Effectiveness of Health Educational Program Based on Health Belief Model, Self-efficacy and Social Support to Prevent Opisthorchiasis among Primary School Students in Bandung District, Udonthani Province, Thailand

นิพนธ์ต้นฉบับ

Original Article

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บทคัดย่อ

วัตถุประสงค์: เพื่อศึกษาประสิทธิผลของโปรแกรมการให้สุขศึกษาเพื่อป้องกันโรคพยาธิใบไม้ตับ โดยการประยุกต์ใช้ทฤษฎีแบบแผนความเชื่อด้านสุขภาพ ความสามารถตนเองและแรงสนับสนุนทางสังคม ในนักเรียนชั้นประถมศึกษา **วิธีการศึกษา:** การศึกษาแบบกึ่งทดลองนี้ศึกษาในนักเรียนชั้นประถมศึกษาปีที่ 4 - 6 ในอำเภอบ้านดุง จังหวัดอุดรธานี ทั้งหมด 70 คน โดยแบ่งเป็นกลุ่มทดลองและกลุ่มควบคุมกลุ่มละ 35 คน กลุ่มทดลองได้รับโปรแกรมการส่งเสริมพฤติกรรมการป้องกันโรคพยาธิใบไม้ตับจากนักวิจัยด้วยการให้สุขศึกษาที่หลากหลายรูปแบบ ประกอบด้วย 1) การให้สุขศึกษาและดูวิดีโอเกี่ยวกับการป้องกันโรคพยาธิใบไม้ตับในสัปดาห์ที่ 1, 2) การสนทนากลุ่มในสัปดาห์ที่ 3, 3) ให้สุขศึกษาโดยใช้สื่อการ์ตูนแอนิเมชันในสัปดาห์ที่ 4, 4) นำผู้ที่มีญาติเสียชีวิตจากมะเร็งท่อน้ำดีหรือผู้ป่วยที่ติดเชื้อโรคพยาธิใบไม้ตับมาเป็นตัวแบบสำหรับการให้ชั้นเรียนในสัปดาห์ที่ 6 5) ประกวดเรียงความในสัปดาห์ที่ 7, 6) ฝึกบันทึกพฤติกรรมเสี่ยงต่อโรคพยาธิใบไม้ตับของนักเรียนในสัปดาห์ที่ 8, 7) นักวิจัยและอาสาสมัครสาธารณสุขได้เยี่ยมและให้แรงสนับสนุนทางสังคมหลังสัปดาห์ที่ 10 เก็บข้อมูลโดยใช้แบบสอบถามที่สร้างขึ้นก่อนการทดลองและให้ความรู้แก่กลุ่มทดลอง เปรียบเทียบค่าเฉลี่ยของคะแนนความรู้ ปัจจัยพฤติกรรมศาสตร์ และการปฏิบัติตน เปรียบเทียบภายในกลุ่มและระหว่างกลุ่มด้วยสถิติ Paired t-test และ Independent t-tests ตามลำดับ **ผลการศึกษา:** หลังการทดลอง พบว่ากลุ่มทดลองมีค่าเฉลี่ยของคะแนนความรู้ การรับรู้โอกาสเสี่ยง การรับรู้ความรุนแรง การรับรู้ความสามารถตนเองในการป้องกันโรคพยาธิใบไม้ตับ ความคาดหวังในผลของการปฏิบัติเพื่อป้องกันโรค แรงสนับสนุนทางสังคมในการป้องกันโรค และการปฏิบัติสูงกว่าก่อนการทดลอง และสูงกว่ากลุ่มเปรียบเทียบอย่างมีนัยสำคัญทางสถิติ (*P*-value < 0.001 ทุกการเปรียบเทียบ) **สรุป:** โปรแกรมการให้สุขศึกษาเพื่อป้องกันโรคพยาธิใบไม้ตับ โดยการประยุกต์ใช้ทฤษฎีแบบแผนความเชื่อด้านสุขภาพ ความสามารถตนเองและแรงสนับสนุนทางสังคม ในนักเรียนชั้นประถมศึกษามีประสิทธิภาพดี

คำสำคัญ: การป้องกัน, โรคพยาธิใบไม้ตับ, แบบแผนความเชื่อด้านสุขภาพ, การรับรู้ความสามารถตนเอง, แรงสนับสนุน ทางสังคม, สื่อสุขศึกษา

Abstract

Objective: To examine the effectiveness of health education program based on Health Belief Model, self- efficacy and social support to prevent opisthorchiasis among primary school students. **Methods:** In this quasi-experimental research, a sample of 70 primary school students (grade 4 – 6) in Bandung District of Udon Thani province were randomized into experimental and control groups (n = 35 per group). The intervention which the experiment group received were composed of 1) health education by the researcher about opisthorchiasis in week 1, 2) focus group discussion in week 3, 3) education activities by using the cartoon animation in week 4, 4) learning from a person with opisthorchiasis infected and a relative of a person passed away with opisthorchiasis or Cholangiocarcinoma as models in week 6, 5) assay writing competition about opisthorchiasis in week 7, 6) training to record their behaviors in week 8, 7) home visits by researchers and village health volunteers after the 10 weeks. The intervention took 10 weeks. Data were collected by questionnaires. Paired t-test and independent t-test were used to compare scores of knowledge, behavioral factors and practice of the behavior for within- and between-group comparisons, respectively. **Results:** After the intervention, scores of knowledge, perceived susceptibility, perceived severity, perceived self-efficacy and practice of the behavior to prevent opisthorchiasis in the experimental group were higher than baseline and higher than those in control group (*P*-value < 0.001 for all comparisons). **Conclusion:** Health education program based on Health Belief Model, self-efficacy and social support to prevent opisthorchiasis among primary school students was effective.

Keywords: prevention, opisthorchiasis, Health Belief Model, self-efficacy, social support, health education media

Introduction

The opisthorchiasis infection has been high in Europe and Asia continents. In Asia, a risk of *Opisthorachiasis Viverrini* (OV) infection has been particularly high. There have been 25 million patients with OV infection all worldwide with the highest prevalence in Thailand, Laos, Cambodia and Vietnam. In Thailand there are about 6 millions of OV patients.[1] The incidence of cholangiocarcinoma (CCA) in the people living in north-east of Thailand was 87 per 100,000 population. Furthermore, the incidence of CCA in Thailand was so high that it became number one on the world top-ten list.[1] The provinces that had high mortality rates from liver cancer and cholangiocarcinoma in Thailand in the past 20 years were Sakonnakorn, Roi- et, Mahasarakam, Kalasin, Udonthani, Yasothorn, Nakornpanom and Prae.[2] 150Prevalence rates of OV in the areas under the responsibility of the regional public health office 8 (Udon Thani) during 2012 – 2013 was very high in Nakornpanom, Nongbualumpu, Udonthani, Sakonnakorn and Nongkhai provinces (50.8%, 24.7%, 20.0%,

20.0% and 8.8%, respectively).[3,4] Another study also indicated high prevalence rates of OV infection in the year 2013 in 5 provinces including Nakornpanom, Sakonnakorn, Nongkhai, Nongbualumpu and Udonthani.[5] Furthermore, Udonthani was troubled with a profoundly high prevalence rate of 19.5% of OV infection.

The OV problem in Udonthani has been of a great concern. Udonthani has certain factors to allow for OV infestation. With Songkram river running through its three districts, namely Bandung, Nonghan and Tungfon, Udonthani is a relatively rich reservoir of OV. It has been found that people aged 45 – 55 years living near this river were more likely to have OV infection.[5] Since fish is a reservoir of OV, those consuming raw or uncooked fish are at a higher risk of OV infection. In Loei province, an infection rate of OV as high as 12.76% was found in people under 20 years of age. This indicated that attention must be paid toward eating habit of young people.[6] The surveillance data of the National Health Security Office in the year 2012 indicated that areas with a high risk of CCA in Udonthani province included districts of Bandung, Nonghan and Tungfon where rates of OV infection were as high as 49.7%, 43.6% and 29.2%, respectively.[3]

The use of behavioral theory in programs to promote healthy eating habit to prevent opisthorchiasis has been done with certain success. In a quasi-experiment study in 94 primary school students in Moeiwadee district, Roi-Et province, the investigators aimed to test the effectiveness of a program based on health belief model and social support to modify eating behavior for preventing opisthorchiasis and cholangiocarcinoma.[7] They found that the scores of knowledge, perceived susceptibility, perceived severity, perceived benefit and perceived barrier to prevent opisthorchiasis and cholangiocarcinoma of students in test group after the program were significantly higher than those before the program (*P*-value < 0.0001). In addition, after the program, all scores mentioned above in the test group were significantly higher than those in control group (*P*-value < 0.0001). In another study conducted in primary school students in Nakha sub-district of Udonthani province in 2008, the application of health belief model and social support on the prevention of detrimental behaviors causing caries and gingivitis was tested.[8] At the end of the program, students in test group had scores of knowledge and dental practice higher than those in control group.

Among health behavior theories, health belief model has been one of concepts widely applied in various health related contexts. According to Becker and Maiman (1975)[9], health belief model postulated that people behave or perform their healthy behaviors when they recognize or perceive the risk of the health problem, the severity of the problem, and the benefit of treatment and prevention of the problem. Furthermore, to be more effective in problem solving or prevention, individuals should also perceive barriers or costs of adopting such healthy health behaviors. In addition to internal factors suggested by health belief model, health motivation and some other modifying factors could lead to individuals' self-adjustment.[10] According to Bandura, self-efficiency concept postulated that individuals could achieve healthy behaviors if their self-efficiency and outcomes of practicing such behavior are adequately perceived.[11] Another useful concept was social support of House[12] which proposed that friends and family members, such as spouses, are critical source for emotional support, information support, and material and evaluation supports.

Based on the problem of prevalent OV infection and benefits of certain health behavior theories mentioned above, our present study aimed examine the effectiveness of health education program based on health belief model, self-efficacy and social support to prevent opisthorchiasis among primary school students (grade 4 – 6). Specific objectives included 1) to compare the mean of behaviors towards OV before and after the experiment within the experiment and control group, 2) to compare the difference mean of knowledge about OV, perceived susceptibility, perceived severity and perceived self-efficacy toward Opisthorchiasis among two groups.

Methods

In this quasi-experimental research, two-group pretest-posttest design was used. The study was conducted from January 28th to March 31st, 2016. This research was done in the stud population of primary school students (level grade 4 – 6) aged between 10 - 12 years old in districts of Bandung and Phen in Udonthani province in the northeastern Thailand. The study was done in the academic year of 2015.

Based on the multi-stage random sampling method, two of 20 districts in Udonthani province, namely Bandung and Phen, were randomly selected. There were 71 and 68 primary schools in Bandung and Phen districts, respectively. To be

eligible, these schools needed to have at least 35 students in each classroom. As a result, 28 and 26 schools in Bandung and Phen districts, respectively met the criteria and were eligible for the further selection. A primary school in Bandung district was randomly selected and assigned as experiment group and the other one in Phen district as control group. In each of the two selected schools, prospective participants were randomly selected.

Study sample consisted of 70 students who were eligible for the study, 35 in each group. To be eligible, prospective participants had to be primary students in grade 4 to 6. They also needed to be able to communicate and permitted by their parents. Students with learning disability were excluded. A sample of 70 students, 35 in each group, was selected by the simple random sampling.

For sample size estimation, a formula of number per group equals 2 $(Z_\alpha + Z_\beta)\ \sigma^2 / (\mu_1 - \mu_2)^2$ was used. With a type error of 5%, a power of 80%, a sample size of 17 participants per group was needed. With an anticipated attrition rate of 30%, a final sample of 30 participants per group was required. However, a total of 35 participants per groups were recruited.

Interventions, materials and schedule

The interventions and questionnaire were developed based on the concepts of health belief model, self-efficacy and social support with attempts to account for motivation check for modification to perform specific behaviors. In the experimental or test group, participants were provided with educational VDO and pictorial charts about OV infection in ***week 1***. Students in the test group received educational sessions about mode of transmission of OV, and its treatment and prevention, equipped with handbook of OV prevention. In ***week 3***, these students participated in focus group discussion. In ***week 5***, participants in the test group engaged in educational activities by using the cartoon animation. In ***week 6***, educational session was conducted by having a patient with OV infection and a relative of a person died of liver cancer or cholangiocarcinoma as the model to talk with students in the test group. In ***week 7***, these students participated in a competition of short story telling about OV prevention and reflection on the benefits of practicing hygienic habits as instructed in the handbook. In ***week 8***, these students were taught how to record their hygienic habits to prevent OV infection. In ***week 10***, the last week of the intervention, the investigators and village health volunteers visited student's home to provide psychological support and encourage them to perform more hygienic eating behavior to prevent opisthorchiasis. For those in control group, no interventions mentioned above were provided.

Data collection instruments

Based on the theoretical considerations and a literature review, a set of questionnaires was developed by the investigators. The first part collected participant's demographic information including gender, age, educational level, parent's occupation, household monthly income, number of family members, etc. The questionnaires were created to measure 1) knowledge about OV and health related factors including 2) perceived susceptibility, 3) perceived severity, 4) self-efficacy and perceived outcome of the practice or action, 5) social support and 6) practice of the preventive behaviors for OV infection. The questions about the practice of the preventive behaviors for OV infection were, for example, having eaten raw or not fully cooked fishes, main person who cooked for the family, toilet sanitation, stool examination for OV from the last two years, family history of OV infection and/or CCA. For the 12 questions on knowledge about OV, the correct answers were given one point; while the incorrect ones received none. The response formats of the questions on health behaviors (parts 2 to 5) were in 5-point Likert-type rating scale ranging from 1-totally disagree, to 2-disagree, 3-not sure, 4-agree, and 5-totally agree. The practice of preventive behaviors (part 6) was classified into three level as suggested by Best (1981)[13] with a 3-point Likert-type rating scale of 1-never, 2-sometimes (1 – 2 times a month), and 3-always (more than 2 times a month). Internal consistency reliability of parts 2 to 6 of the questionnaire was acceptable with Cronbach's alpha coefficient of 0.72, 0.71, 0.72, 0.71, and 0.70, respectively. This reliability test was done in a preliminary sample of 30 students living in Bandung district of Udonthani province who were comparable to the actual participants.

Before the 10-week intervention, the two groups were asked to complete parts 1 – 6 of the questionnaire. However, at the end of the study (i.e. after the 10-week intervention in the test group), both groups were asked to complete parts 2 – 6.

This study was approved by the Human Ethics Committee of Khon Kean University on January 27th, 2016. Study protocol

was started after ethical approval. Students participated after written informed consent by their parents was obtained. Voluntery nature of the study was understood by participants. Data were kept securely and presented as summarized, not individual person data.

Statistical analysis

Descriptive statistics including mean with standard deviation and frequency with percentage were used to present the participants' demographic, knowledge, behavior related factors, behavioral practice data. Scores of knowledge about OV, perceived susceptibility, perceived severity, self-efficacy, social support and practice of preventive behaviors before and after the 10-week intervention were compared using paired t-test. The comparisons of these scores between the two groups after the 10-week intervention were done by independent t-test. Statistical analysis was performed using the SPSS software provided by Khon Kaen University. All statistical significance was set at *P*-value < 0.05.

Results

Of 35 partcipants in each group, proportion of female in the experimental group, or test group, was found higher than that in control group (80.0% and 54.3%, respectively) (Table 1). Since they were in their grades 4 – 6 of primary school, they were 10, 11, and 12 years old with similar proportion in each age between the two groups. A larger proportion of parents in the test group were small business owners (80.0%) while were only 54.3% of those in control group. The two groups were comparable regarding monthly household income with 28.6% and 37.0% in test and control groups with the household income of less than 10,000 Baht. It was worth noting that less than half of participants in the test group (45.7%) had eaten raw or not fully cooked fish; while as high as 65.7% in control group did so. Majority in the test and control groups had good home toilet sanitation (88.6% and 85.7%, respectively). Mother was the main person who cooked for the family in the test and control groups (60.0% and 71.5%, respectively) (Table 1).

After the 10-week intervention, participants in the experimental group had their scores of all measures of knowledge, behavioral factors (perceived susceptibility, perceived severity, perceived self-efficacy, social support) and practice of preventive behaviors to prevent OV infection increased (i.e. improved) from baseline (or before the intervention) (Table 2). All changes were statistically significant (*P*-value < 0.001 for all measures).

Table 1 Demographic and hygiene characteristics of the participants (N = 35 in each group).

Characteristics	Experimental group		Control group	
	No.	%	No.	%
Gender				
Male	7	20	16	45.7
Female	28	80	19	54.3
Age (yrs)				
10	10	28.6	13	37.0
11	14	40.0	13	37.0
12	11	31.4	9	25.8
Parent's occupation				
Labor	7	20.0	16	45.7
Small business owner	28	80.0	19	54.3
Monthly household income (Baht)				
< 10,000	10	28.6	13	37.0
10,001 - 20,000	14	40.0	13	37.0
20,001 - 30,000	11	31.4	9	25.8
Number of family members				
4	11	31.4	8	22.9
5	10	28.6	19	54.3
> 5	14	40.0	8	22.9
Having had raw or not fully cooked fish				
Yes	16	45.7	23	65.7
No	19	54.3	12	34.3
Home toilet sanitation				
Good sanitation	31	88.6	30	85.7
Poor sanitation	4	11.4	5	14.3
Person mainly cooking food for the family				
Mother	21	60.0	25	71.5
Father	9	17.0	4	11.4
Others	5	14.2	6	7.1

Table 2 Comparisons of measure scores of knowledge, behavioral factors and practice of preventive behaviors to prevent OV infection in the experimental group (N = 35) before and after the 10-week intervention.

Measures	Before		After		Mean difference	Paired t-test	95% CI	*P*-value
	mean	SD.	Mean	SD.				
Knowledge about OV	8.89	2.23	11.83	1.07	2.94	6.61	2.03 - 3.84	< 0.001
Perceived susceptibility	22.94	2.77	32.29	2.32	9.34	11.99	7.76 - 10.92	< 0.001
Perceived severity	21.54	2.44	28.14	1.81	6.60	13.89	5.63 - 7.56	< 0.001
Perceived self-efficacy	23.80	3.53	28.26	1.70	4.45	6.61	3.08 - 5.82	< 0.001
Social support	19.14	2.99	22.94	1.32	3.80	6.87	2.67 - 4.92	< 0.001
Practice of the behavior	18.63	2.17	20.60	0.55	1.97	6.13	1.31 - 2.62	< 0.001

Table 3 Comparisons of measure scores of knowledge, behavioral factors and practice of preventive behaviors to prevent OV infection **between** the two groups (N = 35 each) **after** the 10-week intervention.

Measures	Experimental group		Control group		Mean difference	Independent t-test	95% CI	*P*-value
	mean	SD.	mean	SD.				
Knowledge about OV	11.83	1.07	8.97	2.26	2.85	6.73	2.00 - 3.70	< 0.001
Perceived susceptibility	32.29	2.32	22.97	3.74	9.31	12.50	7.82 - 10.80	< 0.001
Perceived severity	28.14	1.81	21.57	2.45	6.57	12.73	5.54 - 7.60	< 0.001
Perceived self -efficacy	28.26	1.70	23.83	3.44	4.42	6.83	3.13 - 5.72	< 0.001
Social support	22.94	1.32	19.26	2.99	3.68	6.65	2.58 - 4.79	< 0.001
Practice of the behavior	20.60	0.55	18.60	2.15	2.00	5.31	1.24 - 2.75	< 0.001

After the 10-week intervention, participants in the test group had scores of knowledge, perceived susceptibility, perceived severity, self-efficacy, social support and practice of preventive behaviors to prevent OV infection higher, i.e. better, than those in control group with statistical significance (*P*-value < 0.001 for all)

(Table 3). In terms of self-efficacy, the scores in the experimental and control groups before the intervention were not statistically different (23.86 ± 3.53 and 23.86 ± 3.48 points, respectively, *P*-value = 0.94). However, after the 10-week intervention, the score of self-efficacy in the experimental group (28.26 ± 1.70 points) was significantly higher than that in control group (23.83 ± 3.44 points) (P-value < 0.001) (Table 3).

Discussions and Conclusion

This study applied concepts of Health Belief Model, self-efficacy and social support into the elements of an interventional program to promote hygienic practice to prevent opisthorchiasis among primary school students with grade 4 - 6 in Bandung district of Udonthani province. The 10-week program could significantly improve scores of knowledge about OV, perceived susceptibility to OV infection, perceived severity, self-efficacy, social support and practice of preventive behaviors to prevent OV infection in the experiment group (*P*-value < 0.001). Furthermore, scores of all measures mentioned above in the experimental group were higher than those in control group after the 10-week intervention (*P*-value < 0.001). Therefore the application of Health Belief Model, self-efficacy and social support was successful in promoting the preventive behavior to prevent opisthorchiasis among primary school students with grade 4 – 6.

Our findings were in line with several other studies. In the quasi-experimental study of Thongnamung and Duangsong (2012).[7] program based on Health Belief Model and social support to promote behavior to prevent opisthorchiasis and CCA among primary school students in Roi-et province was proved to improve knowledge and behavioral practice. Results similar to ours could also be found in the study in Nongblualumpu province by Kaewponpeg (2009)[14] where protection motivation theory and social support were applied for promoting preventive behavior against opistorchiasis among primary school students. Our study and others also shared similar intervention elements such as lecture, group discussion, VDO, and practice manual about OV, and common involving parties such as parents, teachers and health personnel to provide social support for primary school students. Another beneficial effect of social support was also found in the study of Saelee (2012)[8] where health belief model and social support on the behavior was applied to prevent dental caries and gingivitis among primary school students in Muang district of Udonthani province.

This study was also consistent with the study of Sota and colleagues (2007)[15] which found that certain media including manuals and VCD could help students in Khon Kaen province gained more knowledge about OV prevention with statistical significance (*P*-value < 0.001). Some studies suggested that effective health promoting program could actually prevent OV infection. Two studies revealed that significant decrease in re-infection OV was found among primary school students in Nongblualumpu province in studies of Seti (2009)[16] and Kaewponpeg (2009).[14] Similar results but in older population were also found. The study of Hamsompan and colleagues (2013)[17] found that health promoting program was beneficial for family leaders in Kasetwisai district of Roi-et province which was a group of a high risk of OV infection among people aged 35 years or over.

In terms of cooking hygiene, parents play an important role in cooking foods for their children. Unfortunately, poor hygiene could also induce the risk of OV infection. Therefore, parents should be empowered by knowledge about OV and they recognized the need to cook with a certain level of hygiene to reduce the risk of OV infection for family members.[17] Many studies also revealed the benefits of social supports in supporting and empowering people to participate in changing the risk and inappropriate behaviors of OV prevention by community participation such as the study of Duangsong and colleagues in Khon Kaen province in 2007.[18]

In addition, our and other studies found that a good cooperation of students and family members in the experiment group in various activities could help young people embrace good habit to prevent OV infection.[18] These activities included adjusting their cooking and eating hygiene, seeking for stool examination, treatment of OV parasites found in stool examination, and joining in the health education program.

Our study confirmed the potential of self-efficacy and social support in health promoting program. Self-efficacy and social support has been proved useful in various behaviors. In a quasi-experimental study of Buaphat (2008)[19] where an educational program based on self-efficacy and social support to develop tooth brushing behavior among students in grade 6 in Udonthani province. At the end of the program, the scores of knowledge, self-efficacy and practice of the behavior in the experimental group were all significantly improved from

baseline, and were significantly higher than those in control group (*P*-value < 0.001).

Our study also confirmed the benefit of Health Belief Model in modifying behavior and was consistent with many studies. Sharifirad and his colleagues (2007)[20] revealed a benefit of an educational program based on Health Belief Model to promote self-care on foot health among Iranian type 2 diabetes patients. Furthermore, health educations based on Health Belief Model and empowerment not only helped change but also sustain the desirable eating behaviors to prevent related infectious diseases.[6,21,22]

In addition to the application of behavioral theories into health promoting program, the development of networks of parties with similar lifestyles, contexts or cultures were highly necessary for success. Lifestyles and cultures in the northeastern of Thailand are unique. Provinces as well as districts also differ from each other. Udonthani province is no exception. Therefore, networking among local people with common lifestyles and cultures in a specific province or district is needed. The success based on the participation of local people in reducing the OV infection rate after the intervention in people of three districts of Khon Kaen province was evident in the participatory action research of Duangsong and colleagues (2010).[23] Local village health volunteers could act as a valuable body of social support in implementing a successful health promoting program. The benefits of village health volunteers were evident in our study. Furthermore, to be successful in preventing OV infection, changing behaviors among young generation in the endemic areas or high prevalence of OV has been proved again to be effective and should be studied more extensively in the future.

Our study had some limitations. With only 10 weeks of intervention, long-term or sustainable benefits of the program could not be understood. Since most support was mainly information oriented, actions of participants were somewhat limited. More emotional support could be tested in the future study so that more actions and interactions between students and their parents could be more elaborated, for example, information sharing between students and their parents.

In conclusion, this research aimed to investigate the effectiveness of a health educational program based on Health Belief Model, self-efficacy and social support to prevent opisthorchiasis among primary school students level (grade 4 – 6) in Bandung district of Udonthani province. After the 10-week intervention, students in the experiment group had significantly higher scores of knowledge, perceived susceptibility, perceived severity, self-efficacy, social support and practice of preventive behaviors to prevent OV infection compared with their baseline scores. Their scores of all these measures at the end of the program were significantly higher than those in control group.

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