



## ผลของโปรแกรมการป้องกันโรคไข้วอดข้อของลาย ของนักเรียนชั้นประถมศึกษา

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### บทคัดย่อ

การศึกษานี้มีวัตถุประสงค์เพื่อวัดระดับความรู้ ทักษะ และการรับรู้การปฏิบัติ เพื่อป้องกันการติดเชื้อไข้วอดข้อของลาย ในนักเรียนชั้นประถมศึกษา โรงเรียนบ้านลาดสระบัว อำเภอยางตลาด จังหวัดกาฬสินธุ์ โดยเปรียบเทียบคะแนนความรู้ ทักษะ และการรับรู้การปฏิบัติ เพื่อป้องกันการติดเชื้อไข้วอดข้อของลาย โดยใช้สถิติทดสอบค่าที

ผลการวิจัย พบว่า ภายหลังการได้รับความรู้กลุ่มตัวอย่างมีคะแนนความรู้ในระดับดีเพิ่มขึ้นจากร้อยละ 1.5 เป็นร้อยละ 13.7 ทักษะระดับดีมากเพิ่มขึ้นจากร้อยละ 66.7 เป็นร้อยละ 75.8 และได้คะแนนการรับรู้การปฏิบัติตัวเพื่อป้องกันการติดเชื้อไข้วอดข้อของลายเพิ่มจากร้อยละ 77.3 เป็นร้อยละ 84.8 ซึ่งคะแนนเฉลี่ยความรู้ ทักษะ และการรับรู้การปฏิบัติ เพื่อป้องกันการติดเชื้อไข้วอดข้อของลาย มีความแตกต่างกันอย่างมีนัยสำคัญทางสถิติที่ระดับ  $p < 0.05$

การให้ความรู้ทำให้ คะแนนความรู้ ทักษะ และการรับรู้การปฏิบัติ เพื่อป้องกันการติดเชื้อไข้วอดข้อของลาย เหมาะสมขึ้น พยาบาลและเจ้าหน้าที่ที่เกี่ยวข้องในทีมสุขภาพควรมีการจัดบริการเพื่อส่งเสริมให้เยาวชนมีโอกาสเรียนรู้เกี่ยวกับโรคอุบัติใหม่อื่น ๆ ซึ่งจะทำให้การดำเนินงานป้องกันการแพร่ระบาดของโรคมมีประสิทธิภาพยิ่งขึ้น

**คำสำคัญ:** ไข้วอดข้อของลาย ความรู้ ทักษะ การรับรู้การปฏิบัติ

### Background and Significance

Chikungunya disease is a significant communicable disease in tropical areas. Once transmission of the disease has occurred, the disease can last for over 20 years in the affected areas. Even though this disease is not fatal, it can result in a deterioration of the health of people infected which negatively impact on their quality of life. Persistent joint and muscular pain, as well as depression can last for several months after chikungunya infection. Chikungunya transmission can also occur for a long time after infection, close surveillance to control the disease is necessary as there is no vaccine available for the disease<sup>1</sup>.

Chikungunya has reemerged and appears to be a more serious disease. The first emergence

was in Africa in 1952. Chikungunya is a reemerged disease in different global regions, for example, in the Indian Ocean Islands and India with a massive epidemic in which one-third of the people in the Indian Ocean Island (a French territory) were affected by the infection and it caused 237 deaths and 1.3 million cases of chikungunya in India<sup>2</sup>. A higher morbidity and mortality rate in the current outbreak and 2 new species of *ae. fuscifer-taylori* and *ae. luteocephala* have been identified<sup>3,4</sup>.

In Thailand and Asia, the first emergence of chikungunya was found in Bangkok where the transmission has been absent since 1970. In September 2008 the most recent emergence of chikungunya, to date, occurred<sup>5</sup>. In 2009, chikungunya affected

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45,201 people in 57 provinces; including Kalasin province<sup>6</sup>. It was found that students accounted for one third of the cases with 8,341 students infected by chikungunya overall<sup>7</sup>. Between August 2008 and June 2009, the number of people with chikungunya infection was higher than dengue haemorrhagic fever. The chikungunya outbreak moved from the south to the north of Thailand with an incidence rate of 521 cases per 100,000 people and a total of 23,847 identified as being infected with chikungunya<sup>8</sup>.

Knowledge is necessary to encourage people to prevent themselves from communicable diseases. Absence of disease may lead to limit knowledge which may lead to less concern about disease prevention. Therefore, a lack of knowledge about chikungunya can lead to high incidence of chikungunya disease among primary school students because of limited means to prevent infection and transmission. Health care providers and public health officials should educate people about the disease and the means of transmission control to reduce the risk of chikungunya infection<sup>9</sup>. Knowledge is one of the essential components for students' to understanding about chikungunya, develop appropriate attitudes about the disease and motivate students to prevent themselves from becoming infected and decrease transmission of the disease to other people. As chikungunya is a re-emerging disease which has been absent from Thailand for sometime, it is necessary to provide knowledge about the disease and disease prevention. As knowledge is significant for transmission control, the researchers developed a health education program to fit with the students' context, aimed to facilitate better understanding which will enhance the students' understanding of the disease and help them develop appropriate attitudes and attain suitable prevention practice to control outbreaks of chikungunya.

## Research objectives

1. To measure knowledge, attitude and preventive practice perception of primary school students.
2. To compare knowledge, attitude and preventive practice perception regarding chikungunya infection and transmission among primary school students before and after participating in a chikungunya prevention program.

## Research Methodology

This study is a quasi-experimental research using pretest-posttest research design.

**Research Setting and Sample:** This study was conducted in a primary school located in Kalasin province, in the Northeastern part of Thailand. Following human ethics of Faculty of Nursing, Mahasarakham University approved the research project, primary school students were invited to participate in this study were purposively selected for this study. The criteria for eligibility were able to read and write in Thai and agreed to participate in the program. The participants were sixty-six students aged between 10–12 years old both male and female who were attending school in Ban-Lad-Sra-Bua, Tambol Yang-Ta-Lad, Kalasin Province.

**Research Instruments:** The research instruments were developed by the researchers and the reliability of this questionnaire which was tested with similar school children by the researchers was 0.76.

1. The questionnaire comprises of 3 parts as follows: 1) Knowledge about chikungunya disease questionnaire which contained 20 items to determine knowledge about chikungunya, transmission route, infection symptoms, effects of the disease, treatment, and means to prevent the disease. Knowledge scoring was marked as 1 for correct and 0 for incorrect. The total score range was from 0–20. Knowledge score was divided into 3 levels. 2) Attitude toward chikungunya



questionnaire comprised of 12 items to determine attitude about chikungunya. A three- point Likert scale which was easy for school children to select the level of agreement was used to range the scores. Item responses range from 1-3, that represented the students' positive views and negative views on the items. There were 9 positive items which were scored as 1 for disagree, 2 for agree and 3 for strongly agree with the item and 3 negative items scored as 1 for strongly disagree, 2 for slightly disagree, and 3 for disagree. The total range of scores was from 12-36. The scores were divided into 4 levels. 3) Preventive practice perception of infection by and transmission of chikungunya disease comprised of 9 items to determine the participants' preventive practice perception to prevent themselves from becoming infected and also to prevent transmission of the disease to others. A three-point Likert scale was used to range the scores. Item responses ranged from 0-3 representing the students' preventive practice perception of the items, scored as 0 for no perception, 1 for occasional perception and 3 for regular perception. The total score range was from 0-18. The score was divided into 3 levels.

2. The handbook on chikungunya transmission and control which was developed by the researcher consisted of information about chikungunya disease which fitted with the primary school students' learning ability which is appropriate with their aged. It includes information about the cause and route of infection and transmission, signs and symptoms of the disease, the disease treatment, and preventive practice guidelines.

**Research Implementation:** The research proposal was submitted to and approved by the Nursing Faculty, Mahasarakham University. Permission was obtained from the director of the school. The researchers also met with primary school students to explain the nature of the study and study procedures. The participants were informed that they could decline from participating

in the study at any time without penalty. The participants participated in education aimed to facilitate knowledge acquisition, develop an appropriate attitude, and recognize essential skills to prevent chikungunya infection and transmission. Knowledge, attitude and chikungunya preventive perception scores were collected by survey prior to and after engaging health education program.

**Data Analysis:** Descriptive statistics include frequency and percentages were calculated to describe the general characteristics of the primary school students. Mean and standard deviations were calculated to determine the knowledge, attitude, and preventive practice perception of the students. Paired t-test was used to assess statistical differences at  $p=0.05$  of mean scores of knowledge and attitude toward chikungunya disease, and preventive practice perception before and after educational sessions.

## Research Findings

This study is a quasi-experimental research on one group of students' pretest-posttest that examined the effects of participation in a health educational program on students' knowledge, attitude and preventive perception of chikungunya disease. The findings from this study revealed some interesting results which will be presented as follows:

**1. Characteristics of Primary School Students:** The result shows 55.4 percent of participants were age between 11-12 years old. A majority of students were male (53.0%) and studying in grades 1-4 (53.0%). Most of the participants had a daily income of 40-59 baht per day (36.4%) and lived in Ban-Lad-Sra- Bua (68.2%).

**2. Comparisons of Knowledge levels before and after attending the chikungunya disease health education program:** The knowledge level of primary school students after participating in the chikungunya



disease health education program was higher. Before participating in the program, most of the students' knowledge scored was at the moderate level (98.5%). After participation, the students' knowledge scored increased from 1.5 % to 13.7 % (table 1).

**3. Comparison of Attitude levels before and after attending the chikungunya disease health education program:** The attitude levels of the primary school students after participating in the chikungunya disease health education program increased. Before participating in the program, most of the students' attitude scores were at the excellence level (66.7%). After participating, the number of students with attitude scores at the excellent level increased to 75.8 % (table 1).

**4. Comparison of preventive practice perception levels of chikungunya disease before and after attending the chikungunya disease health program:** Preventive practice perception levels of the primary school students after their participation in the chikungunya disease health education program

increased. Before their participation in the program, most of the students' preventive practice perception scores were at the very appropriate level (77.3%) and following their participation, the students' preventive practice perception scores were at the very appropriate level (84.8%) (table 1).

**5. Differences of average score on knowledge, attitude, and preventive practice perception of chikungunya disease before and after the chikungunya disease health education program:** The t-test shows statistically significant differences ( $p < 0.05$ ) between the average scores of knowledge, attitude, and preventive practice perception from the primary school students before and after their participation in the health education program. The results showed that after their participation in the health education program, their mean scores of knowledge, attitude, and preventive practice perception increased from 5.77 to 8.12, 29.81 to 30.67, and 13.90 to 14.60 respectively (table 2).

**Table 1** Comparison the levels of knowledge, attitude, preventive practice perception, before and after attending the chikungunya disease health education program

Chikungunya Disease		Before		After	
		Frequency	Percentage	Frequency	Percentage
<b>Knowledge Levels</b>					
Moderate	(0-10 scores)	65	98.5	56	84.8
Good	(11-14 scores)	1	1.5	9	13.7
Very good	(15-20 scores)	0	0	1	1.5
<b>Attitude Levels</b>					
Not good	(12-17 scores)	1	1.5	1	1.5
Moderate	(18-23 scores)	3	4.6	3	4.5
Good	(24-29 scores)	18	27.2	12	18.2
Excellent	(30-36 scores)	44	66.7	50	75.8
<b>Preventive Practice Perception Levels</b>					
Inappropriate	(0-6 scores)	1	1.5	0	0
Appropriate	(7-12 scores)	14	21.2	10	15.2
Very Appropriate	(13-18 scores)	51	77.3	56	84.8



**Table 2** Differences of average score on knowledge, attitude, and preventive practice perception of chikungunya disease before and after the chikungunya disease health education program

Items	Before		After		t-test	p-value
	mean	S.D.	mean	S.D.		
Knowledge	5.77	2.45	8.12	3.06	-5.66	.00*
Attitude	29.81	3.92	30.67	3.74	-2.07	.04*
Preventive Practice Perception	13.90	2.37	14.60	1.87	-2.51	.01*

\*Statistical significant difference  $p < 0.05$

## Discussion

Our results show participation in the chikungunya disease health education program enabled the students to gain understanding, develop appropriate attitude and appropriate preventive practices for chikungunya disease. This understanding and knowledge could reduce the possibility of an outbreak of chikungunya in the community. According to the findings of this study, the specific program to provide disease information should be used as a strategy to reduce transmission rates of chikungunya outbreak.

Understanding about disease and disease transmission can enable people to attain appropriate attitudes to facilitate development of disease prevention practices. In contrast, a lack of clear understanding about the disease leads to the failure of transmission control<sup>10</sup>. A number of campaigns aimed at protecting communities from communicable diseases use “providing knowledge” as a significant method to control communicable disease. For example, dengue haemorrhagic prevention program aimed at limiting the source of the virus the mass communication campaign was conducted using lectures and audiovisual aids. This made a marked improvement in knowledge, attitudes and practices<sup>11,12</sup>. This strategy also reduced chikungunya disease transmission<sup>13</sup>.

Clear information and the people’s understanding about the disease and disease prevention

is a basic method of disease transmission control<sup>14</sup>. Renault, Solet and Sissoko stated that providing information on chikungunya disease, prevention and control is a significance strategy to limit the spread of chikungunya infection<sup>12</sup>, Pai, Hong and Hsu reported that appropriate attitude closely related to motivation of preventive practice, facilitate practical prevention practice. This concurs with the findings of this study that after the students participated in the health education program, the level of appropriate practice perception increased significantly. It can be predicted that the students’ participation in the chikungunya infection control which can facilitate the success of infectious monitoring as a result of social involvement in control measures is made available to the public<sup>10</sup>, and swift public health response is needed<sup>15</sup>. The World Health Organisation also recommend the importance surveillance strategy through community participation to help detect and respond to signs and symptoms of chikungunya<sup>16</sup>.

Knowledge about communicable disease is an essential factor to prevent disease transmission<sup>17</sup>, and also found that the educational program reduced aegypti breeding places more effective than the use of chemical spraying<sup>18</sup>. According to the United States Department of Health and Human Services, educating people is a key to reducing the effects of disease transmission<sup>19</sup>. Concise, clear, and useable information



is needed to support people, family and community to prevent infection and transmission of communicable disease<sup>2</sup>. Community support and participation is crucial for the prevention of future outbreaks and improving the health and wellbeing of the population. As a result of cooperation and participation a community can reduce morbidity and mortality from communicable disease.

However, it is evidence that there is no report of an outbreak of chikungunya in a country without dengue<sup>12</sup>. Therefore, the most cost-effective way of chikungunya prevention is by implementing alongside with dengue. Adding chikungunya knowledge into dengue prevention campaign is likely to cause a little burden to health care budget and can improve people knowledge about chikungunya disease and the disease prevention.

## Recommendation

1. During an outbreak of communicable disease, providing knowledge, transmission prevention and prevention practice by health professionals is needed and should be addressed as essential policy. The significance of innovative programs which fit with each social context needs to be addressed as this strategy can facilitate people complying with containment measures.

2. Nurses who work is community-based and hospital-based should be aware of the significance of and regularly inform people about the emergence of communicable disease, transmission situation and prevention guidelines. Nurses also should provide health education in education institutions and facilitate community health workers to provide knowledge about communicable diseases regularly.

3. The nursing curriculum needs to contain information about the emergence of chikungunya and management so to encourage nursing students to participate in prevention management. This education preparedness should enable nursing students' awareness of emergence disease control.

4. Future research should be addressed on:  
1) implementation of chikungunya education program in high schools and universities in order to determine the effects of this program toward knowledge, attitudes and preventive practice perception, 2) study how communities participate in chikungunya prevention, 3) explore support and barrier factors of chikungunya prevention, 4) develop a community-based programme to promote chikungunya prevention.





## References

1. WHO. Communicable disease: Chikungunya fever. [online] 2009 [cite 2010 July 17]. Available from: <<http://www.searo.who.int/en/>>
2. Mavalankar D, Shastri P, Ramani KV. Chikungunya epidemic mortality in India: Lessons from “17<sup>th</sup> Century Bills of Mortality” still relevant. W.P. No. 2007-07-12, July 2007: Indian Institute of Management Ahmedabad.
3. Lahariya C. Update on chikungunya and polio in India. *Indian Pediatrics* 2008; 45: 39-40.
4. Mavalankar D, Shastri P, Bandyopadhyay T, et al. Increase mortality rate associated with chikungunya epidemic, Ahmedabad, India. *Emerging Infectious Diseases*. [online] 2008 [cite 2011 April 1]. Available from: <http://www.highbeam.com>
5. Ayut P. Chikungunya fever. *Annual Epidemiological Surveillance Report*. [online] 2009 [cite 2010 May 10]. Available from: <<http://epid.moph.go.th>>
6. Sanoasaeng S, Sayumpurujinun S, Oppapong T. Chikungunya Surveillance in Thailand. Data on October 27<sup>th</sup>, 2009. Bureau of Epidemiology. Department of Disease Control, Ministry of Public Health 2009; 1-3.
7. Oppapong T, Areechokchai D, Sanoasaeng S, et al. Re-emergence of chikungunya in the new year period in 2010. Department of Disease Control, Ministry of Public Health; 2010.
8. Ditsuwat T, Liabsuetrakul T, Chongsuvivatwong V, et al. Assessing the spreading patterns of dengue infection and chikungunya fever outbreaks in lower southern Thailand using a geographic information system. *Annals of Epidemiology* 2011; 21(4): 253-261.
9. Gibney KB, Fischer M, Prince HE, et al. Chikungunya fever in the United States: A Fifteen year review of cases. *Clinical Infectious Disease* 2011; 1-6.
10. Weinstein P, Ravi S. The failure of colonial ‘distancing’: Changing representations of the 2005-06 chikungunya epidemic in Réunion, France. *Singapore Journal of Tropical Geography* 2008; 29: 221-235.
11. Ibrahim NK, Abalkhail B, Rady M, et al. An educational programme on dengue fever prevention and control for females in Jeddah high schools. *Eastern Mediterranean Health Journal* 2009; 15(5):1058-1067.
12. Pai H, Hong Y, Hsu E. Impact of a short-term community-based cleanliness campaign on the sources of dengue vectors: An entomological and human behavior study. *Journal of Environmental Health* 2006; 68(6): 35-39.
13. Massad E, Ma S, Burattini MN, et al. The risk of chikungunya fever in a dengue-endemic area. *Journal of Travel Medicine* 2008; 15(3): 147-155.
14. Renault P, Solet J, Sissoko D, et al. A major epidemic of chikungunya virus infection on Réunion Island, France, 2005-2006. *American Journal Tropical Medicine and Hygiene* 2007; 77(4): 727-731.
15. Leo YS, Chow A, Tan LK, et al. Chikungunya outbreak, Singapore, 2008. *Emerging Infectious Diseases* 2009; 15: 836-837.
16. WHO. Prevention and control of chikungunya in South-East Asia: Report of the expert group meeting Aurangabad, India. 27-29 September 2007: WHO, Regional Office for South-East Asia; 2008.
17. Larson EL, Ferng Y, Wong-McLoughlin J, et al. (2010). Impact of non-Pharmaceutical interventions on URIs and influenza in crowded, urban households. *Public Health Report* 2010; 125: 178-191.
18. Espinoza-Gomes F, Moises CM, Coll-Cárdenas R. Educational campaign versus malathion spraying for the control of *Aedes aegypti* in Colima, Mexico. *Journal of Epidemiology & Community Health* 2002; 56 (2): 148-152.
19. Mitty E. Infection control practices in assisted living communities. *Geriatric Nursing* 2009; 30: 417-423.



## Effects of Chikungunya Prevention Program in Primary School Students

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### Abstract

A quasi-experimental research was carried out to compare the knowledge, attitude, and practice perception to prevent transmission of and infection by chikungunya among primary school students at Ban Ladsabua school, Amphur Yangtalad, Kalasin province. The differences of knowledge, attitude, and practice perception score before and after participating in the health education program were determined by paired t-test.

The findings revealed positive impacts of health education program on knowledge, attitude, and practice perception for preventing transmission of and infection by chikungunya at with a significant differences at  $p < 0.05$ . Following health education, knowledge score at 11-14 from 20 score increased from 1.5% to 13.7%, attitude at the excellence level increased from 66.7% to 75.8%, and practice perception for preventing chikungunya disease score at 13-18 from 18 score increased from 77.3% to 84.8%.

Health education about chikungunya can improve knowledge, attitude, and practice perception for preventing the disease. It is recommended that health professionals should focus their practice on providing health services to support learning opportunities. The more people know about the disease and how to avoid infected by and transmission of communicable diseases, the better of transmission control; so appropriate management of disease transmission should be implemented.

**Keywords:** Chikungunya disease, knowledge, attitude, practice perception

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