between the low and high performance groups. There was significant association between VHVs' performance and level of education and family income.

The result of Mahaman Rahmen (47) showed that VHVs who had a relatively good knowledge and positive attitude would practice well.

Therefore, VHVs performance was related not only to socio-economic factors but also to psychosocial factors. Krasae Chanawongse (1990) (19) paid more attention to human relations. He always interprets the identity of human being in the context of his relation with fellow human and organization to which he belongs. He thinks human relations play a very important role in the implementation of PHC.

2.6.3 Relationship between enabling factors and VHVs' performance

Previous studies found that there was association between duration of work and performance. However, the considerable finding also indicated that the longer a VHVs served, the lower the mother's knowledge, attitude and practice. The period of 6 to 14 years would provide the experience needed for carrying out nutrition activities. VHVs with less experience would not be skilled enough to solve problem (39).

Likewise, training experience was found to be the most powerful predictor of VHVs' performance. Some studies before indicated that those who exposed to the training are more likely to perform better than those who did not (40, 41). It was because the training of VHVs aims to equip them necessary and proper knowledge for the task they expected to do in the community (42). Moreover, training could be made VHVs 'work more effective if technique or skills such as communication, interview skills are included. Previous studies also suggested that the generally basic education of VHVs have required the continuing education program, so it should be provided for VHVs for VHVs periodically to increase the effectiveness of their work.

The study by Shan Ou Qi (48) revealed that those who had more opportunity to attend the refresher course after becoming a VHV would perform better. It was suggested the training courses should be held for VHVs.

Regarding the management of volunteer program, WHO pointed out "poor selection hardly considered motivation for community services", should be blamed in volunteer program (WHO 1987).

The provision of supplies such as IEC materials can expectedly enhance performance of VHVs. The significance related to the provision of supplies and performance indicated that there was high performance level among those VHVs who were supplied with these materials while contrary was true among those who were not supplied (40).

2.6.4 Relationship between reinforcing factors and VHVs' performance

Some experts also indicated that inadequate motivation was one of the reasons for VHVs poor performance. One study in Khlong-Khlung district, Kamphaengpet province showed that self-actualization was associated with the performance of VHVs. Low self-actualization lead too much lower performance (18). Other factors affecting the VHVs' participation were mentioned in previous studies such as motivational support from family members, mainly from one's husband/wife, from local leaders and health staff.

Encouragement of family member towards VHVs was recognized that it has certain influence in the VHVs' work (21). As VHVs saying, this kind of support enables them to spend more time for participating in the community to do their activities.

The common and most effective support by health staff to VHVs is via supportive supervision. Regular supervision provides professional support, and confidence critical for VHVs with limited training, and moral support and recognition. The regular availability of health personnel in the field adds to the VHVs credibility in the eyes of the community people (43).

Croley (1990) and Husbumror (1988) indicated that Tambon health officer's supervision played a positive role in VHVs performance (17).

According to MA Koblinsky, " without appropriate motivation, guidance and supervision, without supplies, referral channels, medical back up or the knowledge of their own limits, VHVs can not be expected to function " (44).

It was well known that VHVs could not perform their job without support from community people especially the local leaders, who can facilitate favorable condition for VHVs' work such as giving them allowance, free medical care, support funds to implement activities, coordinating resources to help them carrying out their work. According to WHO, allowance support for VHVs was noted that as a vital for

motivation and a sensitive issue affecting their job. It indicated that there is a tendency to drop out at higher rate among non-paid VHVs (42). Some research in the Philippines showed that a modest monthly monetary incentive was seen as motivating factors affecting VHVs performance. However, experiences in India showed that although there were some workers who resigned to find better paid job, more than of the workers still kept working as efficiently as they had the year before, to them the worker itself was satisfying (42).

CHAPTER 3
RESEARCH METHODOLOGY

3.1 Research design

The study was a cross-sectional design. The dependent variable was the participation of VHVs on nutritional activities including nutrition surveillance activity and nutrition education.

The relationship between dependent variable and independent variables (predisposing factors, enabling factors and reinforcing factors) was also examined.

3.2 Population and place of study

The target population in the study was the VHVs who had registered as village health volunteer, carried out primary health care responsibilities, include work in the nutritional activities program. For VHVs who work less than 1 year were excluded.

Muang district in Sakeo Province was the place of study. Sakeo province is located in the upper part of eastern in Thailand, on the border of Cambodia, and where is constituted by seven districts (Amphur). Muang district is one of districts in Sakeo, is constituted by eight sub districts (Tambon) with the total number of VHVs is 1,108 people.

Table 4 Number of VHVs distribution by sub district

Muang	Sa-kwan	Ta-kasem	Ta-Yaek	Ban Keng	Kok piknong	Sala-lumduan	Nong - Bon	**Total**
120	160	139	132	138	155	149	115	**1,108**

3.3 Sample size

The sample size is calculated by using statistical formula of the cross sectional study for one sample (50):

$$n = \frac{N \cdot z^2_{\alpha/2} \cdot p\,(1-p)}{(N-1)d^2 + z^2_{\alpha/2} \cdot p\,(1-p)}$$

n : the desirable calculated sample

N: Total number of VHVs in Muang district, Sakeo province = 1,108

p : proportion of highly active VHVs from a previous study (= 0.388)

d : Degree of accuracy desired setting at 0.05

$z^2_{\alpha/2}$ = 1.96 (95% confidence interval)

Therefore $n = (N-1)(1.96)^2 (p)(1-p) / (N-1)(0.05)^2 + (1.96)^2 (p)(1-p) \cong$ **280**

3.4 Sampling frame or sampling technique

Multi stage sampling technique was applied in this study. Two sub districts among eight sub districts in Muang district namely Muang and Sala-lumduan from urban area and two sub districts namely Sa-kwan and Ta-yaek from rural area were selected purposively. From these four sub districts, 280 VHVs were selected randomly. However, the numbers of the four sub districts were different. Therefore, the number of sample from each sub district was calculated by multiplication the proportion of number of VHVs. Thus, the sample in this study was selected 60 VHVs from Muang, 74 VHVs from Sala-lumduan, 80 VHVs from Sa-kwan and 66 VHVs from Ta-yeak.

Sampling technique has been shown in diagram as follows.

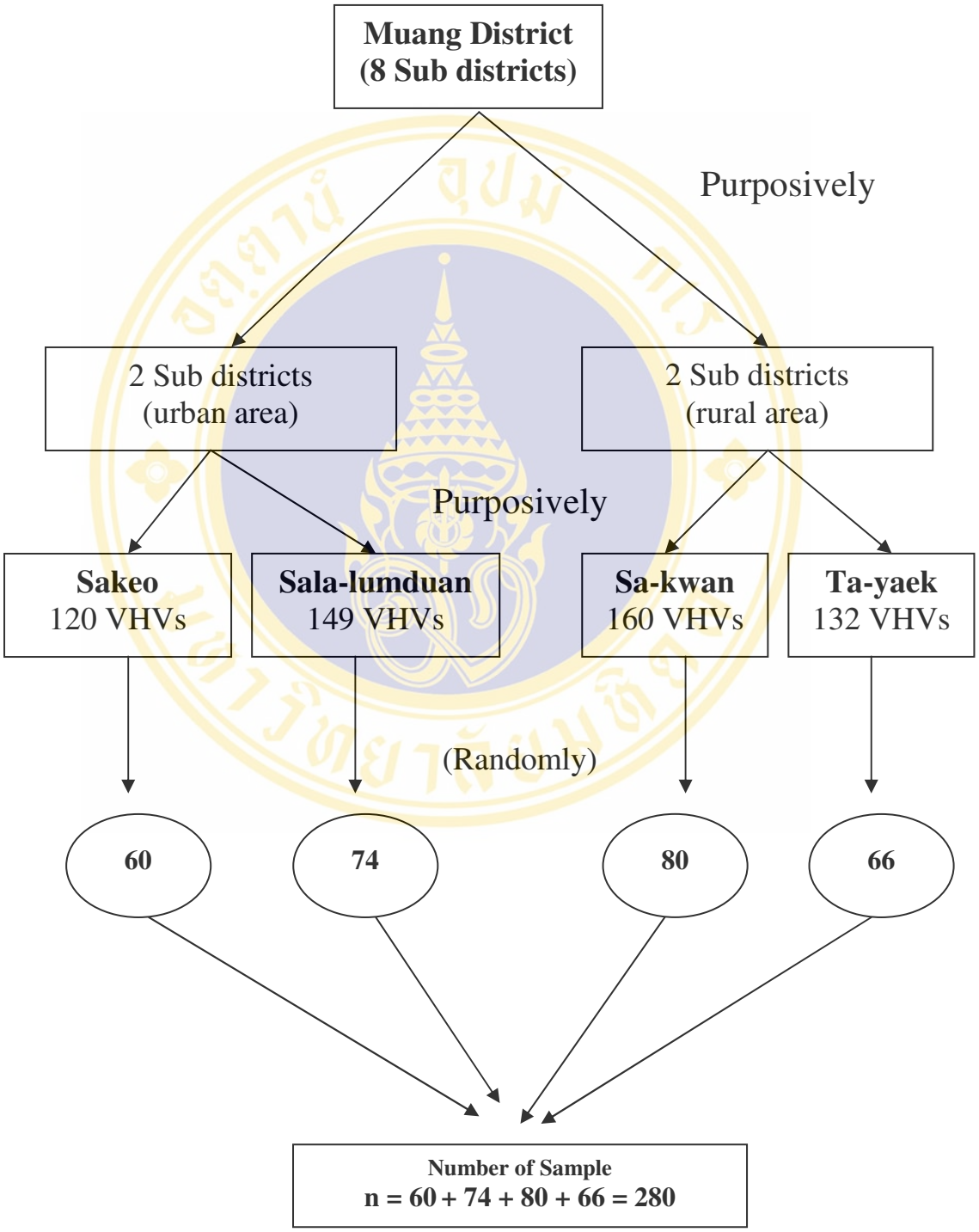

Figure 5 Flow diagram of sampling technique

3.4 Research instruments for data collection

A structured questionnaire form for individually interviewing the study population was used as the instruments for data collection. The content of questionnaire was based on previous similar research conducted by other researchers. Almost all the questions were closed ended and some were open ended. The questionnaires were used in Thai language.

The questionnaire composed of:

Part 1: regarding to VHVs personal characteristics, including socio-demographic factors

Part 2: was the question concerning with enabling factors such as training experience, working experience, type of recruitment and material supports

Part 3: the question regarding to reinforcing factors such as motivational supports (family, local leader, health staff and villagers) and incentive.

The respondents were answered three, five, six and eight questions according to the questions that asked about the support from family, villagers, local leaders and health staff, respectively. The questions were yes/no question. One score was given if the answer was "yes" and zero score if the answer was "no". For the support from villagers, the questions were asked about the aggregate of villagers attended in the nutritional activities. Answer for each question was scored from 0 to 3 points corresponding to most, some, few and none. Therefore, the total idea score of the support from family, local leaders, health staff and villagers were 3, 6, 8 and 15, respectively.

The level of each motivational support was classified into two groups, namely poor and good based on 50^{th} percentile (51):

- Poor: $\leq 50^{th}$ percentile
- Good: $\geq 50^{th}$ percentile

Part 4: Psychological factors concerning with knowledge on nutrition and attitude of VHVs toward participation on nutrition activities.

For knowledge, the respondents were asked fifteen questions about their knowledge on basic nutrition. It was Yes / No question. One score was given to the correct answer and zero for the incorrect answer.

For attitude, the respondents were asked eighteen questions about their attitude toward the nutritional activities. The question was prepared based on Likert scales. Answers for each positive question was scored from 1 to 5 points corresponding to strongly disagree, disagree, uncertain, agree and strongly disagree. For negative questions, the scores were invested.

The level of both knowledge and attitude were classified into three groups, namely poor, moderate and good, based on the following criteria (49):

- Poor: ≤ 60% of the total idea score
- Moderate: 61 – 80% of the total idea score
- Good: ≥ 81% of the total idea score

Part 5: The questions concerning with the participation of VHVs in nutritional activity program such as nutrition surveillance activities (weighing action), nutrition education (basic foods, breast-feeding, food hygiene, proper dietary practices and supplementary feeding) within last one year. The respondents were asked twenty questions concerning to regular, often, sometime and never participated in the activities. As for the score of participation, score '3' for regularly, '2' for often, '1' for sometime and '0' for never participate in the activities.

The level of participation was classified as three levels, as good, fair and poor depend on the interval scale measurement (50).

Interval scale = (maximum score – minimum score)/ 3

3.6 Pre-testing of the questionnaire

Pre-testing of the instrument for data collection was carried out by interviewing 30 VHVs in Sakeo province to test the validity and reliability of the questionnaire. After doing the pre-test, the questionnaire was revised and readjusted.

3.7 Data collection procedure

There were four basic steps for the data collection procedure as follows.

(1) contact the provincial health office of Sakeo and district health office to make a list of all VHVs in the purposive district in the study.

(2) contact the district health office for the cooperation in the study and select interviewers.

(3) training interviewers before the data collection.

(4) conduct the data collection.

3.8 Data analysis procedure and statistics used

The data was analyzed by using MINITAB statistical software program. Regarding to the objectives of the study, level of significant was set at 0.05 throughout the analysis.

In order to achieve the research objectives, the data was sorted and grouped, according to the following headings:

(1) The number and percentage distribution of VHVs by socio-demographic (age, sex, marital status, education, occupation and income) and psychological (knowledge and attitude) characteristics.

(2) The number and percentage distribution of enabling factors (training experience, working experience and material supports)

(3) The number and percentage distribution of reinforcing factors (motivational supports and incentive)

(4) The number and percentage distribution of the level of VHVs participation on nutritional activities.

(5) The data was used to analyze by cross tabulation and Chi-square to find out the association between the three level of participation and the predisposing factors, enabling factors and reinforcing factors.

CHAPTER IV
RESULTS

The participation of village health volunteers (VHVs) who had been working on the nutritional activities program in Muang district, Sakeo province, Thailand and its factors related to their participation was studied during January 28 to February 15, 2006. The total number of VHVs was 280, selected from four sub districts were interviewed by using a self-administered questionnaire. The findings of the study were presented in two main parts; part one was a description of the respondents' characteristics and part two was a statistical analysis of factors associated with the participation of the VHVs. The association between the independent and dependent variables was tested by using Chi-square test. The level of significance for association was set at p-value = 0.05.

Part one – Descriptive

Section 1: Socio-demographic characteristics of the respondents.

Section 2: Respondent's enabling factors including working experience, training experience on nutritional activities, and material supports.

Section 3: Motivational support for the participation of the respondents including support from family, local leaders, health staff and villagers and incentives.

Section 4: Psychosocial characteristics of the respondents including knowledge and attitude towards participating the nutritional activities.

Section 5: Level of participation among respondents in the nutritional activities.

Part two – Analytic

Section 6: Association between dependent variable (participation of VHV on nutritional activities) and independent variables (predisposing, enabling and reinforcing factors).

4.1 Socio-demographic characteristics of village health volunteers

Table 5 Number and percentage distribution of respondents by socio – demographic Characteristics

Socio-demographic characteristics	Number (n= 280)	Percentage (%)
Age (years)		
≤ 30	13	4.64
31 - 40	88	31.43
41 - 50	97	34.64
≥ 51	82	29.29
Mean = 45.18 SD = 9.65 Min = 18 Max = 69		
Gender		
Male	107	38.21
Female	173	61.79
Marital status		
Single	16	5.71
Married	240	85.71
Widowed	16	5.71
Divorced/Separated	8	2.87
Education levels		
Primary school	187	66.79
Secondary school	58	20.71
High school	29	10.36
Others (College, Bachelor)	6	2.14

Table 5 Number and percentage distribution of respondents by socio – demographic characteristics (Cont.)

Socio-demographic characteristics	Number (n= 280)	Percentage (%)
Occupation		
Farmer/plantation	93	33.21
Laborer	87	31.07
Daily wages laborer/ vender	39	13.93
Housewife	33	11.79
Others	28	10.00
Family monthly income (Baht)		
≤ 4000	166	59.29
4001 – 8000	87	31.07
≥ 8000	27	9.64
Median = 4000 , Min = 500 Max = 30000		

Table 5 presented the distribution of the village health volunteers according to their socio-demographic characteristics such as age group, gender, marital status, education level, occupation and average monthly family income.

The age of respondents ranged from 18 to 69 years old with the mean of age is 45.18 years and standard deviation of 9.65 years. The age distribution of the respondents showed the majority (34.64%) was concentrated in the age group of 41-50 years old. About one third (31.43% and 29.29%) of the respondents were in the age group of 31-40 and more than 50 years old. The age of the youngest group, 18-30 years old, only accounted for 4.64% of the respondents.

The majority of the respondents were female (61.79%) and 38.21% were male. Most of the respondents were married (85.71%), 5.71% were single and 8.58 % were widowed and divorce/separated.

The education attainment of the respondents indicated that the majority of them had attended primary school whereas 20.71% and 10.36% of them had got secondary and high school levels respectively. Only 2.14% of the respondents had received college education and vocational study.

The majority of the respondents' occupations were farmer (33.21%) and laborers (31.07%), daily wage laborers or venders and housewife accounted for 13.93% and 11.79%, respectively. Other occupations such as grocery shop sellers and business firm employees contributed 10%.

The average monthly family income of the respondents displayed a wide gap, ranging from 500 Baht to 30,000 Baht. The median of family income was 4,000 Baht per month. The majority (59.29%) of respondents had their income of 4,000 Baht or less and about one-third of them (31.07%) had the income more than 4,000 Baht and up to 8,000 Bath. Only 9.64% of respondents had their income more than 8,000 Baht per month.

4.2 Identification of the enabling factors of village health volunteer's status

4.2.1 Working experience of village health volunteers

Table 6 Number and percentage distribution of respondents by working experience

Working experience	Number (n= 280)	Percentage (%)
Duration to be a VHV (in year)		
1 – 4	84	30.00
5 – 10	130	46.43
11 – 15	31	11.07
> 15	35	12.50
Mean = 8 SD = 5.5 Median = 7 Min = 1 Max = 25		
Type of recruitment		
Self-administer	135	48.21
Selected by villagers	53	18.93
Selected by health personnel	47	16.79
Selected by village chief	24	8.57
Transferred by parent/relatives	10	3.57
Others (Selected by VHV chiefs)	11	3.93

The duration of VHVs' work for the nutritional activities ranged from 1 to 25 years with the median of 7 years. Table 6 showed that among 280 respondents, roughly 30% were involved in the nutritional activities from 1 to 4 years, followed by those who being involved from 5 to 10 years, 11 to 15 years and more than 15 years accounting for 46.43%, 11.07% and 12.50%, respectively.

Regarding to type of recruitment to be a VHV, the majority of the VHVs (48.21%) were recruited by self-administer. The VHVs who selected by villagers,

health personnel and village chief contributed 18.93%, 16.79% and 8.57%, respectively. 3.57% of the VHVs were transferred by their parents or relatives, and others (3.93%) were selected by VHVs chief.

4.2.2 Training experience of village health volunteers

Table 7 Number and percentage distribution of respondents by training experience

Training experience	Number (n= 280)	Percentage (%)
Attend training course/refresher training on nutrition		
Yes	248	88.57
No	32	11.43
Number of training attended		
None	32	11.43
1 – 5	127	45.35
> 5	121	43.22
Mean = 7 SD = 7.5 Median = 4 Min = 0 Max = 35		
Time of the last training		
Last year (2005)	145	51.79
Last two years (2004)	84	30.00
Last three years (2003)	10	3.57
More than three years ago	9	3.21
Never attend refresher training course	32	11.43

As given in Table 7, about 11.43% of respondents answered that they had never received any training course or refresher training on nutrition while 45.35%, and 43.22% of the respondents had received nutrition training ranged 1 - 5, and more than 5 times, respectively. Median of the number of training was 4 times and its maximum was 35 times.

About half of the respondents (52.79%) received their last nutrition training last year (2005), about one-third (30%) in 2004 and 3.57% in 2003. Only 3.21% of respondents attended their last training before 2003.

4.2.3 Material support for village health volunteer

Table 8 Number and percentage of respondents by material supports

Material support	Number (n=280)	Percentage (%)
Type of material*		
Weighing scale	194	69.29
Growth chart	189	67.50
IEC materials	160	57.14
Number of type of the material support received		
0	52	18.57
1	52	18.57
2	37	13.22
3	139	49.64

* Multiple answers

To do the nutritional activities program, the village health volunteers have received some basic material such as weighing scale, growth monitoring chart and IEC materials. Table 8 showed the type of material supports. In the study, more than half of the respondents, 69.29%, 67.50% and 57.14%, had received some material as

fellow, weighing scale, growth chart and IEC materials, respectively. Comprehensively, the number of type of material support ranged from 0 to 3. The majority of respondents (49.64%) received the three types of materials, followed by 18.57% and 13.21% received 1and two types of material, respectively. And 18.57% of respondents did not receive any type of material support as mentioned above.

4.3 Identification of the reinforcing factors of village health volunteer

4.3.1 Motivational supports

Table 9 Number and percentage of respondents by level of motivational support

Motivational Supports	Number (n= 280)	Percentage (%)
Support from Family		
Poor (0 - 2)	6	2.14
Good (3)	274	97.86
Mean = 2.96 SD = 0.25 Min. = 0 Max. = 3		
Support from Local leaders		
Poor (0 - 3)	61	21.79
Good (4 - 6)	219	78.21
Mean = 4.78 SD = 2.04 Median = 6 Min. = 0 Max. = 6		
Support from Health staff		
Poor (0 - 4)	21	7.50
Good (5 - 8)	259	92.50
Mean = 7.23 SD = 1.53 Median = 8 Min. = 0 Max. = 8		
Support from Villagers		
Poor (0 - 7)	55	19.64
Good (8 - 15)	225	80.36
Mean = 9.8 SD = 2.9 Min. = 0 Max. = 15		

Table 9 presented the level of support from family, local leaders, health staff and villagers among the respondents. The classification of the levels were based on 50th percentile; the total score of support was equal or lower than 50th percentile was classified as "Poor" and the total score was higher than 50th percentile was classified as "Good".

Three questions were asked to assess the support from family and five, six and eight questions were asked to assess the level of support from villagers, local leaders and health staff, respectively. It was found that only a small proportion of respondents (2.14%) had poor support from their family (giving the score for 2 or less) and the majority (97.86%) had good support (giving score for 3). The range of the score was 0 to 3 with mean of 2.96, standard deviation of 0.25.

For the support from local leaders, only 21.79% of the respondents had poor support (giving score less than 4) and 78.21% had good support (giving score from 4 to 6) and total score ranged from 0 to 6, mean of 4.78 and standard deviation of 2.04. Most of the respondents (92.50%) had good support from health staff (giving score from 5 to 8), 7.50% of them had poor support (giving score from 0 to 4) and total score ranged from 0 to 8 with mean of 7.23 and standard deviation of 1.53. Regarding to the support from villagers, 80.36% of them had good support (giving score from 8 to 15) and nearly 20% had poor support (giving score from 0 to 7), the total score ranged from 0 to 15 with mean of 9.8 and standard deviation of 2.9. The detailed score for each item of support from family was presented in Table 23 and Table 24 in Appendix B.

4.3.2 Incentives

Table 10 Number and percentage of respondents by incentives

Incentives	Number (n=280)	Percentage (%)
Incentive receiving		
Yes	277	98.93
No	3	1.07
Number of type of incentive received		
Never	3	1.07
Up to three	218	77.86
More than three	59	21.07
Incentive satisfaction		
Yes	265	94.64
No	15	5.36

The Table 10 presented the type and the number of type of incentives the respondents had received since they worked as a VHV. Most of them (98.93%) reported they had received at least one type of incentives. The majority (77.86%) of respondents received three types of incentives or less whereas 21.07% of them received more than three types. Only 3 respondents (1%) had never received any type of incentives. According to the incentive satisfaction, the majority of respondents (94.64%) were satisfied. The detailed of number and percentage of respondents distribution by each type of incentive was presented in Table 25 in Appendix B.

4.4 Psychological characteristics of village health volunteers

4.4.1 Knowledge of nutrition

Table 11 Number and percentage of VHVs by level of knowledge on nutrition

Knowledge on nutrition	Number (n = 280)	Percentage (%)
Poor (0 – 9)	95	33.93
Moderate (10 – 12)	147	52.50
Good (13 – 15)	38	13.57
Mean = 10.23 SD = 2.07	Median = 10 Min.= 4	Max. = 15

Table 11 presented the level of knowledge among the respondents. The 15 questions designed to assess nutrition knowledge and the level of knowledge was based on Bloom criteria (0-60%: Poor, 61-80%: Moderate and 81-100%: Good). It was found that only 13.57% of respondents had good knowledge (giving score of more than 12). About half of the respondents (52.50%) had moderate knowledge (giving score of 10 to 12) while 33.93% of them had poor knowledge (giving score of 9 or less). The total score of knowledge ranged from 4 to 15 with mean of 10.23 and standard deviation of 2.07. The detailed score for each item of knowledge was presented in Table 26 in Appendix B.

4.4.2 Attitude toward the nutritional activities

Table 12 Number and percentage of VHVs by level of attitude toward nutritional Activities

Attitude toward nutritional activities		Number (n = 280)		Percentage (%)
Poor	(0 – 54)	47		16.79
Moderate	(55 – 72)	180		64.29
Good	(73 – 90)	53		18.92
Mean = 64.6	SD = 8.8	Median = 65	Min.= 46	Max. = 86

Table 12 presented the level of attitude toward nutritional activities among the respondents. The respondents were asked 18 questions designed to assess their attitude and the level of the attitude was based on Bloom criteria (0-60%: Poor, 61-80%: Moderate and 81-100%: Good) (49). It was found that only 18.92% of respondents had good attitude (giving score of more than 72). 64.29% of the respondents had moderate attitude (giving score of 55 to 72) while 16.79% of them had poor attitude (giving score of 54 or less). The total score of attitude ranged from 46 to 86 with mean of 64.6 and standard deviation of 8.8. The detailed score for each item of knowledge was presented in Table 27 in Appendix B.

4.5 Participation of village health volunteers on the nutritional activities

4.5.1 Working place

Table 13 Number and percentage of respondents by working place of nutritional activities

Working place*	Number (n=280)	Percentage (%)
PCU/HC	189	67.50
Home visit	178	63.57
School	84	30
Others	28	10

* Multiple answers

The working place for the nutritional activities was showed on Table 13. The majority (67.50% and 63.57%) of the respondents were reported that they performed their activities at the primary health care unit (PCU) or health center (HC) and the villager house during the home visit activities. 30% of the respondents did their activities at school in their village and only 10% did the activities at other places such as pagoda or village meeting center.

4.5.2 Participation in nutritional activities

Table 14 Number and percentage distribution of respondents by participation on nutritional activities

Nutritional activities	Participation n=280 (%)			
	Regular	**Often**	**Sometime**	**Never**
Weighing under five years old every 3 months	135 (48.21)	53 (18.93)	88 (31.43)	4 (1.43)
Check growth curve of children under five years old	75 (26.8)	75 (26.8)	110 (39.3)	20 (7.1)
Inform and discuss with mothers about the result of their children's weight and nutrition status	95 (33.92)	71 (25.36)	106 (37.86)	8 (2.86)
Prepare and provide supplementary food for malnourished children	45 (16.07)	66 (23.57)	125 (44.64)	44 (15.72)
Using IEC materials during health education	35 (12.5)	62 (22.14)	135 (48.22)	48 (17.14)
Provide health education about basic foods	37 (13.21)	65 (23.21)	143 (51.08)	35 (12.50)
Provide health education about breast feeding	73 (26.07)	83 (29.64)	99 (35.36)	25 (8.93)
Provide health education about proper dietary practices	51 (18.21)	67 (23.93)	136 (48.57)	26 (9.29)
Demonstrate on food preparation to mothers with malnourished children	34 (12.13)	47 (16.79)	138 (49.29)	61 (21.79)
Weighing and follow up obese people at least once a month	43 (15.36)	56 (20)	125 (44.64)	56 (20)
Encourage obese people in the village to do physical exercise	78 (27.86)	98 (35)	91 (32.5)	13 (4.64)

Table 14 Number and percentage distribution of respondents by participation on nutritional activities (Cont.)

Nutritional activities	Participation n=280 (%)			
	Regular	**Often**	**Sometime**	**Never**
Educate obese people to change their eating behavior	55 (19.15)	79 (28.2)	120 (42.85)	26 (9.3)
Weighing pregnant women	48 (17.14)	53 (18.93)	108 (38.57)	71 (25.36)
Educate pregnant women about nutrient needs during pregnancy and lactation	46 (16.43)	66 (23.57)	131 (46.79)	37 (13.21)
Educate married women about family planning	38 (13.57)	57 (20.36)	146 (52.14)	39 (13.93)
Report on nutrition status in the village to the HC	66 (23.56)	83 (29.64)	103 (36.8)	28 (10)
Discuss with others and health staffs about nutrition problems in the village during the VHV meeting	77 (27.5)	70 (25)	116 (41.43)	17 (6.07)
Develop weekly or monthly activity plan for the nutrition program	35 (12.5)	64 (22.85)	145 (51.8)	36 (12.85)
Encourage the villagers to attend in the nutritional activities program in the village	56 (20)	81 (28.93)	122 (43.57)	21 (7.5)
Cooperate with village committee to solve the problem on nutrition in the village	71 (25.36)	73 (26.07)	109 (38.93)	27 (9.64)

The number and percentage distribution of VHVs 'participation on nutritional activities during last year was presented in Table 14. The activities were shown according to the basic activities for nutritional activities of VHVs. The majority (48.21%) of the respondents participated in weighing children under five years old regularly and about one third (21. 79%) of respondents had never participated in demonstrating on food preparation to mothers with malnourished children. More than half of respondents participated regularly and often in weighing children under five years old, check growth curve, inform and discuss with mother about their children nutrition status, provide health education about breast feeding, report on nutrition status in the village to the health center, discuss with health staff about nutrition problem and cooperate with village committee to solve the nutrition problem in their village.

Table 15 Number and percentage distribution of respondents by participation level on nutritional activities

Level of Participation	Number (n = 280)	Percentage (%)
Poor (5 – 23)	77	27.50
Fair (24 – 41)	148	52.86
Good (42 – 59)	55	19.64
Mean = 31.11 SD = 11.98 Median = 30.5 Min.= 5 Max. = 59		

Total scores from 20 activities in Table 14, was summarized and reclassified in Table 15. VHVs' participation status scores for each activity that they answered were given "3" for regularly, "2" for often, "1" for sometime and "0" for never participate in the activity. And the total score of participation for each respondent was calculated. The levels of participation in the activities were classified based on rating scale criteria with three categories: Poor, Fair and Good.

The total scores ranged from 5 to 59 with mean of 31.11 and standard deviation of 11.98. About half of respondents (52.86%) had fair participation (giving score of 24 to 41) and 27.50% of them had poor participation (giving score of 5 to 23). Only 19.64% of respondents had good participation (giving score of 42 to 59).

4.6 Association between the dependent and independent variables

4.6.1 Association between participation and socio-demographic characteristics of VHVs

Table 16 Association between VHVs' participation and socio-demographic characteristics

Socio-demographic characteristics	Participation			Total	χ^2 (df)	p-value
	Poor n (%)	Fair n (%)	Good n (%)			
Age (years)						
≤ 30	5 (38.46)	5 (38.46)	3 (23.08)	13	12.850 (6)	**0.045***
31 - 40	22 (25)	45 (51.14)	21 (23.86)	88		
41 - 50	36 (37.11)	44 (45.36)	17 (17.53)	97		
≥ 51	14 (17.07)	54 (65.85)	14 (17.08)	82		
Gender						
Male	27 (25.23)	61 (57.01)	19 (17.76)	107	1.202 (2)	0.548
Female	50 (28.90)	87 (50.29)	36 (20.81)	173		

** $p < 0.05$*

Table 16 Association between VHVs' participation and socio-demographic characteristics (Cont.)

Socio-demographic characteristics	Participation			Total	χ^2 (df)	p-value
	Poor	Fair	Good			
	n (%)	n (%)	n (%)			
Marital Status						
Single	3 (18.75)	12 (75.00)	1 (6.25)	16	11.195 (6)	0.083
Married	66 (27.50)	122 (50.83)	52 (21.67)	240		
Widower	3 (18.75)	11 (68.75)	2 (12.50)	16		
Divorce/separate	5 (62.50)	3 (37.50)	0 (0)	8		
Education						
Primary school	46 (24.60)	109 (58.29)	32 (17.11)	187	13.577 (6)	**0.035***
Secondary school	23 (39.66)	22 (37.93)	13 (22.41)	58		
High school	6 (20.69)	13 (44.83)	10 (34.48)	29		
Others (College, Bachelor)	2 (33.33)	4 (66.67)	0 (0)	6		

** $p < 0.05$*

Table 16 Association between VHVs' participation and socio-demographic characteristics (Cont.)

Socio-demographic characteristics	Participation			Total	χ^2 (df)	p-value
	Poor	Fair	Good			
	n (%)	n (%)	n (%)			
Occupation						
Farmer/plantation	22 (23.66)	49 (52.68)	22 (23.66)	93	8.931 (8)	0.348
Laborer	31 (35.63)	39 (44.82)	17 (19.55)	87		
Daily wages laborer/ vender	6 (15.38)	26 (66.67)	7 (17.95)	39		
Housewife	10 (30.30)	18 (54.55)	5 (15.15)	33		
Others	8 (28.57)	16 (57.14)	4 (14.29)	28		
Income						
≤ 4000	52 (31.33)	85 (51.20)	29 (17.47)	166	10.99 (4)	**0.027***
4001 – 8000	22 (25.29)	50 (57.47)	15 (17.24)	87		
≥ 8000	3 (11.11)	13 (48.15)	11 (40.74)	27		

** $p < 0.05$*

Poor, fair and good participation of VHVs in nutritional activities were cross-tabulated with each of independent variables including socio-demographic characteristics and looked for any significant relationship. These relations were presented in Table 16. There was slightly significant association between participation and age groups of VHVs. Regarding to level of education, the Chi-square value indicated there was significant association between participation and education level of VHVs. There was also significant association between participation and monthly family income of VHVs.

However, among the VHVs socio-demographic characteristics there were no significant association between the levels of participation with gender, marital status and occupation.

4.6.2 Association between participation and working experiences of VHVs

Table 17 Association between VHVs' participation and working experiences

Working experiences	Participation			Total	χ^2 (df)	p-value
	Poor	Fair	Good			
	n (%)	n (%)	n (%)			
Duration to be a VHV (in year)						
1 – 4	25 (29.76)	45 (53.57)	14 (16.67)	84	15.059 (6)	**0.020***
5 – 10	44 (33.85)	63 (48.46)	23 (17.69)	130		
11 – 15	6 (19.35)	15 (48.39)	10 (32.26)	31		
> 15	2 (5.71)	25 (71.43)	8 (22.86)	35		
Type of recruitment						
Self-administer	32 (23.70)	80 (59.26)	23 (17.04)	135	21.002 (10)	**0.021***
Selected by villagers	10 (18.87)	28 (52.83)	15 (28.30)	53		
Selected by health personnel	23 (48.94)	15 (31.91)	9 (19.15)	47		
Selected by village chief	6 (25.00)	13 (54.17)	5 (20.83)	24		
Transferred by parent/relatives	2 (20.00)	5 (50.00)	3 (30.00)	10		
Others	4 (36.35)	7 (63.65)	0 (0)	11		

** $p < 0.05$*

Table 17 presented there were significant association between participation and duration that the respondents have been VHVs and type of VHVs recruitment. The highest proportion of good participation (32.26%) belonged to the group of 11-15 and smallest proportion of poor participation (5.71%) belonged to the group of more than 15 years.

The groups were selected by villagers and transferred by parent/relatives had more active participate in the activities than other groups did, with the proportion of good participation of 28.30% and 30%, respectively. The highest proportion of poor participation (48.94%) was the group selected by health personnel.

4.6.3 Association between participation and training experiences of VHVs

Table 18 Association between VHVs' participation and training experiences

Training experiences	Participation				χ^2	p-value
	Poor	Fair	Good			
	n (%)	n (%)	n (%)	Total	(df)	
Attend training course/refresher training on nutrition						
Yes	64 (25.81)	130 (52.42)	54 (21.77)	248	7.360	**0.025***
No	13 (40.63)	18 (56.25)	1 (3.12)	32	(2)	
Number of training attended						
None	12 (37.50)	19 (59.38)	1 (3.12)	32	13.832	**0.008***
1 – 5	37 (29.13)	56 (44.09)	34 (26.78)	127	(4)	
> 5	28 (23.14)	73 (60.33)	20 (16.53)	121		
Time of the last training **						
Last year (2005)	28 (19.31)	83 (57.24)	34 (23.45)	145	16.564	**0.011***
Last two years (2004)	33 (39.29)	33 (39.29)	18 (21.42)	145	(6)	
Last three years (2003)	1 (10.00)	7 (70.00)	2 (20.00)	10		
More than three years ago	2 (22.22)	7 (77.78)	0 (0)	9		

** Exclude Never attend refresher training course = 32

** $p < 0.05$*

Table 18 described the results of the statistical test for association between participation and nutrition training experiences of the respondents. There were significant associations between participation and training course or refresher training on nutrition attendants, number of the training attended and time of the last training.

The majority of respondents who never attended any training (40.63%) had poor participation. The highest proportion of good participation (26.77%) belonged to the group that received the training from 1 to 5 times. More than half of group that received training more than 5 times (60.33%) had fair participation while the group of 1- 5 had only 44%. Refer to the time of last training; the table showed that the longer of the last training time the levels of participation had become lower.

4.6.4 Association between participation and material support of VHVs

Table 19 Association between VHVs' participation and material supports

Material supports	Participation				χ^2	p-value
	Poor	Fair	Good			
	n (%)	n (%)	n (%)	Total	(df)	
Number of type of the material support received						
None	28 (53.85)	18 (34.62)	6 (11.53)	52	42.215 (6)	**0.000***
1	13 (25.00)	19 (36.54)	20 (38.46)	52		
2	11 (29.73)	24 (64.86)	2 (5.41)	37		
3	25 (17.99)	87 (62.59)	27 (19.42)	139		

** $p < 0.05$*

The table 19 presented the significant association between participation and number of type of the material supports. The respondents who received the three types of material more likely than others who received material less than 3 types to have good participation in the activities.

4.6.5 Association between participation and motivational supports of VHVs

Table 20 Association between VHVs' participation and motivational supports

Motivational Supports	Participation			Total	χ^2 (df)	p-value
	Poor	Fair	Good			
	n (%)	n (%)	n (%)			
Support from family						
Poor	2 (33.33)	3 (50.00)	1 (16.67)	6	0.113 (2)	0.945
Good	75 (27.37)	145 (52.92)	54 (19.71)	274		
Support from local leaders						
Poor	26 (42.62)	28 (45.90)	7 (11.48)	61	9.849 (2)	**0.007***
Good	51 (23.29)	120 (54.79)	48 (21.92)	219		
Support from health staff						
Poor	11 (52.38)	10 (47.62)	0 (0)	21	9.688 (2)	**0.008***
Good	66 (25.48)	138 (53.28)	55 (21.24)	259		
Support from villagers						
Poor	22 (40.00)	31 (56.36)	2 (3.64)	55	12.976 (2)	**0.002***
Good	55 (24.44)	117 (52.00)	53 (23.56)	225		

** $p < 0.05$*

Table 20 indicated association between participation and motivational supports, which included support from family, local leaders, health personnel and villagers.

The result of the Chi-square test showed that there were significant association between participation and support from local leaders, health staff and villagers; but there was no significant association between participation and support from family.

4.6.6 Association between participation and incentives of VHVs

Table 21 Association between VHVs' participation and incentives

Incentives	Participation			Total	χ^2 (df)	p-value
	Poor	Fair	Good			
	n (%)	n (%)	n (%)			
Incentive receiving						
Yes	76 (27.44)	146 (52.70)	55 (19.86)	277	0.743 (2)	**N/A**
No	1 (33.33)	2 (66.67)	0 0	3		
Number of type of incentive received						
1 – 3	68 (31.19)	115 (52.75)	35 (16.06)	218	12.708 (2)	**0.002***
More than three	8 (13.56)	31 (52.54)	20 (33.90)	59		
Incentive satisfaction						
Yes	73 (27.55)	137 (51.70)	55 (20.75)	265	4.374 (2)	0.112
No	4 (26.67)	11 (73.33)	0 0	15		

N/A: Not applicable to use Chi-square

** $p < 0.05$*

Table 21 showed that there was significant association between participation and number of type of incentives VHVs received. The group of respondents received more than three types of incentives more likely than those received incentive up to three types to have good participation. However, there was no significant association between participation and incentive satisfaction.

4.6.7 Association between participation and psychological factors of VHVs

Table 22 Association between VHVs' participation and psychological factors

Psychological factors	Participation			Total	χ^2 (df)	p-value
	Poor	Fair	Good			
	n (%)	n (%)	n (%)			
Level of knowledge on nutrition						
Poor	33 (34.74)	48 (50.52)	14 (14.74)	95	6.016 (4)	0.198
Fair	35 (23.81)	77 (52.38)	35 (23.81)	147		
Good	9 (23.68)	23 (60.53)	6 (15.79)	38		
Level of attitude toward nutrition activities						
Poor	23 (48.94)	19 (40.42)	5 (10.64)	47	22.392 (4)	**0.000***
Fair	48 (26.66)	100 (55.56)	32 (17.78)	180		
Good	6 (11.32)	29 (54.72)	18 (33.96)	53		

** $p < 0.05$*

Table 22 presented the association between participation and psychological factors of VHVs including knowledge on nutrition and attitude toward nutritional activities.

According to the results of the statistical test, there was no significant association between participation and knowledge. Although the proportion of good participation among the poor and good knowledge were not much different (14.74% and 15.79%), it seem that those VHVs having lower knowledge had a tendency to have higher proportion of poor participation in the activities. The highest proportion of good participation (23.81%) belonged to the group of those respondents who had fair knowledge on nutrition.

Table 22 showed that there was significant association between participation and attitude of the respondents toward nutritional activities with p-value. It described the VHVs who had higher level of attitude were more likely to have better participation in the activities.

CHAPTER 5
DISCUSSION

This study was based on the primary data collection from VHVs who have been working in the nutritional activities program in Muang district, Sakeo province, Thailand. A total of 280 VHVs were interviewed. The main objective of the study was to assess the level of participation of VHVs in the nutritional activities. In addition, the factors related to the VHVs participation, such as predisposing factors (socio-demographic and psychological characteristics), enabling factors (working experience, training experience and material support) and reinforcing factors (motivational support and incentive) were determined in this study. According to the conceptual framework, the objective of this study was also to identify the association between the dependent and independent variables.

5.1 The level of VHVs' participation in nutritional activities

In this study, the participation of VHVs in nutritional activities was classified into three levels, namely poor, fair and good. In overall participation status in the activities, the growth monitoring of children under five years old, inform mother about their child's nutrition status, health education about breast feeding and encourage obese people to do physical exercise were performed more than the others such as weighing pregnant women, weighing obese people and demonstrate on food preparation to mother with malnourished child.

The results showed the level of participation of VHVs in nutritional activities; about one fifth (19.64%) of VHVs were good participation, more than half (52.86%) of VHVs were fair participation and 27.50% of VHVs were poor participation. The finding had similar to the study done by Tin Tun Aung (17), conducted in Chiang Mai, had found the proportion of good, fair and poor participation of VHVs were 19.5%, 56.1% and 24.4%, respectively. But the good proportion of this study was

lower than the other previous studies. In Khin Myintzu Han (24) study showed that the high performance were to be highly active VHVs which had constituted 32.6% and those who low performance were to be moderately active VHVs was 67.4%. For Sulaiman Ratman (25) found that 38.8% of VHVs had highly active (good participation), the majority (56.1%) was related as fair participation and only the small amount of VHVs (19.5%) were related as poor participation.

According to Sompoch Ratioran (36), only one- third of VHVs (35.9%) participated in nutritional activities in term of weighing children under five years old. In this study, only 7 activities among overall activities (20 activities) were participated by VHVs often and regularly with the proportion higher than 50% (Table 14). It meant that the VHVs had poor participation in the other activities. That could be nutrition is not a major problem in Thailand now, because they have VHVs involve in the nutritional program since 1980s and malnutrition rate were remarkably reduced during nine years from 1982 to 1991from over 50% to under 20%virtually eradicating severe and moderate malnutrition in the process (9).

5.2 The VHVs' participation related to socio-demographic characteristics

In this study, there was slightly association between participation and age of VHVs. The result supported to Nguyen Thu Huoung (21) and Chan-amrung S. (45), they concluded that VHVs having high age had more participation than those with young age.

However, it is hard to conclude that old age people are always better than young age people because both have advantage and also disadvantage. It maybe young ones did not have enough experience but they were vigorous and had better education while old age people tend to have more experience and responsibility but they were not vigorous enough.

There was association between participation and education level of VHVs in this study. It was revealed that those who had higher level of education for example

primary, secondary and high school tended to have better participation. The majority of VHVs (66.8%) had primary level of education and only few (2.14%) had bachelor or vocational education.

This finding was the same as the previous studies, the study of Surendra Shrestha (46) and Chan-amrung S. (45). They concluded that people who received high education had more participation than those obtaining lower education. But it contrasted to Nguyen Thu Huoung (21), the study in Vietnam, which showed the higher level of education and professional level tended to have a poorer participation.

The study result found that average family monthly income among respondents had a wide range from 500 to 30,000 baht and nearly 60% of respondents had income 4,000 baht or less per month and only 9.64% had income 8,000 baht or more. The statistic showed there was significant association between participation and family income of the respondents. The proportion of good participation was higher depending on the higher level of income the VHVs had. This finding supported the study of Khin Myintzu Han (24). Comparing to the study of Nguyen Thu Huoung (21) and Tin Tun Aung (17), the two studies did not find any significant association between participation and income of VHVs but their result of good participation proportion tended to be high while the level of income was high. It was probably the poor had problem already in their family that why they could not participate actively in the activities as much as the rich did.

However, this study did not find any significant association between participation and gender, marital status and occupation of the respondents at p-value of 0.05. The result was same as the result of Sulaiman Ratman (25), and Tin Tun Aung (17). But Francis Wade Z. Gomez IV (18) and Nguyen Thu Huoung (21) found there were significant association between participation and marital status. For Surendra Kumar Shrestha (46), he found that the association between participation and occupation in term of job satisfaction.

5.3 The VHVs' participation related to psychological factors

The majority of respondents (52.5%) had moderate knowledge and only 13.57% had good knowledge on nutrition. There was no relation between the participation of VHVs in nutritional activities and knowledge on nutrition in this study. This finding was not supported by the previous studies made by Mohaman Rahmen (47), Nguyen Thu Huoung (21) and Tin Tun Aung (17) indicated there was significant association between participation and knowledge of VHVs. They concluded that good knowledge the VHVs had, the good performance they did. Even though this study not found the significant association between participation and knowledge, it revealed that the higher level of knowledge of VHVs tended to have better level of participation in the activities.

Concerning to the attitude towards the nutritional activities of the respondents, the majority of them had good and moderate attitude. Only the small amount of them (16.79%) had poor attitude. The result showed that the attitude towards the nutritional activities had positive relationship with participation. This finding paralleled to previous studies made by Mohaman Rahmen (47), Nguyen Thu Huoung (21) and Sompoch Ratioran (36) showed that positive attitude would practice well.

5.4 The VHVs' participation related to enabling factors

The duration of work of VHVs in this study was divided into 4 groups: less than 5 years, from 5 – 10 years, from 11 – 15 years and longer than 15 years. The majority of respondents (46.43%) had duration of work from 5 to 10 years; about one third of them had experience of work less than 5 years and about 11% and 12.50% had duration of work from 11 to 15 years and more than 15 years. The result also showed there was significant association between participation and duration of work of the VHVs. The Table 17 revealed that the proportion of good and fair participation had increased depending on longer duration of work, but the group of VHVs who had experience of work more than 15 years the proportion of good participation tended to be lower. This result was supported by Mikhanorn J. (39), he indicated the period of 6

to 14 years would provide the experience needed for carrying out nutritional activities. VHVs with less experience would not be skilled enough to solve problem. It is probably the ones who worked very long time could be become bored and less energetic.

According to the type of recruitment to be a VHVs, the majority of respondents were self volunteer (48.21%) and 18.93%, 16.79%, 8.57% and 3.93% were selected by villager, health personnel, village chief and VHVs chief, respectively. Only 3.57% of respondents were transferred by parent or relative. This study showed there was significant association between participation and type of recruitment of VHVs. The group of VHVs transferred by parent had highest proportion of good and fair participation and the latter was the group selected by villagers. Similar to the study of Keiko Suwa (20), the VHVs transferred by parent or relative seemed highest to any approaches in nutrition promotion. Regarding the management of volunteer program, WHO pointed out "poor selection hardly considered motivation for community services" should be blamed in volunteer program (WHO 1987).

The majority of respondents (88.57%) in this study had attended in training or refreshed training on nutrition after they became VHVs. Nearly half of VHVs (45.35%) attended the training from 1 to 5 times and 43.22% attended the training more than 5 times. The time of training was categorized into 4 parts: last year (2005), last two years (2004), last three years (2003) and more than three years ago (before 2003). About half of respondents had their last training in last year, 30% of them had their last training in last two years. Only the small amount of them (3.57% and 3.21%) had their last training in last three years and before. The study result indicated there was association between participation and training experiences including attend training, number of training the VHVs attended and time of the training.

The table 18 showed that VHVs never attended training or refreshed training on nutrition had poorer participation than VHVs had attended the training did. Also the number of training they received had influenced to their participation; it seemed similar to the duration of work. It was remarkable that the time of last training in this

study affected the participation of VHVs. The longer time of the last training tended to be poorer participation of VHVs in the activities. The study was supported by the study of Shan Ou Qi (48) revealed that those who had more opportunities to attend the refreshed course after becoming a VHV would perform better. For Nguyen Thu Huoung (21), showed a strongly significant association between time of last training and VHVs performance. This finding was verified by other relevant studies in Thailand (40,41). It was proved that lack of continuing training would affect skill and performance.

Majority of respondents (49.64%) received three types of material for their activities, about 18.57% of them did not have material support and the others had only one or two types of material. There was association between participation and material support. It revealed that the VHVs had the three types of material had participated in the activities better than those who had received less or no did. This was same as the study of Publio V. Piedad JR. (40) showed the significant related to the provision of supplies and performance. He indicated that there was high performance level among those who were supplied with these material while contrary was true among those who were not supplied.

5.5 The VHVs' participation related to reinforcing factors

This study showed in Table 20 almost all of respondents (97.86%) had good support from their family. There was no association between participation and the support from family but the result showed the VHVs had good support from family tended to have good participation in the activities. Some previous for example the study of Gomez FWZ (18) showed there was association between performance and support from family, mainly from one's wife or husband. But the study of Nguyen Thu Huoung (21) did not showed any significant association between the two variables. However, the support from family is very important for VHVs to perform their job because without that support they could not do anything.

The finding from this study found that 78.21%, 92.50% and 80.36% of respondents had good support from local leaders, health staff and villagers, respectively. It also indicated there was association between participation and the three kinds of support. The result showed that the level of these supports had positive relationship with participation in the nutritional activities. This study was supported by the study of Croley (1990) indicated that Tambon health officers' supervision played a positive role in VHVs' performance (17). Nguyen Thu Huoung (21) showed the significant association between the number of support from local leaders and VHVs performance. Those VHVs who received more support from local leaders were more likely to have good performance than those who received fewer (poor support).

It was known that VHVs could not perform their job without support from community people especially the local leaders, who can facilitate favorable condition for VHVs.

In this study, most of respondents (98.93%) had received incentives such as free medical care, per-diem, certificate appreciation, social recognition etc. The majority of them (77.86%) received up to three types of incentives and 21% received more than three types. Only 5.36% of the respondents were not satisfied with their incentives. The finding indicated there was significant association between participation and number of type of incentives, but was no any significant association between participation and incentive satisfaction. Table 21 showed the VHVs who received more than three types of incentives had higher proportion of good participation than the VHVs who received less.

According to WHO, incentives especially allowance support for VHVs was noted that as a vital for motivation and a sensitive issue affecting their job. It indicated that there was a tendency to drop out at higher rate among non-paid VHVs. However, experiences in India showed that although there were some workers who resigned to find better paid job, more than of the workers still kept working as efficiently as they had the year before, to them the worker itself was satisfying (42). And the study of

Tin Tun Aung (17) also showed there was positive significant relation between participation and self-satisfaction of VHV for being a useful resource.

In summary, self-satisfaction of VHVs for being useful resources in village is very important to implement the primary health care activities but other kinds of incentive that we could provide them must have more influence to strengthen their performance to be better and better. That is why in Thailand now the incentive of free medical care had extended to cover the family member of VHVs (20). These could be regarded as a marvelous incentive to motivate VHVs to participate actively in the health care activities.

CHAPTER 6
CONCLUSION AND RECOMMENDATION

6.1 Conclusion

This study was a cross sectional study aimed to assess the participation of the village health volunteers in nutritional activities program and determined the relationship between the selected factors and their participation. A structured questionnaire was used for data collection among 280 village health volunteers who had been working in nutrition program in Muang district, Sakeo province, Thailand. Statistical test (Chi-square) were applied to determine the association between participation and the predisposing factors including socio-demographic and psychological characteristics, enabling factors and reinforcing factors. Based on the finding of this study, we can make the conclusion as follows:

In this study found that the good participation in the nutritional activities was 19.64%. The majority of VHVs (52.86%) had fair participation. The main activity they participated actively was the activities in term of growth monitoring of children under five years old and nutrition education.

This study also revealed that the participation of village health volunteers had relationship with several factors that mentioned in the study. In summary, the participation of VHVs had significant association with:

- Socio-demographic characteristics including age, level of education and family income of VHVs
- Attitude toward nutritional activities
- Enabling factors including working experience (duration of work and type of recruitment), training experience (attend refresher training, number of training received and time of the last training) and material support

- Reinforcing factors including motivational supports (support from local leaders, health staff and villagers) and number of type of incentive the VHVs received.

However, in this did not find the significant relationship between participation and level of knowledge of VHVs as same as many previous studies did.

6.2 Recommendation

Based on the finding of this study, the recommendations are as follows:

6.2.1 Recommendation for implementation

In order to improve the participation of VHVs in carrying out nutritional activities, the following actions, which based on the study finding, should be undertaken:

1. The VHVs recruitment procedure should be considered. In this case selection of VHVs by the villagers and transferred by parent or relatives are the better intervention. The prospective VHVs candidate's educational level also should need to be considered.

2. As for the training or refresher course related to nutritional activities, it might better to conduct every year and the training evaluation should be done appropriately.

3. The motivational supports, especially the support from local leaders should be improved and strengthen.

4. All kinds of material supplies or logistics for carrying out the nutritional activities should be provided to the VHVs in timely and adequately.

5. Appropriate guideline and or job description should be considered and developed for VHVs to improve quality of the nutritional activities.

6. Evaluation of village health volunteers is necessary to determine the effectiveness and to identify the problem affecting them in order to guide program planners and implementers in formulating sustainable policies and guidance.

6.2.2 Recommendation for further studies

There are many factors affecting the participation of VHVs in their activities, while the statistical test in this study could not determine which ones are the most powerful in predicting the participation of VHVs. Moreover, some qualitative research method such as real observation, in-depth interview or focus group discussion could not covered in this study. Therefore, it suggested that:

1. A similar research with a larger sample size and employing techniques of both quantitative and qualitative approaches that mentioned above to overcome the limitation of this study is recommended.

2. Research on the quality of training for VHVs should be done, so the appropriate revision of training program can be undertaken.

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APPENDIX

APPENDIX A
QUESTIONNAIRES

A study of village health volunteers participation in nutrition activities in Muang district, Sakeo province, Thailand

This study intends to achieve better understanding about the participation of village health volunteers in nutrition activities in Muang district, Sakeo province, Thailand. Please mark (✓) and fill in the blank of each question according to VHVs answer. Make sure that every question is marked and answered.

Each questionnaire is used for one VHV only. This questionnaire is for academic research purposes only and all answers are considered confidential.

Name of interviewer: .....

Date of interview: ...../ .... / 2006

Interviewee's ID number: ....., Code: [ ][ ] [ ][ ][ ]

Part 1: (regarding to VHVs personal characteristics)

Socio-demographic factors

1. Age :..... years
2. Gender: □ Male □ Female
3. Education attainment:
   - □ Primary school
   - □ Secondary school
   - □ High school
   - □ Others (specify): .....
4. Occupation:
   - □ Farmer/ plantation
   - □ Laborer
   - □ Private shop owner/vender
   - □ Business firm private sector employee
   - □ Daily wages labor/vender
   - □ Housewife

□ Others (specify): .....

5. Marital status:

□ Single □ Married

□ Widow □ Divorced/Separated

6. What is your household monthly income: ..... Bahts

Part 2: (enabling factors such as training experience, working experience and material supports)

Working experience

7. How long have you been as a village health volunteer? ..... years.
8. How were you recruited to be a village health volunteer?

□ Self-administer □ Selected by the villagers

□ Selected by health personnel □ Selected by village chief

□ Transferred by parent/relatives □ Others (specify): .....

Training experience

9. Since working as a VHV, have you ever attended any training course or refresher training on nutrition?

□ Yes □ No (if No, skip to)

10. If yes, how many training courses or refresher training on nutrition you attended? ..... Courses
11. When was your last training on nutrition?

□ 2005 □ 2004 □ 2003 □ Before2003

Material supports

12. Do you have a weighing scale for your nutritional activities?

□ Yes □ No

13. Do you have a growth chart for your nutritional activities?

□ Yes □ No

14. Do you have IEC materials for your nutritional activities?

□ Yes □ No

Part 3: reinforcing factors such as motivational supports (family, local leader, health staff and villagers) and incentive

Motivational support from family

15. Does your family encourage you to work as VHV?

 Yes No

16. Does your family encourage you to improve the knowledge about nutrition by self-education?

 Yes No

17. Does your family help you to do housework or taking care of the children while you are working for nutrition program?

 Yes No

Motivational support from local leaders

18. Do the local leaders (Village committee, Tambon council...) give you any advice relating to the nutrition activities?

 Yes No

19. Do the local leaders discuss with you about action plan on nutrition activities?

 Yes No

20. Do the local leaders help you to solve the problems regarding to nutrition activities?

 Yes No

21. Do the local leaders support you in term of working condition (eg. facility, vehicle for transportation, coordination...)?

 Yes No

22. Do the local leaders support the budget for the nutrition activities?

 Yes No

23. Do the local leaders monitor the nutrition activities?

 Yes No

Motivational support from health staff

24. Do the health staffs make any comments to improve your work?

 Yes No

25. Do the health staffs encourage/motivate you to do the activities?

□ Yes □ No

26. Do the health staffs demonstrate any technical skill related to nutrition activities to you when they supervise you?

□ Yes □ No

27. Do the health staffs help you to organize and plan your work?

□ Yes □ No

28. Do the health staffs help you to solve the problems related to nutrition activities?

□ Yes □ No

29. Do the health staffs provide you the material (IEC, growth chart...) when you need?

□ Yes □ No

30. Do the health staffs provide you drug supply (iodine, ferrous sulphate, Vitamin A...)?

□ Yes □ No

31. Did health staffs supervise you regularly last year (2005)?

□ Yes □ No

Motivational support from villagers

Villagers attend in the nutrition activities (one answer only)

Activities	Most	Some	Few	None
32. Attend the weighing activities				
33. Attend the feeding station				
34. Attend the food product activity				
35. Feed supplementary food to the malnourished child				
36. Share in the nutrition fund				

Incentive

37. As a VHV, are you receiving any kind of incentive?

□ Yes □ No (skip to ..)

38. If yes, what are they? (You can specify more than one)

□ Free medical care

□ Per-diem received at the meeting in health center

□ Certificate of appreciation

□ Social recognition

□ Self-satisfaction for being useful resource for the village

□ Others (specify):.....

39. Do you satisfy with those incentives?

□ Yes □ No

Part 4 Psychological factors

Knowledge towards nutrition

Statement	Yes	No
1. Exclusive breastfeeding is not enough for the first six months of life of baby for enhancing child survival, growth, and development.		
2. The first milk or colostrum is not necessary for a newborn baby, because it does not contain any good nutrition for him/her.		
3. Exclusive breastfeeding promotes child spacing and thus improves maternal and reproductive health.		
4. Infants under 2 months of age who are not breastfed are more likely to die of diarrhea than infants who are exclusively breastfed.		
5. Breast milk provides total food security for an infant's first six months.		
6. Pregnant women and children should not eat dark green vegetables because they could cause indigestion.		
7. We find Body Mass Index (BMI) to identify a person is obese or not.		
8. To calculate BMI of someone, we have to know his/her height and circumference (perimeter) of hip.		
9. Vitamin A helps our body to promote good night vision.		
10. Iron helps our body to build bones.		
11. Iodine-rich foods cause our body to get goiter.		
12. Breast milk contains vitamin A.		
13. Pregnant women should not eat meals, which contain iron-rich foods.		
14. Obese person may get diabetes more easily than person who is not obese.		
15. Regular and vigorous exercise make person lose fat stores and build muscles.		

Attitude toward Nutrition Activities

Statement	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
1. You feel good about nutrition activities and their benefits.					
2. You are happy to be a VHV in the village.					
3. You greatly enjoy listening to nutrition program talk.					
4. You would angry if someone advised you to improve your knowledge about nutrition.					
5. You pity those who get malnutrition.					
6. You feel normal to those who get obesity.					
7. You think nutrition activities are not important any more because people in your village have enough food to eat.					
8. You believe that rich family never have problem with nutrition.					
9. You believe that poor family can't improve their nutrition status because they don't have enough money to by good food.					
10. Nutrition activities concern about children only.					
11. You would even walk far away to help or advise mother who has child with malnutrition.					
12. It should be the role of health staff or the government to solve the nutrition problem, not you.					
13. You would be happy if the people in your village actively participate in the nutrition activities.					
14. Mass media in the village in enough to do health education including nutrition advice. No need VHVs to do the activities					

Statement	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
more.					
15. You would ask health staff for help if you could not solve problem					
16. You dislike advising those who have poor level of education because it is very difficult to explain.					
17. If someone in your family objected to nutrition activities you would try your best to persuade him/her to see the good things about the activities.					
18. If given an opportunity, you would argue against the need for the nutrition activities.					

Part 5 Participation toward nutrition activities (during the year 2005)

1. Where did your participation in nutrition activities (multiple answers)

   □ PCU/HC
   □ Home visit
   □ School
   □ Others (specify) .....

2. Participation activities

Activities	Participation			
	Regularly	Often	Some time	Never
1. Weighing under five years old every 3 months				
2. Check growth curve of children under five years old				
3. Inform and discuss with mothers about the result of their children's weight and nutrition status				
4. Prepare and provide supplementary food for malnourished children				
5. Using IEC materials during health education				
6. Provide health education about basic foods				
7. Provide health education about breast feeding				
8. Provide health education about proper dietary practices				
9. Demonstrate on food preparation to mothers with malnourished children				
10. Weighing and follow up obese people at least once a month				
11. Encourage obese people in the village to do physical exercise				
12. Educate obese people to change their eating behavior				
13. Weighing pregnant women				
14. Educate pregnant women about nutrient needs during pregnancy and lactation				
15. Educate married women about family planning				
16. Report on nutrition status in the village to the HC				
17. Discuss with others and health staffs about nutrition problems in the village during the VHV meeting				
18. Develop weekly or monthly activity plan for the nutrition program				
19. Encourage the villagers to attend in the nutritional activities program in the village				
20. Cooperate with village committee to solve the problem on nutrition in the village				

THANK YOU VERY MUCH FOR YOUR COOPERATION

APPENDIX B

TABLES

Table 23 Number and percentage distribution of VHVs by motivational supports

Motivational supports	Number (n=280)	Percent (%)
Support from family		
Encourage to work	278	99.3
Encourage to improve the knowledge	277	98.9
Help to do housework or taking care of the children	276	98.5
Support from local leaders		
Give advice related to the nutritional activities	228	81.43
Discuss about action plan of nutrition	226	80.7
Help to solve the problem regarding to nutritional activities	221	78.93
Support in term of working condition	237	84.65
Support budget for the nutritional activities	207	73.93
Monitoring the nutritional activities	221	78.93
Support from health staff		
Make comment to improve the work	279	99.64
Encourage or motivate to do the activities	270	96.43
Demonstrate technical skill related to the activities	260	92.85
Help to do planning	257	91.8
Help to solve problems	260	92.85
Provide material related to the activities	252	90
Provide drug supply (eg. Iodine, ferrous sulphate, vitamin A)	235	83.93
Supervised regularly last year	208	74.3

Table 24 Number and percentage distribution of VHVs by support from villagers

Support from villagers	Most n (%)	Some n (%)	Few n (%)	None n (%)
Attend the weighing activities	132 (47.14)	129 (46.07)	14 (5.00)	5 (1.79)
Attend the feeding station	76 (27.14)	169 (60.36)	28 (10.00)	7 (2.50)
Attend the food product activity	56 (20.00)	159 (56.80)	33 (11.80)	32 (11.40)
Feed supplementary food to the malnourished child	73 (26.07)	138 (49.30)	31 (11.07)	38 (13.56)
Share in the nutrition fund	42 (15.00)	139 (49.64)	47 (16.80)	52 (18.56)

Table 25 Number and percentage distribution of VHVs by type of incentives

Type of incentives	Number (n=280)	Percent (%)
Free medical care	241	86.07
Per-diem	76	27.14
Certificate of appreciation	43	15.36
Social recognition	125	44.64
Self-satisfaction	163	58.21
Others (eg. field study,...)	9	3.21

Table 26 Number and percentage distribution of VHVs by knowledge about nutrition

Knowledge*	Number (n=280)	Percent (%)
Exclusive breastfeeding is not enough for the first six months of life of baby for enhancing child survival, growth, and development.	125	43.93
The first milk or colostrum is not necessary for a newborn baby, because it does not contain any good nutrition for him/her.	209	74.64
Exclusive breastfeeding promotes child spacing and thus improves maternal and reproductive health.	201	71.80
Infants under 2 months of age who are not breastfed are more likely to die of diarrhea than infants who are exclusively breastfed.	190	67.86
Breast milk provides total food security for an infant's first six months.	259	92.50
Pregnant women and children should not eat dark green vegetables because they could cause indigestion.	211	75.36
We find Body Mass Index (BMI) to identify a person is obese or not.	176	62.86
To calculate BMI of someone, we have to know his/her height and circumference (perimeter) of hip.	126	45.00
Vitamin A helps our body to promote good night vision.	239	85.36
Iron helps our body to build bones.	48	17.14
Iodine-rich foods cause our body to get goiter.	214	76.43
Breast milk contains vitamin A.	215	76.80
Pregnant women should not eat meals, which contain iron-rich foods.	179	63.93
Obese person may get diabetes more easily than person who is not obese.	216	77.14
Regular and vigorous exercise make person lose fat stores and build muscles.	259	92.50

* Correct answer

Table 27 Number and percentage distribution of VHVs by attitude towards nutritional activities

Attitude	Strongly agree n (%)	Agree n (%)	Uncertain n (%)	Disagree n (%)	Strongly disagree n (%)
You feel good about nutrition activities and their benefits.	92 (32.86)	174 (62.14)	9 (3.21)	5 (1.79)	0 (0)
You are happy to be a VHV in the village.	117 (41.79)	136 (48.57)	21 (7.50)	6 (2.14)	0 (0)
You greatly enjoy listening to nutrition program talk.	67 (23.93)	173 (61.79)	27 (9.64)	12 (4.29)	1 (0.36)
You would angry if someone advised you to improve your knowledge about nutrition.	30 (10.71)	56 (20)	44 (15.71)	111 (39.64)	39 (13.93)
You pity those who get malnutrition.	116 (41.43)	139 (49.64)	10 (3.57)	12 (4.29)	3 (1.07)
You feel normal to those who get obesity.	26 (9.29)	78 (27.86)	54 (19.29)	98 (35)	24 (8.57)
You think nutrition activities are not important any more because people in your village have enough food to eat.	36 (12.86)	70 (25)	29 (10.36)	101 (36.07)	44 (15.71)
You believe that rich family never have problem with nutrition.	20 (7.14)	80 (28.57)	54 (19.29)	90 (32.14)	36 (12.86)
You believe that poor family can't improve their nutrition status because they don't have enough money to by good food.	42 (15)	110 (39.29)	41 (14.64)	73 (26.07)	14 (5)
Nutrition activities concern about children only.	37 (13.22)	65 (23.21)	10 (3.57)	142 (50.71)	26 (9.29)
You would even walk far away to help or advise mother who has child with malnutrition.	85 (30.36)	173 (61.79)	6 (2.14)	14 (5)	2 (0.71)

Table 27 Number and percentage distribution of VHVs by attitude towards nutritional activities (Cont.)

Attitude	Strongly agree n (%)	Agree n (%)	Uncertain n (%)	Disagree n (%)	Strongly disagree n (%)
It should be the role of health staff or the government to solve the nutrition problem, not you.	38 (13.58)	86 (30.71)	28 (10)	107 (38.21)	21 (7.50)
You would be happy if the people in your village actively participate in the nutrition activities.	140 (50)	121 (43.21)	10 (3.57)	9 (3.22)	0 (0)
Mass media in the village in enough to do health education including nutrition advice. No need VHVs to do the activities more.	30 (10.71)	70 (25)	20 (7.14)	124 (44.29)	36 (12.86)
You would ask health staff for help if you could not solve problem	104	147	9	19	1
You dislike advising those who have poor level of education because it is very difficult to explain.	42 (15)	50 (17.86)	19 (6.78)	133 (47.50)	36 (12.86)
If someone in your family objected to nutrition activities you would try your best to persuade him/her to see the good things about the activities.	68 (24.29)	173 (61.79)	20 (7.14)	18 (6.43)	1 (0.35)
If given an opportunity, you would argue against the need for the nutrition activities.	32 (11.43)	83 (29.64)	41 (14.64)	101 (36.07)	23 (8.21)

BIOGRAPHY

NAME	Roumany Yenn
DATE OF BIRTH	March 09, 1969
PLACE OF BIRTH	Kampot Province, Cambodia
INSTITUTE ATTENDED	Faculty of Medicine, Phnom Penh, Cambodia Medical Doctor 1986 - 1993
	ASEAN Institute for Health Development, Mahidol University, Thailand Master of Primary Health Care Management 2005 - 2006
FELLOWSHIP/ RESEARCH GRANT	JICA / TICA
PRESENT POSITION	Medical Doctor of National Institute of Public Health, Phnom Penh, Cambodia.