

## RESEARCH ARTICLE

# Implementation of Health Behavior Education Concerning Liver Flukes among Village Health Volunteers in an Epidemic Area of Thailand

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## Abstract

**Background:** Liver fluke infection is associated with cholangiocarcinoma; the bile duct cancer found frequently in the northeast and north of Thailand. Prevention and control particularly requires health education and behavior change. **Objective:** This study aimed to improve health behavior among village health volunteers (VHV) regarding liver fluke exposure in an epidemic area. **Materials and Methods:** A quasi-experimental study was performed during July 2015 to January 2016 in Sang Kha district of Surin province, Thailand. A total of 67 VHVs underwent a health education program (HEP) and data were collected on knowledge, attitude, and practice (KAP) before and after participation for HEP 3 months with a pre-designed questionnaire. The Students paired T-test was used for comparisons of mean KAP levels before/after the intervention. **Results:** The results revealed that knowledge (P-value=0.004), attitude (P-value=0.004), and practice level (P-value=0.000) were significantly improved after participation in the HBP. Attitude was significantly associated with knowledge ( $r=0.266$ ,  $p<0.05$ ), and practice ( $r=0.348$ ,  $p<0.01$ ). **Conclusions:** The implementation of health education among VHVs is feasible and increases their KAP. This improvement should have potential in liver fluke prevention and control in local communities in rural Thailand.

**Keywords:** Implementation - health behavior - liver fluke - village health volunteer - Thailand

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## Introduction

Thailand has a serious health problem with cholangiocarcinoma (CCA) and opisthorchiasis particularly in the northeast and north region (Sitthithaworn et al., 2012; Sripa et al., 2012; Kaewpitoon et al., 2015). Top ten diseases with high mortality in Thai population found that liver and bile duct cancer were ranked 4 in male and 5 in female (Sripa and Pairojkul, 2008). Mortality rate of CCA in Thailand was approximately 36.48% (Sripa et al., 2012). These CCA is associated with the re-infection of *Opisthorchis viverrini* infection (IARC, 1994). In addition, mortality rate of CCA and *O. viverrini* infection are found epidemic frequently in the same areas of Thailand (Sripa and Pairojkul, 2008).

*O. viverrini* infection was nationwide clustered sampling survey in Thailand and found that the prevalent was 5.1%. The highest of prevalent was found in the northeast (9.2%) and followed by the north region (5.2%).

In addition, the top five of prevalent with opisthorchiasis were reported in Nakhon Panom (23.2%), Buriram (17.6%), Roi Et (15.5%), Srisaket (14.3%), and Surin province (14.3%), respectively (Wongsaroj et al., 2014). Meanwhile, the provincial wide multistage sampling survey in Surin province, Thailand was reported that Tha Tum (16.7%) and Sang Kha district (16.7%) of were the highest of infection (Kaewpitoon et al., 2015). Therefore, health education and behavior change are urgently required in this areas particularly regarding improvement of correct knowledge, attitude, and practice in village health volunteers who work for the health of their local communities.

The implementation of health education may useful and potential of liver fluke prevention and control in the rural communities. Therefore, this study aimed to improve the health behavior among village health volunteers toward liver fluke prevention in the epidemic areas of Surin province, Thailand.

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## Materials and Methods

A quasi-experimental study was approved by the human research ethics committees of Suranaree University of Technology, 2012. Informed consent was necessary from those participants. The study was performed in Sang Kha district, Surin province, northeastern Thailand where had reported the highest prevalent areas. 67 village health volunteers (VHV) were participated and intervened with health education program (HEP). The HEP was implemented for VHVs which comprised the (1) presentation of the general knowledge on the epidemiology, morphology, life cycle, transmission, sign and symptoms, pathogenesis, related diseases, diagnosis, treatment, prevention and control of liver fluke, (2) group discussion and sharing their ideas and experience toward liver fluke prevention and control, (3) appreciated empowerment of liver fluke prevention and control in their household and responsive village, and (4) VHVs network for liver fluke prevention and control in their communities (Figure 1-4). Pre-and-post-test was measured with a predesigned behavior; knowledge, attitude, and practice (KAP). KAP questionnaire was utilized to collect the data from all participants. The KAP questionnaire was comprised 5 domain included (1) demographic data; gender, age, education, agriculture, and income, (2) knowledge; 15 questions, (3) attitude; 20 questions, and (5) practice; 20 questions. Reliability and validity of questionnaire was analyzed, knowledge (Kruider-Richardson-20) = 0.80, attitude and practice (Cronbach's alpha coefficient) = 0.82 and 0.79, respectively.

Descriptive and analytical statistical data were analyzed with SPSS software. Each questionnaire was analyzed and interpreted for their parts. Evaluation of knowledge level was calculated and analyzed according to Bloom (1971), answer correct=1, incorrect=0, and interpreted to high level; 11-15 points, moderate level; 6-10 points, 0-5 points; low level. Evaluation of attitude level was calculated and analyzed according to Likert (1932) with 3 choice (agree, not sure, dis-agree): positive question=3,2,1, negative question=1,2,3, and interpreted to good level; 48-60 points, moderate level; 36-47 points, and low level; 0-35 points. Evaluation of practical level was calculated and analyzed according to Best (1977) with 3 choice (frequently, sometimes, never): positive question=3,2,1, negative question=1,2,3, and interpreted to good level; 48-60 points, moderate level; 36-47 points, poor level; 0-35 points. Student pair-t-testing was used to analyze the difference between before and after participated the health intervention.

## Results

The majorities of village health volunteers who participated this implemented project were male (82.09%), age >50 years old (52.24%), primary education (74.63%), and retired (55.22%) (Table 1). A comparison between pre-and post-test of knowledge, attitude and practice toward liver fluke among village health volunteers was analyzed and reveals that the knowledge (T-test=3.024, P-value=0.004), attitude (T-test=2.522, P-value=0.004),

**Table 1. Demographic data of Village Health Volunteers in Sang Kha, Surin Province, Thailand**

item	n=67	%
Gender		
Male	55	82.09
Female	12	17.91
Age (mean=49.49, S.D.=12.60, max=73, min=18)		
<50 years	32	47.76
>50 years	35	52.24
Education		
Primary Education	50	74.63
Secondary Education	17	25.37
Occupation		
Agriculture	30	44.78
Retired	37	55.22
Income (mean=6,725.37, S.D.=4,466.11, max=30,000, min=1,200)		
<THB 6,725	37	55.22
>THB 6,725	30	44.78

**Table 2. A Comparison Between Pre-And Post-Test of Knowledge, Attitude and Practice Toward Liver Fluke among village health volunteers in sang kha, surin province, Thailand**

Variables	N	Knowledge		t	p
		Mean	S.D.		
Pre-test	67	11.54	1.68	3.024	0.004
Post-test	67	12.3	1.39		
	N	Attitude		t	p
		Mean	S.D.		
Pre-test	67	49.67	6.51	2.522	0.014
Post-test	67	52.88	9.52		
	N	Practice		t	p
		Mean	S.D.		
Pre-test	67	36.42	3.53	5.336	0
Post-test	67	40.54	4.87		



**Figure 1. Health Education among Village Health Volunteers Toward the Epidemiology, Morphology, Life Cycle, Transmission, Sign and Symptoms, Pathogenesis, Related Diseases, Diagnosis, Treatment, Prevention and Control of Liver Fluke, By Medical Doctor**

and practice level (T-test=5.336, P-value=0.000) toward liver fluke prevention and control, were statistical

**Table 3. A correlation between knowledge, attitude and practice towards liver fluke among village health volunteers in Sang Kha, Surin province, Thailand**

Variables	Knowledge	Attitude	Practice
Knowledge	-	0.266*	0.173
Attitude		-	0.348**
Practice			-

\*p&lt;.05, \*\*p&lt;.01

**Figure 2. Group Discussion and Sharing their Ideas and Experience Toward Liver Fluke Prevention and Control****Figure 3. Appreciated Empowerment of Liver Fluke Prevention and Control**

significant different (Table 2). A correlation between knowledge, attitude and practice towards liver fluke, was found that knowledge was a statistical significant associated to attitude,  $r=0.266$ ,  $p<0.05$ . In addition, attitude was a statistical significant associated to practice,  $r=0.348$ ,  $p<0.01$  (Table 3). However, knowledge, attitude, and practice were not statistical significant associated to gender, age, education, occupation, and income.

## Discussion

*O. viverrini* infection is a serious public health problem in Southeast Asia especially in the northeast and north of Thailand (Sripa et al., 2010). A nationwide clustered sampling survey was reported that Surin province was the top five of prevalence with opisthorchiasis (Wongsaroj et al., 2014). Meanwhile, Tha Tum (16.7%) and Sang Kha district (16.7%) of were the highest of infection (Kaewpitoon et al., 2015). Improvement of health behavior regarding liver fluke prevention and control is need required. Recent study is studied in Sang Kha where has been reported the highest of prevalence in Surin province. The majorities of village health volunteers who participated this implemented project were male, age

>50 years old, primary education, and retired. This recent results is similar to that several approaches for reducing opisthorchiasis-linked CCA. All participants were 30-69 years of age. Of all the participants, more than 60% had regularly participated in activities to prevent CCA following health officials advice. Age and health behavior to prevent CCA were factors associated with community participation for CCA ( $p<0.001$ ) (Songserm et al., 2015).

Development of a community-based approach to opisthorchiasis control has been recommended (Duangsong et al., 2013). Toward integrated opisthorchiasis control in northeast Thailand: the Lawa project was showed to be the best model (Sripa et al., 2015). Community-based health education and communication model development for opisthorchiasis prevention has been also implemented in a high risk area, Khon Kaen Province, Thailand (Promthet et al., 2015). Here we results were success to improve the behavior of village health volunteers who are the leader of health model in their communities. Recent results reveal that the knowledge, attitude and practice level toward liver fluke prevention and control, were statistical significant different. This result indicates that continuous health education is need required to implement the health volunteer for a high potential approaches for reducing opisthorchiasis-linked CCA. In addition, knowledge was a statistical significant associated to attitude, and the attitude was also a statistical significant associated to practice. This data indicates that the behavior-based approach to opisthorchiasis control should be improved their knowledge that affected to attitude and together domino change their practice toward opisthorchiasis.

In conclusion, the implementation of health education among village health volunteer is increased their KAP and affected to liver fluke prevention and control in their communities. Both knowledge and attitudinal improvement will be taken into consideration for behavior change approaches for CCA and *O. viverrini* prevention through participatory action research in future studies.

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