

Effect of Health Education on Health Perception and Preventive Health Behaviour of Populations at risk of Cholangiocarcinoma in Si Samran Subdistrict, Porncharoen District, Bueng Kan Province, Thailand

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Abstract

People in Si Samran subdistrict, Porncharoen district, Bueng Kan province have little awareness and perception of risk and severity of cholangiocarcinoma (CCA). They still eat raw fish or other menu cooked with raw fish. Therefore, CCA prevention campaign should be done to enhance awareness and perception of this disease in order to reduce raw fish consuming behaviours. This study aimed to evaluate the effect of health education to populations at risk of CCA in Si Samran subdistrict by comparing health perception and preventive health behaviours before and after receiving health education. This study recruited 76 participants by purposive sampling technique to attend the health education for stop eating raw fish workshop. The workshop was applied based on the theory of Health Belief Model (HBM) and the activities comprised lecture of 1) signs and symptoms of CCA, 2) risk factors of CCA, 3) benefits of CCA prevention and group discussion about CCA preventive behaviours and barriers of behaviour modification. Data were collected with the questionnaire before and 3 months after the workshop. The questionnaire was adopted from Sangprach's questionnaire which had been already tested for reliability (overall Cronbach's alpha coefficient = 0.89). Descriptive statistics were used to describe personal demographic data, level of health perception regarding CCA and level of CCA preventive behaviours. Inferential statistics (paired samples t-test) were used to compare the level of health perception regarding CCA and level of CCA preventive behaviours before and after attending the workshop. The results showed that a majority of 76 participants were female (68.4%), age group 40-50 years old (51.3%), married (89.5%), finished primary school (76.3%), employed in agriculture (61.8%), and had income more than 10,000 bath/month (40.8%). Participants had a higher level of 3 parts of health perception regarding CCA after the workshop, including perceived susceptibility, perceived severity and perceived barriers but demonstrated a lower level of many CCA preventive behaviours except the behaviour "You do not eat mouldy food" level that was higher after attending the workshop. The recommendation for CCA preventive behaviour improvement is that health education should be focused on the elimination of obstacles or barriers in the community which obstructed the behaviour modification.

Keywords: Health education, health perception, preventive health behaviour, cholangiocarcinoma

Introduction

Cholangiocarcinoma (CCA), also known as bile duct cancer, is one of the most cancers prevalent in the North-eastern region of Thailand. The incidence rate was 5 per 100,000 populations and the death toll was approximately 14,000 per year (Bhudhisawasdi et al., 2003). It has been already known that *Opisthorchis viverrini* (OV) infection is the major

cause of CCA particularly in North-eastern region of Thailand. Previous studies revealed that raw fish consuming behaviour associated with OV infection leading to CCA. Thailand is the highest incidence of CCA in the world in 1988-1989 (Ohshima et al., 1994; Wongba et al., 2011). The types of raw fish dish which are popular in North-eastern region include, for example, raw fermented fish (Pla Ra), raw fish

in spicy condiment (Koi Pla), raw spicy minced fish salad (Lahb Pla), raw pickled fish (Pla Som), raw pickled small fish (Pla Jom), etc. (Chavengkun et al., 2016; Intajarunsan et al., 2016).

Bueng Kan is one of the provinces in the North-eastern region of Thailand that has many cases of CCA. The distribution during 2012 – 2014 was reported as follow; the incidence rates were 42.76, 40.86, 41.46 per 100,000 populations and the mortality rates were 17.92, 23.41, 19.65 per 100,000 populations respectively. Likewise, in Porncharoen district, Bueng Kan province, cases of CCA were reported and the trend gradually increased as follow; the incidence rates during 2012 – 2014 were 87.70, 66.37, 82.64 per 100,000 populations and the mortality rates were 30.81, 42.67, 69.72 per 100,000 populations respectively. In addition, new cases during 2012 – 2014 were 54, 22, 21 respectively (Bueng Kan Provincial Public Health Office, 2016). This report showed that the incidence and mortality rates in Porncharoen district were higher than the rates in Bueng Kan province and new patients still occurred every year as well. Thereby, the disease accounts for the major public health problem in Porncharoen district.

Si Samran subdistrict is situated in Porncharoen district, Bueng Kan province. Cases of OV infection in this area was one of the highest prevalence in Bueng Kan province. Findings of stool examination in 2011 revealed that OV eggs were found in 10 samples from all 60 samples (16.67%). Furthermore, since the CCA ultrasonography screening campaign had been launched in 2015, populations at risk in Si Samran subdistrict were recruited for this campaign accounting for total 397 subjects. 185 showed ultrasonographic abnormalities (46.6%). Most of abnormal findings were periductal fibrosis (FDF) (120 subjects, 30.2%) and fatty liver (62 subjects, 15.6%) (CASCAP, 2559). Evidently, OV infection causes PDF that is the major risk factors leading to CCA. It is known that raw fish consuming causes OV infection, but people in the North-eastern region of Thailand love to eat since they were young, and some continue doing until present. (Wongba et al., 2016) The lack of awareness and perception of risk and severity of the disease was important factors leading to maintaining risk behaviours. Therefore, the CCA prevention campaign should be done continuously to enhance awareness and perception of risk and danger of this disease in order to reduce raw fish consuming behaviours. This means that CCA in this area will likely decline in future (Padchasuwan et al., 2016).

Porncharoen hospital cooperating with Si Samran subdistrict health promotion hospital conducted “Stop eating raw fish” campaign for people in Si Samran subdistrict in order to reduce the risk of CCA. Populations at risk were recruited for ultrasonography screening. They had received health education before ultrasound examination. This study aimed to evaluate the effect of health education to populations at risk of CCA in Si Samran subdistrict, Porncharoen district, Bueng Kan province by comparing health perception and preventive health behaviours before and after receiving health education.

Materials and Methods

This study was a quasi-experimental research; one group pre-test and post-test design were applied in Si Samran subdistrict, Porncharoen district, Bueng Kan province, North-eastern region of Thailand during the period November 2016 – March 2017.

Population and sample

The study populations were people who live in Si Samran subdistrict and had risks of CCA screened by using CASCAP (Cholangiocarcinoma Screening and Care Program) CCA screening criteria as follow (CASCAP, 2016); they are typical northeast Thai aged of 40 years and over with any one or more of the following; 1) ever been infected by liver fluke or 2) ever been treated with praziquantel or 3) ever consumed raw freshwater fish with scales or 4) have family history with CCA. A total of populations was 1,495. This study recruited only 76 participants by purposive sampling technique to enrol ultrasound screening for CCA and attend health education for (stop eating raw fish workshop). These 76 participants were the pilot group of the program aimed to gain accurate perception regarding CCA, modify behaviours, and then disseminate correct knowledge to other people in their community.

Data collection

All target participants had attended the health education workshop, after that, they underwent an ultrasound examination for CCA screening by a trained physician. The health education workshop was applied based on the theory of Health Belief Model (HBM). The main constructs of the HBM comprise: 1) perceived threat, which consists of A) perceived susceptibility: a person’s subjective perception of the risk of acquiring a disease and B) perceived severity: a person’s feelings about the seriousness of contracting a disease; 2) perceived benefits: a person’s perception of the

effectiveness of various actions available to reduce the threat of a disease; 3) perceived barriers: a person's belief about the potential negative aspects of taking a particular health action; and 4) cue to action: internal or external cues that determine a person's readiness for action and trigger the decision-making process (Shojaei et al., 2016). In this workshop, 4 constructs were selected for training including perceived susceptibility, perceived severity, perceived benefits, and perceived barriers. The workshop activities comprised lecture of 1) signs and symptoms of CCA 2) risk factors of CCA 3) benefits of CCA prevention and group discussion about CCA preventive behaviours and barriers of behaviour modification.

This study was implemented for 3 months. Pre- and post-test were measured. Data were collected with questionnaire consisted of 3 parts: 1) personal demographic data 2) perceived susceptibility, perceived severity, perceived benefits, and perceived barriers 3) CCA preventive behaviours. The instrument in this study was adopted from Sangprach's questionnaire (Sangprach, 2010) which had been already tested for reliability. (Overall Cronbach's alpha coefficient = 0.89) Participants had to answer the questionnaire before attending the workshop, and 3 months after that they had to do it again to evaluate the improvement.

Data analysis

Descriptive statistics were used to describe personal demographic data, level of health perception regarding CCA and level of CCA preventive behaviours with frequency, percentage, mean and standard deviation. Inferential statistics (paired samples t-test) were used to compare the level of health perception regarding CCA and level of CCA preventive behaviours before and after attending the workshop. All test statistics were one-tailed at p-value < 0.05.

Results

Personal demographic data

In a total of 76 participants, majority were female (68.4%), age group 40-50 years old (51.3%), married (89.5%), finished primary school (76.3%), employed in agriculture (61.8%), and had income more than 10,000 bath/month (40.8%). (See Table 1)

Table 1: Personal demographic characteristic of participants

Characteristic (n=76)	Number	Percentage
Gender		
Male	24	31.6
Female	52	68.4
Age (years old)		
40 - 50	39	51.3
51 - 60	29	38.2
61 - 70	8	10.5
Marital status		
Single	1	1.3
Married	68	89.5
Widowed	4	5.3
Divorced/Separated	3	3.9
Education		
No school	2	2.6
Primary school	58	76.3
Secondary school	13	17.1
Diploma	2	2.6
Bachelor's degree	1	1.3
Occupation		
No employment	3	3.9
Agriculture	47	61.8
Government service	2	2.6
Commercial work	10	13.2
General labor	14	18.4
Income (Baht/month)		
< 3,000	22	28.9
3,001 – 5,000	8	10.5
5,001 – 10,000	15	19.7
> 10,000	31	40.8

Level of health perception regarding CCA among participants before and after attending workshop

The participants had a higher level of all parts of health perception regarding CCA after attending workshop compared with the before attending. Perceived susceptibility, perceived severity and perceived barriers were the parts that showed higher scores with statistical significance at 0.05 level. (See Table 2).

Table 2: Comparison of health perception regarding CCA among 76 participants before and after attending health education workshop

Level of health perception regarding CCA	Health education workshop				t	sig (1-tailed)
	Before		After			
	\bar{x}	S.D.	\bar{x}	S.D.		
Perceived susceptibility	3.58	0.74	3.80	0.46	-2.11	0.019*
Perceived severity	3.85	0.71	4.11	0.55	-2.35	0.011*
Perceived benefits	3.90	0.65	3.93	0.33	-0.34	0.369
Perceived barriers	2.34	1.04	2.63	0.98	-1.69	0.048*

Level of CCA preventive behaviours among participants before and after attending workshop

The participants had a lower level of the overall CCA preventive behaviours after attending workshop compared with before attending with no statistical significance. However, the behaviour “You always eat cooked freshwater

fish”, “You always eat cooked food” and “You have received hepatitis B vaccination” level was lower after attending workshop with statistical significance at 0.05 level. Whereas, the behaviour “You do not eat mouldy food” level was higher after attending workshop with statistical significance at 0.05 level. (See table 3).

Table 3: Comparison of CCA preventive behaviours among 76 participants before and after attending health education workshop

Level of CCA preventive behaviours	Health education workshop				t	sig (1-tailed)
	Before		After			
	\bar{x}	S.D.	\bar{x}	S.D.		
You always eat cooked freshwater fish.	4.22	0.87	3.86	0.93	2.54	0.001*
You always eat cooked food.	4.17	0.89	3.92	0.81	1.68	0.049*
You do not eat mouldy food.	3.49	1.67	3.99	0.79	-2.30	0.012*
You do not drink alcohol.	3.54	1.54	3.70	0.97	-0.71	0.240
You do not eat raw fermented fish, raw pickled small fish.	3.32	1.32	3.51	0.99	-1.06	0.146
You do not eat raw sore pork, raw sausage.	3.53	1.47	3.42	0.91	0.52	0.302
You have received hepatitis B vaccination.	3.36	1.59	2.36	1.43	4.29	< 0.001*
You always eat vegetables and fruits.	4.14	1.04	4.01	0.70	0.96	0.170
You do not eat food cooked with raw fermented fish.	3.39	1.37	3.37	0.91	0.15	0.443
Overall CCA preventive behaviours.	3.68	0.85	3.57	0.71	0.92	0.181

Discussion

From the health education workshop results, we found that participants had a higher level of all parts of health perception regarding CCA particularly perceived susceptibility, perceived severity, perceived barriers that were statistically significant. This finding is like the studies by Phatisena et al. (2016) and Thongnamuang (2011). Both studies applied HBM through health education programs and their findings showed a higher level of perceived susceptibility, perceived severity, perceived benefits and perceived barriers after joining the program. Therefore, health education campaign should be promoted among people in order to prevent CCA

(Chewakiatyingyong et al., 2011, Promthet et al., 2015). However, perceived barriers seemed to be greater after the workshop. It might indicate that participants were still not confident to modify their own behaviours because of various obstacles in their communities such as; participants could not refuse eating raw food when they participated in merit rituals or other traditional events. Sometimes, they had to eat raw food because they respected and should be courteous to host or other people to maintain friendship. In addition, unavailable healthcare services might be the perceived barrier that caused lower level of hepatitis B vaccination behaviour.

Most of CCA preventive behaviours were lower after attending the workshop, except the

behaviour “You do not drink alcohol”, “You do not eat raw fermented fish, raw pickled small fish”, especially, the behaviour “You do not eat mouldy food” that showed higher with statistical significance. These unimproved behaviours might be due to the participants had higher perceived barriers mentioned above. Nevertheless, the findings presented that the participants decrease eating mouldy food after the workshop. It might be due to such behaviour can be modified easier than other behaviours. Participants were able to refuse to eat mouldy food when they went to the party with their friends but could not refuse eating raw food due to maintaining friendships. The findings were not consistent with many studies that demonstrated better behaviours after attending the health education program. (Phatisena et al., 2016; Promthet et al., 2015; Thongnamuang, 2011) The result of non-improved behaviours required further investigation to elucidate our findings.

References

- Bhudhisawasdi V, Sripa B, Romphruk A, Pairojkul C, Limpaboon T. (2003). *Pathology and mechanism of cholangiocarcinoma carcinogenesis in North-eastern Thailand: Loss of Heterozygosity of Chromosome 9p*. Bangkok: Database of public infrastructure of science and technology, Ministry of science and technology.
- Bueng Kan Provincial Public Health Office. (2016). *Health Data Center*. Retrieved from <http://bkn.hdc.moph.go.th/hdc/main/index.php>.
- CASCAP (Cholangiocarcinoma Screening and Care Program). (2559). *CCA screening report, Si Samran Subdistrict Health Promotion Hospital, Porncharoen district, Bueng Kan province*. Retrieved from <https://cloud.cascap.in.th>. (2559). *Cholangiocarcinoma verbal screening form*. Retrieved from <https://cloud.cascap.in.th>.
- Chavengkun W, Komporn P, Norkaew J, Kujapun J, Pothipim M, Ponphimai S, et al. (2016). Raw Fish Consuming Behaviour Related to Liver Fluke Infection among Populations at Risk of Cholangiocarcinoma in Nakhon Ratchasima Province, Thailand. *Asian Pacific Journal of Cancer Prevention*, 17(6), 2761-2765.
- Chewakiatyingyong S, Phanseub P, Chaiwong T, Chaiwong S. (2011). Health belief and self care for liver cancer precaution in patients who had dyspepsia symptom in Dok Kham Tai district, Phayao province. *Naresuan Phayao Journal*, 4(3), 6-14.
- Intajarunsan S, Khuntikeo N, Chamadol N, Thinkhamrop B, Promthet S. (2016). Factors Associated with Periductal Fibrosis Diagnosed by Ultrasonography Screening among a High Risk Population for Cholangiocarcinoma in Northeast Thailand. *Asian Pacific Journal of Cancer Prevention*, 17(8), 4131-4136.
- Ohshima H, Bandaletova TY, Brouet I, et al. (1994). Increased nitrosamine and nitrate biosynthesis mediated by nitric oxide synthase induced in hamsters infected with liver fluke (*O. viverrini*). *Carcinogenesis*, 4, 271-275.
- Padchasuwan N, Kaewpitoon SJ, Rujirakul R, Wakkuwattapong P, Norkaew J, Kujapun J, Ponphimai S, Chavengkun W, Komporn P, Kaewpitoon N. (2016). Modifying

In conclusion, participants showed a higher level of 3 parts of health perception regarding CCA after the workshop, including perceived susceptibility, perceived severity and perceived barriers but demonstrated a lower level of many CCA preventive behaviours. However, the behaviours should be measured periodically in order to follow the change. The recommendation for CCA preventive behaviour improvement is that health education should be focused on the elimination of obstacles or barriers in the community which obstructed the behaviour modification. It should be implemented more than one time to the same participants in order to maintain good practices.

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Health Behaviour for Liver Fluke and Cholangiocarcinoma Prevention with the Health Belief Model and Social Support Theory. *Asian Pacific Journal of Cancer Prevention*, 17(8), 3721-3725.

Phatisena P, Eaksanti T, Wichantuk P, Tritipsombut J, Kaewpitoon SJ, Rujirakul R, et al. (2016). Behavioural Modification Regarding Liver Fluke and Cholangiocarcinoma with a Health Belief Model Using Integrated Learning. *Asian Pacific Journal of Cancer Prevention*, 17(6), 2889-2894.

Promthet P, Kessomboon P, Promthet S. (2015). Community-Based Health Education and Communication Model Development for Opisthorchiasis Prevention in a High Risk Area, Khon Kaen Province, Thailand. *Asian Pacific Journal of Cancer Prevention*, 16(17), 7789-7794.

Sangprach A. (2010). *Factors relating to behaviours of the hepatocellular carcinoma and cholangiocarcinoma in Ubon Ratchathani Province, Thailand* (master of public health thesis). Rajabhat university, Ubon Ratchathani. (in Thai)

Shojaei S, Farhadloo R, Aein A, Vahedian M. (2016). Effects of the Health Belief Model (HBM)-Based Educational Program on the Nutritional Knowledge and Behaviours of CABG Patients. *The Journal of Tehran University Heart Center*, 11(4), 181-186.

Thongnamuang S. (2011). *The effectiveness of application by health belief model and social support for preventive behaviour of opisthorchiasis and cholangiocarcinoma among primary school students in Moeiwadi District, Roi-Et Province, Thailand* (master of public health thesis). Khon Kaen university, Khon Kaen.

Wongba N, Thaewongiew K, Phathee K, Laithavewat L, Duangsong R, Promthet S, et al. (2011). Liver fluke prevention and control in the northeast of Thailand through action research. *Asian Pacific Journal of Cancer Prevention*, 12(5), 1367-1370.