

## RESEARCH ARTICLE

# Effects of Application of Social Marketing Theory and the Health Belief Model in Promoting Cervical Cancer Screening among Targeted Women in Sisaket Province, Thailand

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## Abstract

Cervical cancer is a major public health problem in Thailand, being ranked second only to breast cancer. Thai women have been reported to have a low rate of cervical cancer screening (27.7% of the 80% goal of WHO). We therefore aimed to apply the social marketing theory and health belief model in promoting cervical cancer screening in Kanthararom District, Sisaket Province. A total of 92 from 974 targeted women aged 30-60 years were randomly divided into two groups. The experimental group underwent application of social marketing theory and a health belief model program promoting cervical cancer screening while the control group received normal services. Two research tools were used: (1) application of social marketing theory and health belief model program and (2) questionnaire used to evaluate perceptions of cervical cancer. Descriptive and inferential statistics including paired sample t-test and independent t-test were used to analyze the data. After the program had been used, the mean score of perception of cervical cancer of experimental group was at a higher level ( $\bar{x}=4.09$ ; S.D.=0.30), than in the control group ( $\bar{x}=3.82$ ; S.D.=0.20) with statistical significance ( $p<0.001$ ). This research demonstrated an appropriate communication process in behavioral modification to prevent cervical cancer. It can be recommended that this program featuring social marketing and the health belief model be used to promote cervical cancer screening in targeted women and it can be promoted as a guideline for other health services, especially in health promotion and disease prevention.

**Keywords:** Social marketing theory - health belief model - cervical cancer screening - Thailand

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## Introduction

Cancer is a non-communicable disease and a major public health problem in all countries around the world. The World Health Organization has predicted that by the next 20 years, the number of patients with cancer will have increased to 2 times comparing to the present. It is also predicted that in the year 2020, more than 11 million people will die from cancer. Cervical cancer is a common problem among women worldwide. It is ranked the third most common cancer in women especially in the developing countries (Bray et al., 2013; Ferlay et al., 2013). It is also a major public health problem in Thailand, which is ranked the second only to breast cancer of Thai women's cancer (Khuhaprema et al., 2012). In the year 2008, the women aged 15 years and older were at risk of cervical cancer around 26.09 million people. Also, each year there are 9,999 new cases with cervical cancer and 5,216 of them die; accounting of 53% with the average of 14 cases a day. By the year 2025, it is expected that there will have been 13,082 new cases with cervical cancer and

7,871 of them will have died (World Health Organization, 2013). The total deaths from cervical cancer in Thailand are approximately 4,500 cases per year and there are 8,000 new cases with cervical cancer per year. Squamous cell carcinoma is the most common type of cervical cancer found in Thailand, accounting of 69.8-81.8% and it is mostly found in women aged 50-55 years old (Imsamran et al., 2015).

Cervical cancer is a slow progression disease. It takes around 2-15 years to change into cancer. So, it is the cancer that can be prevented and screening can be done to find early abnormality in cervical cells (World Health Organization, 2013). In Thailand, the Ministry of Public Health in collaboration with the National Health Security Office has set the targeted women aged around 30-60 years old to have cervical cancer screening by 80% (Khuhaprema et al., 2012). However, Thai women have low rate of screening for cervical cancer with 27.7% coverage of screening in targeted women in 2006-2009 (Khuhaprema et al., 2012) and they mostly go to see the doctor while they are in the symptomatic stage, which

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cannot be treated promptly.

From the operation of Sisaket Province, Northeast Thailand, there were 259,660 targeted women that had been screened for cervical cancer, accounting of 83.87% (Sisaket Provincial Public Health Office, 2014). Although it met the goals set by the Ministry, when considering in the area level, the target group in some areas received less screening service which did not achieve the target set by the Ministry. The cervical cancer screening accumulated from the year 2010-2014 of Kanthararom District was 73.76% and there were 10 new cases with cervical cancer (Sisaket Provincial Public Health Office, 2014). According to the operation of Sanglao Sub-district Health Promoting Hospital, Yang Sub-district, Kanthararom District, Sisaket Province, the cervical cancer screening was 78.18%. There were 5 targeted villages that had not been screened according to the goal set (Sisaket Provincial Public Health Office, 2014). The target group did not have screening service as the goal set even the service was proactively promoted because they felt embarrassed and they worked full time, so they cannot come at the date of the appointment. They also lacked of awareness and thought that it was not important because the symptoms did not show immediately. For these reasons, the researcher had applied the social marketing theory and the health belief model in the area of Yang Sub-district, Kanthararom District, Sisaket Province to improve knowledge, awareness and correct practice in preventing cervical cancer in the targeted women. It is a suitable concept that can be applied to communicate to the target group of women in order to encourage them to have cervical cancer screening. The results of this study will be the guidelines for the solution of having the cervical cancer screening service in other areas. Therefore, this study aimed to compare the effects of the application of the social marketing theory and health belief model in promoting cervical cancer screening among the women in the target area before and after the experiment in the experimental group and after the experiment between the experimental group and the control group.

## Materials and Methods

### *Study design, population, sample size and sampling*

The population of this research included 974 targeted women aged 30-60 years old in Yang Sub-district, Kanthararom District, Sisaket Province who had never been screened for cervical cancer and whose names were in the Civil Registration Database and lived in the area from on January 1, 2015 to December 31, 2015. The inclusion criteria included living in the area of the study, being able to read and write, not being pregnant, not having cervical cancer and voluntarily participating in the study. The sample size was calculated using the formula for sample size determination to estimate sample size ratio. Each group consisted of 46 people. The purposive sampling method was employed to select the samples. The samples were selected from the villages that had less comprehensive screening process results during the five years; from 2010 to 2014, and their territories were not adjoined in order to control the diffusion of treatment. The

women from two villages were selected. The women from Village No.2 were in the experimental group while those from Village No.6 were in the control group. This study was quasi-experimental research using the pretest-posttest two groups design. That is, the experimental group was treated with the application of social marketing theory and health belief model program in promoting cervical cancer screening while the control group received the normal service. The study was conducted for eight weeks from November 2015 to December 2015.

### *Research tools and their assessment*

There were two research tools: (1) the application of social marketing theory and health belief model program and (2) the questionnaire consisting of two parts: part 1: general information and part 2: the assessment of the perception of cervical cancer covering four aspects: the perception of risk of developing cervical cancer, the perception of severity of cervical cancer, the perception of benefits of treatment to prevent cervical cancer and the perception of obstacles of cervical cancer screening. The content validity of the two research tools was verified by five experts and the reliability was validated with the Cronbach's coefficient alpha. The reliability of the first tool was 0.95 and that of the second tool was 0.83.

### *Ethical approval*

The research ethics were taken into consideration, and the samples' rights were protected starting from the process of data collection to the completion of the research. This research was approved by the Ubon Ratchathani Rajabhat University Ethics Committee for Human Research based on the Declaration of Helsinki and the ICH Good Clinical Practice Guidelines (Reference No. HE581003).

### *Data collection*

#### 1. The process of the pilot testing of the research tools:

The researcher submitted the permission letter the Public Health Executive of Kanthararom District to ask for the permission and cooperation of the pilot testing of the research tools with the targeted women aged 30-60 years old living in Chan Sub-district, Kanthararom District, Sisaket Province.

#### 2. The process of preparation of the experimental group:

*i).* The researcher submitted the permission letter the Director of Sanglao Sub-district Health Promoting Hospital, Yang Sub-district, Kanthararom District, Sisaket Province to ask for the permission and cooperation of the data collection with the targeted women aged 30-60 years old living in Yang Sub-district, Kanthararom District, Sisaket Province. *ii).* The basic information of the community was studied.

3. The planning process of the experiment: *i).* The researchers built good relationships with the samples and introduced themselves and identified the purposes of the study and familiarized with the group. *ii).* The data were collected from the questionnaire querying about the perception of cervical cancer. *iii).* The data of cervical cancer screening were collected before the experiment.

iv). The training program and the development and testing of media such as videos, VCDs and documents used in the activities were prepared. v). The researcher asked for the cooperation and organized the meeting with health authorities of Sanglao Sub-district Health Promoting Hospital in order to inform them about the operation and the promotion of cervical cancer screening program by using the application of social marketing theory and health belief model program and designating responsibilities to the public health officials and the village health volunteers. vi). Date and time were appointed and place materials, documents and media used in the activities were prepared. vii). The operation and implementation were operated.

**4. The process of the experiment:** The activities were organized for the experiment according to the plan with

the women in the experimental group and the control group as follows.

**Experimental group:**

**Week 1:** The researchers introduced themselves to the targeted women and clarified the guidelines of the research process. Campaigns, wire broadcasting, posters brochure and media were prepared. The village health volunteers distributed the brochure and invited the target groups at their homes and the posters were posted at the stores, temples and the entrances of the village.

**Week 2:** The training program for enhancing knowledge and awareness of cervical cancer and the importance of cervical cancer screening method based on the health belief model was administered.

**Table 1. General Characteristics of the Experimental and Control Groups**

General characteristics	Experimental group		Control group	
	Number	%	Number	%
Age (years)				
≤35	1	2.17	2	4.35
36-40	9	19.57	5	10.87
41-45	8	17.39	10	21.74
46-50	11	23.91	10	21.74
51-55	7	15.22	10	21.74
≥56	10	21.74	9	19.57
Mean ± SD	48.00 ± 7.64		48.04 ± 7.30	
Median (min: max)	43 (32: 62)		42 (33: 60)	
Marital status				
Single	2	4.35	1	2.17
Married	40	86.96	38	82.61
Divorced/Widowed	4	8.70	7	15.22
Education level				
Primary school	37	80.43	23	50.00
Secondary school	7	15.22	15	32.61
Bachelor degree or higher	2	4.35	8	17.39
Occupation				
Farmer/Laborer	45	97.83	37	80.43
Commercial/Trading	1	2.17	9	19.57
Household income per month (Baht)				
1,000-6,999	42	91.30	28	60.87
7,000-12,999	3	6.52	11	23.91
≥13000	1	2.17	7	15.22
Contraceptive methods				
Sterilization	30	65.22	27	58.70
Oral pill	8	17.39	11	23.91
Contraceptive injections	5	10.87	7	15.22
Contraceptive coil/loop	3	6.52	1	2.17
Cervical cancer screening uptake				
Ever	41	89.13	43	93.48
Never	5	10.87	3	6.52
Reasons given for screening				
Recommendation by village health volunteers	31	41.33	28	31.11
Recommendation by doctors	26	34.67	26	28.89
Recommendation by neighbors	1	1.33	3	3.33
Abnormal vaginal bleeding	2	2.67	5	5.56
Annual health check-up	9	12.00	14	15.56
After labour	6	8.00	14	15.56
Health services for screening				
Government hospitals	5	10.87	3	6.52
Private hospitals/clinics	2	4.35	2	4.35
Sub-district health promoting hospitals	28	60.87	33	71.74
Cancer hospitals	1	2.17	5	10.87
Mobile units	10	21.74	3	6.52

**Table 2. Compared Mean Scores for Perceptions of Cervical Cancer within Group of the Experimental Group**

Perceptions	Before the program			After the program			t	p-value
	$\bar{x}$	S.D.	Level	$\bar{x}$	S.D.	Level		
Perception of risk of developing cervical cancer	3.31	0.81	Moderate	3.48	0.33	Moderate	1.44	0.16
Perception of severity of cervical cancer	3.51	0.81	Moderate	3.93	0.38	High	2.96	0.01
Perception of benefits of treatment to prevent cervical cancer	4.29	0.89	High	4.15	0.29	High	-1.08	0.29
Perception of obstacles of cervical cancer screening	3.27	1.09	Moderate	3.91	0.55	High	3.32	<0.001
Overall perceptions	4.05	0.38	High	4.09	0.30	High	0.53	0.59

**Table 3. Compared Mean Scores for Perceptions of Cervical Cancer between Groups of the Experimental and Control Groups**

Perceptions	Experimental group			Control group			t	p-value
	$\bar{x}$	S.D.	Level	$\bar{x}$	S.D.	Level		
Perception of risk of developing cervical cancer	3.48	0.33	Moderate	4.36	0.57	High	8.96	<0.001
Perception of severity of cervical cancer	3.93	0.38	High	4.17	0.61	High	2.28	0.03
Perception of benefits of treatment to prevent cervical cancer	4.15	0.29	High	4.74	0.40	High	8.08	<0.001
Perception of obstacles of cervical cancer screening	3.91	0.55	High	3.09	1.13	Moderate	-4.11	<0.001
Overall perceptions	4.09	0.30	High	3.82	0.20	High	4.95	<0.001

**Week 3:** The activity of “knocking the door” focusing on the perception of severity of cervical cancer was done. The researcher and the village health volunteers organized a meeting to exchange ideas and find solutions.

**Week 4:** The activity enhancing the perception of severity of cervical cancer was operated by discussing, exchanging ideas and finding solutions as well as providing the first service unit for cervical cancer screening, distributing bags with the slogan of the campaign and building awareness and motivation in practices.

**Week 5:** The activity promoting the perception of the benefits of cervical cancer screening was done by the village health volunteers visiting and knocking on the door of the target group.

**Week 6:** The activity focusing on the risk of delayed cervical cancer screening and inputting the information during the operation in order to adjust the marketing strategies were administered.

**Week 7:** The activity focusing on the cost of treatment of cervical cancer in different stages by discussing and exchanging ideas and finding solutions was done. The village health volunteers visited and knocked on the door of the target group.

**Week 8:** The activity focusing on the pain when being treated for cervical cancer in different stages was held. The second service unit for cervical cancer screening was done. The bags with the slogan of the campaign were distributed to the target group and the certificates were given to the women who received the cervical cancer screening.

#### Control group

**Week 1:** The women in the control group were sent a letter to invite to have cervical cancer screening service. The researcher met with the samples and built relationships and recorded their personal information. A small group discussion was held. The perception of cervical cancer was assessed and the data of cervical

cancer screening were recorded.

**Week 2-3:** The control group received the normal service system as carried out every year.

**Week 4:** The date and time of the first cervical cancer screening service were informed through the village health volunteers as carried out every year.

**Week 5-7:** The control group received the normal service system as carried out every year.

**Week 8:** The date and time of the second cervical cancer screening service were informed. The perception of cervical cancer was assessed by the same questionnaire and the data of cervical cancer screening were recorded.

#### Statistical analysis

The personal information of the samples was analyzed by descriptive statistics, including percentage, mean, standard deviation, minimum value and maximum value. The difference of the mean scores of the experimental group of both before and after the experiment was analyzed by paired sample t-test. The difference of the mean scores between the experimental group and the control group was analyzed by independent t-test.

#### Results

The results showed that the experimental group aged between 46-50 years old, accounting of 23.91%, and 86.96% of them got married. Also, 80.43% graduated from primary school and 97.83% of them were farmers. The average household income per month was between 1,000-6,999 Baht, accounting of 91.30%. The common contraceptive method was sterilization, accounting of 65.22%. Moreover, 89.13% of them used to receive cervical cancer screening uptake. The samples received the cervical cancer screening service as they were informed by the village health volunteers (41.33%). Most of them (60.87%) went to have screening at the Sub-district Health Promoting Hospital (Table 1).

According to the results of the program for promoting cervical cancer screening, it was found that before the experiment, the mean score of the perception cervical cancer of the experimental group was at a high level ( $\bar{x}=4.05$ ; S.D. = 0.38) and after the use of the program it was found that the mean score of the perception of cervical cancer of the experimental group increased ( $\bar{x}=4.09$ ; S.D. = 0.30) without statistically significant difference (Table 2). Also, the use of the program for promoting cervical cancer screening between the experimental group and the control group revealed that after the experiment, the mean score of the perception of cervical cancer of the experimental group was in a high level ( $\bar{x}=4.09$ ; S.D. = 0.30) which was higher than that of the control group which the mean score of the perception of cervical cancer was in a moderate level ( $\bar{x}=3.82$ ; S.D. = 0.20) with statistically significant difference ( $p<0.001$ ) (Table 3).

## Discussion

The results of the study revealed that after the experiment had been done, the mean score of the perception cervical cancer of the experimental group was in a high level. Moreover, the perception of benefits of the practice of preventing cervical cancer was also in a high level. The targeted women also had more cervical cancer screening. When considering each aspect of the perception of cervical cancer, it was found that the perception of all four aspects affected cervical cancer screening. This was consistent with the study of factors related to Pap smear screening in targeted women at Ratchaburi Province in Central Thailand, which found that the perception of risk of cervical cancer was associated with the behavior of cervical cancer screening statistically significant ( $p = 0.024$ ) (Sudsawang, 2008). Also, it was similar to the study in the Thai Muslim women in Satun Province in Southern Thailand, which revealed that receiving a Pap test was found to be significantly higher among women with a high level of perceived susceptibility, a low level of perceived barriers for the Pap test, having received a routine checkup, having received a recommendation by a doctor, health care personnel or husband (Chesun et al., 2012). In addition, the study in some ethnic minorities in Thailand (Hmong hilltribe), which found that factors positively associated with cervical cancer screening uptake were number of years of school attendance, animistic religious beliefs, previous pregnancy, receipt of information about cervical cancer screening, and perceived risk of developing cervical cancer (Wongwatcharanukul et al., 2014).

After the application of social marketing theory and health belief model program in promoting cervical cancer screening had been used with the samples, it affected the perception of severity of cervical cancer, the perception of practice in the prevention of cervical cancer and the perception of obstacles in cervical cancer screening, which increased comparing to before the program had been used, which the perception was in a moderate level. However, the perception of risk of cervical cancer was still in a moderate level, which was not consistent with the theory. So, when considering seven aspects, it was found that after the program was implemented, the scores of the

first three aspects of the perception of risk of the disease clearly increased which included age at risky, sexually transmitted infection and leucorrhoea with foul smell. In contrast, the scores of the other four aspects were lower which included promiscuous sexual behavior, cleaning sexual organs, smoking or exposing to cigarette smoke and having family members with cervical cancer. When considering the promiscuous sexual behavior and the cleaning sexual organs, the ideas on these issues were less exchanged as they felt embarrassed. Also, for the smoking or exposing to cigarette smoke and having family members with cervical cancer, no one had experienced these issues. The perception was enhanced just through the training of personnel, so the perception of these two issues cannot be sufficiently created. These were consistent with the study of health promotion for staff and factory workers on the role of social marketing which concluded that the information selected to communicate with the target group through social marketing must be in consistent with the knowledge and the attitudes of the target group and also influences the perception of the target group (Yothasamut et al., 2010). If the new information is not in accordance with the attitudes, the new information might be rejected. On the other hand, if the new data is consistent with the attitudes of the target group, it is easy to recognize and change. Therefore, understanding the thinking, beliefs and attitudes of the target group is crucial to communication for health promotion.

Also, when considering the perception of benefits of practice in the prevention of cervical cancer by screening for cervical cancer which the mean score was higher than other aspects, it can be seen that although the persons perceived little risk, if the benefits of screening were recognized, they would decide to go for screening in the end. This can be the direct benefit which the disease can be detected earlier and treated promptly. It is also the indirect benefit such as receiving an award which is an incentive for having screening. The reasons why the experimental group had the mean score of the perception of cervical cancer higher than the control group were probably the results of (1) having real experiences from a good role model / those who had the unusual symptoms / relatives with end stage cancer, (2) providing proactive cervical cancer screening service and (3) creating an incentive by giving away cloth bags with slogan of the campaign and the certificate. These were consistent with the study of the promotion for cervical cancer screening among women living in urban area of Khon Kaen Province (Panomai and Piyabanditkul, 2010).

As a result, it can be said that promoting the perception of cervical cancer is important toward screening service. The methods used may vary depending on the context. It may be only the distribution documents or the provision of training. Encouraging the targeted women to have screening according to the appointment is the role reinforced by personal media, especially public health officials and village health volunteers. This study employed the social marketing concept with the health belief model to develop the appropriate communication process for behavioral change to prevent cervical cancer. This was consistent with the study of the application of social marketing for

mobilization towards a healthy community, which resulted in residents becoming empowered to improve the strength and health of their community (Kittithirapong, 2011). Therefore, this program should be used to change the behaviors of women in preventing cervical cancer. This program is recommended for using to promote cervical cancer screening to the targeted women in the form of the community participation and it can be published or promoted as guidelines for other health facilities and can also be applied to other aspects of health, especially on health promotion and disease prevention.

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