

## KNOWLEDGE OF VILLAGE HEALTH VOLUNTEERS ABOUT THALASSEMIA IN NORTHEAST THAILAND

Yupin Jopang<sup>1,2\*</sup>, Suthep Petchmark<sup>2</sup>, Songgroj Srichanil<sup>3</sup>, Arunee Jetsrisuparb<sup>4</sup>, Kanokwan Sanchaisuriya<sup>5</sup>,  
Pattara Sanchaisuriya<sup>6</sup>, and Frank Peter Schelp<sup>6</sup>

<sup>1</sup>Graduate School, Khon Kaen University, Khon Kaen, Thailand.

<sup>2</sup>Health Promotion Center 5, Nakhon Ratchasima, Department of Health, Ministry of Public Health, Thailand.

<sup>3</sup>Primary Care Unit, Kokklang, Nakhon Ratchasima, Ministry of Public Health, Thailand.

<sup>4</sup>Department of Pediatrics, Faculty of Medicine, Khon Kaen University, Khon Kaen, Thailand.

<sup>5</sup>Center for Research and Development of Medical Diagnosis Laboratories, Faculty of Associated Medical Sciences, Khon Kaen University, Khon Kaen, Thailand.

<sup>6</sup>Department of Nutrition, Faculty of Public Health, Khon Kaen University, Khon Kaen, Thailand.

### ABSTRACT

Thailand has launched a national program for the prevention and control of thalassemia. The aim of the investigation was to assess the knowledge about thalassemia among 112 Village Health Volunteers (VHVs) at one sub-district of Northeast Thailand by means of a questionnaire. Only 33 (12.1%) of the participants had heard about thalassemia before and 20 VHVs (60.6%) from those who knew already somehow about thalassemia had not sufficient insight into the features of the disease. However, those VHVs sufficiently knowing about the disease had a better overall education than those more ignorant about thalassemia. Since thalassemia must be regarded a public health problem in Thailand, there is a need to integrate control measures into primary health care and the proper understanding of VHVs about this issue is essential. Appropriate training material has to be developed and training sessions should not be too academic.

**Keywords:** Thalassemia, prevention, knowledge, village health volunteer, Northeast Thailand.

## INTRODUCTION

According to the 1978 Declaration of Alma-Ata for achieving 'Health for all by the year 2000, Village Health Volunteers (VHVs) had been the cornerstone for Primary Health Care (PHC) in Thailand for the past three decades. Currently, there are more than 1,000,000 VHVs trained throughout the country, supposed to take care of 12 million households. Through them the concept of "community participation", is being pushed forward being one of the most importance principle of PHC (WHO, 1978; Department of Health Service Support, 2010b).

VHVs in the rural areas of Thailand are selected by the villagers and receive brief training in health promotion and prevention. They are a member of people's organization that functioned as a provider, counselor and manager of basic health services on behalf of the community (Suvanavej, 1992; Ramasoota, 1997; Kauffman and Myers, 1997). It is also believed that VHVs know a great deal about their own community and they are more likely to be trusted by villager. Several major health problems in the rural communities of Thailand decreased remarkably in the past due to the involvement of the VHVs. This relates to family planning, control of parasitic and diarrheal diseases, malaria, dengue hemorrhagic fever, tuberculosis, avian flu, and nutrition (Mangklasrisi et al., 1986; Sawangdee, 1988; Phawaphutanond, 1990; Okanurak and Sornnani, 1992; Kongsap, 2006; Roumany, 2006; WHO, 2006; Phomborhub et al., 2008). Despite the widespread issues VHVs had been involved genetic diseases, such as thalassemia had not been one of those and the standard training curriculum for VHVs did not include the disease (Department of Health Service Support, 2010a).

Thalassemia is a highly prevalent hereditary disease in Thailand. It is estimated that 30 to 40% of Thai people, that are about 18 to 24 millions, are carriers and approximately 1% of the population or about 600,000 persons are suffering from clinical symptoms of the disease. The most important forms are  $\alpha$ -thalassemia with a carrier rate ranging from 20 to 30%,  $\beta$ -thalassemia from 3 to 9%, and Hb E

from 13 to 50% (Fucharoen and Winichagoon, 1992). The distribution of thalassemia types vary from one region to another and among different ethnic groups. Thalassemia especially is highly frequent in Northeast of Thailand, mainly in the Chaiyaphum, Buri Ram, Surin, Nakhon Ratchasima, and Mahasarakham provinces. The overall carrier rate was estimated to be 53% (Tienthavorn et al., 2004). In Nakhon Ratchasima Province the carrier rate had been reported to be 43.7% (Jopang et al., 2004). The Thai Ministry of Public Health (MoPH) is very much concerned about this problem and established a national program for prevention and control of the disease in 1994 (Voramongkol, 2001). The program focuses on the reduction of the number of birth with major thalassemia diseases, i.e., Hb Bart's hydrops fetalis, homozygous  $\beta$ -thalassemia,  $\beta$ -thalassemia/Hb E, and secondly emphasizes on providing best care and treatment for those with the disease.

Over the past decade the national program for prevention and control of thalassemia also emphasized on community education and the appropriate know-how of health workers about the condition; however, this aspect of the program was not yet fully successful. Previous studies revealed that only 30% of the population knows about the implication of thalassemia for the health of their children and spread of the disease throughout the population (Phunthawee, 2006). Community education is not always easy for this complex issue and turned out to be expensive. The success of the program in the aspect of an overall awareness of the population needs a multidisciplinary approach on all levels and should not concentrate on the hospital level only. The involvement of VHVs in disseminating the awareness of thalassemia within the community must be an essential feature of the program.

The purpose of this study was to assess the current know-how about thalassemia among VHVs in considering also how the management of the thalassemia program towards community participation can be improved.

## METHODOLOGY

A cross-sectional study was conducted from May to June 2010 within nine rural villages in one sub-district of the Nakhon Ratchasima province, northeastern region, Thailand. Information was collected by interviewing 112 VHVs. The questionnaire was developed by reviewing the relevant literature (Armeli et al., 2005; Dormandy et al., 2007), consulting experts in the field of thalassemia. Ethical approval was obtained by the ethics committee for human research of the Khon Kaen University before

conducting the study (HE532055).

The questionnaire consisted of two parts, i.e., part 1 included questions about the socio-demographic background of the participants, and part 2 consisted of 12 items about the knowledge of thalassemia being assessed through multiple-choice questions. The details of question were consisted of the genetic background of the disease, blood testing, clinical manifestation, treatment, and prevention. The examples of four major features of thalassemia in those aspects are shown in Table 1.

**Table 1.** The example of questions used in the questionnaire.

Stem question	Answer
Circle the correct statements about thalassemia?	a) Thalassemia is an infectious disease b) Thalassemia is a sexually transmitted disease c) Thalassemia is a hereditary disease d) None of these
How can you know that you are a carrier of disease of thalassemia?	a) Blood test b) Urine test c) All of a and b d) None of these
What is the correct answer about a thalassemia disease?	a) Healthy person and does not have thalassemia gene b) Healthy person and have thalassemia gene c) Person who have chronic anemia, need regular blood transfusion and have thalassemia gene d) All of these
Under what condition can a baby be affected by thalassemia?	a) Neither parent is a carrier or has thalassemia b) Both parents are carriers or have thalassemia c) One parent is a carrier or has thalassemia d) All of these
How do you prevent your baby from thalassemia if both parents are carriers or have thalassemia?	a) Early antenatal care that is offered consulting from obstetrician b) Having prenatal diagnosis to diagnose a fetus is definitely going to have thalassemia or not c) Ending the pregnancy (abortion) if a fetus has thalassemia d) All of these

## Data analysis

The STATA statistic program version 10 was used for the data entry and analysis. Participants' characteristics were analyzed by a simple description such as calculating frequencies, proportions, means with standard deviation, and median with ranges.

The Shapiro-Wilk test was used to test for normal distribution. The association of variable and outcome was analyzed by a univariate and bivariate analysis. A p-value of less than 0.05 was considered to be statistically significant.

## RESULTS

### Characteristics of sample population

Of the 112 participants, seven (6.2%) were male and the majority, 105 (93.8%) of them were female. The age ranged between 23 and 59 years (mean  $\pm$  SD = 40.2 $\pm$ 7.9, median = 40.5). More than half of the participants (62/112; 55.3%) completed primary and 50 (44.6%) secondary school or had

a higher educational level. The median household income was 6,000 baht (range 1,000-30,000 baht). Fifty eight (51.8%) VHVs worked in that capacity for less than 5 years, 23 (20.5%) for 6 to 10 years, and 31 (27.7%) more than 10 years (median = 5). The overall characteristics of the participants are given in Table 2.

**Table 2.** Characteristics of 112 village health volunteers who participated in the study

Characteristics	Male (%)	Female (%)	Total
Number of village health volunteers	7(6.2%)	105 (93.8%)	112(100.0%)
Median age in years (range)	51 (41-59)	39(23-58)	40.5 (23-59)
Mean age in year (SD)	50.1 $\pm$ 6.4	39.6 $\pm$ 7.5	40.2 $\pm$ 7.9
Education			
Primary education level	4 (6.5%)	58 (93.5%)	62 (100.0%)
Secondary education level or higher	3 (6.0%)	47 (94.0%)	50 (100.0%)
Median household income (baht) in month (range)	8,000 (1,000-12,000)	6,000 (1,000-30,000)	6,000 (1,000-30,000)
Duration of volunteering as VHV (year)			
$\leq$ 5 years	4 (6.9%)	54 (93.1%)	58 (100.0%)
6-10 years	1 (4.3%)	22 (95.7%)	23 (100.0%)
> 10 years	2 (6.5%)	29 (93.5%)	31 (100.0%)
Median duration of volunteering as VHV (year) Range	3 1-13	5 1-27	5 1-27

### Knowledge about thalassemia

Only those participants who claimed to have heard about thalassemia already had been exposed to questions relating to the knowledge about the disease. This had been 33 (12.1%) of study participants. 26 (78.8%) knew only the causes of the disease, 18(54.5%) knew besides the causes of the disease also the need for blood testing for screening purposes, 16 (48.5%) knew besides what has mentioned above also that the genetic conditions of the parents are related whether their children will have the disease or not, and only 3(9.1%) participants knew all about what has mentioned above also that treatment and prevention of the

disease (Table 3).

As sources for information, 48% mentioned the media such as television, radio, internet, magazine, and newspaper, 18% referred to health officers, 18% knew about thalassemia because of relevant pamphlets, 10% knew about the issue from relatives, especially when those had been carriers or patients, and 6% did hear about thalassemia from friends (Table 4). The fact that someone already had heard about thalassemia, or not, was statistically significantly related to the educational level as indicated by the results of a bivariate statistical analysis (Table 5).

**Table 3.** Knowledge about thalassemia by 33 village health volunteers, who admitted to have heard about the disease.

Knowledge about thalassemia	Male (%) (N=2)	Female (%) (N=31)	Total (N=33)
Knowledge about thalassemia			
Knew only causes of the disease	0	26 (83.9%)	26 (78.8%)
Knew only causes of the disease and blood testing	0	18 (58.1%)	18 (54.5%)
Knew only causes of the disease, blood testing, and inherited conditions	0	16 (51.6%)	16 (48.5%)
Knew of all about what has mention above also that treatment and prevention of the disease	0	3 (9.7%)	3 (9.1%)

**Table 4.** Sources of information of having heard thalassemia.

Sources	Percentage
Media, i.e., TV, radio, internet, newspaper, magazine	48.0
Health officers	18.0
Pamphlets, picture boards	18.0
Relatives	10.0
Friends	6.0

**Table 5.** Comparison of characteristics of village health volunteers knowing and not knowing about thalassemia ('having heard of thalassemia before' as dependent variable).

Characteristics	Heard (%)	Crude OR	95%CI	p-value
Age (y)				
≤ 40	15 (26.8%)	1	-	0.53
> 40	18 (32.1%)	1.29	0.58-2.90	
Education				
Primary education level	12 (19.4%)	1	-	0.009*
Secondary education level or higher	21 (42.0%)	3.02	1.31-6.94	
Duration of volunteering (y)				
≤ 5	16 (27.6%)	1	-	0.65
> 5	17 (31.5%)	1.21	0.54-2.70	
Household's income (baht /m)				
≤ 6000	15 (24.6%)	1	-	0.21
> 6000	18 (35.3%)	1.67	0.74-3.70	

\*Statistical significance, CI: confidence interval

## DISCUSSION

Most of the VHVs participating in the study were female with a rather high educational level for this group of participants. Generally, VHVs are supposed to cover a wide range of activities related to maternal and child health care, such as the mobilization of mothers to have their children vaccinated and other additional services. They are responsible for collecting health information about the households in their communities and undertake frequent home visits as well as take the weight of newborns regularly. The issue of thalassemia fits into the scope of the mother and child health activities, especially in case the VHV is a female as well.

Although, over the past decade, campaigns by the Ministry of Public Health aimed to prevent thalassemia through the mass media the impact of this intervention up to now was only marginal. Neglecting more or less the community level had been one major reason for not being very successful in preventing the disease up to now. A VHV should be the one better informed about health issue than the villagers within her or his community. Since it was found that even less than 30% of VHV knew about thalassemia, it could be easily concluded that the overall knowledge about this matter within the community is insufficient. Since the mass media were quoted from about 50% of the study participants to be the main source of their information the conclusion could be that the information obtained is not very well understood by the general public.

The finding that the educational level is a major factor related to knowledge about thalassemia might be due to the fact that the thalassemia issue might have been tackled in the curriculum of biology in secondary schools, suggesting that VHVs who are able to inform villagers about thalassemia must be graduated at least from secondary school. Similar results had been obtained from previous studies in Greece, which have shown that education has a high influence on the probability that persons have a better insight into the features of thalassemia (Politis et al., 1991).

As long as primary health care was dealing with infectious diseases, it was comparable easy to explain preventive measures to the general public. In the course of the epidemiological transition, now dealing with predominantly non-infectious diseases to communicate preventive issues became more challenging and to explain sufficiently to non-medical personal, even predominantly with only primary school education is even more challenging (WHO, 2005). Thus, the educational level of VHV should be of major concern when selecting appropriate persons for this task.

This study showed that prevention of thalassemia conducted by the Ministry of Public Health has not been fully effective. There remains a need to develop and manage a thalassemia prevention program for the community. The VHVs, as the backbone of the health care delivery system, should have the capacity to inform villagers about thalassemia sufficiently. Thalassemia training courses for VHVs should be integrated into the VHVs education program and leaflets, teaching aids in an appropriate language for the community should be developed. The involvement of mass media to spread information about thalassemia should be maintained but also improved.

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มหาวิทยาลัยบูรพา  
Burapha University