

Oral Self-screening Knowledge Dissemination Process for Oral Potentially Malignant Disorders in Sanpatong District, Chiang Mai Province, Thailand

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Abstract

Objectives: To create a knowledge dissemination process for oral self-screening for the detection of early oral cancer and potentially malignant disorders with the participation of village health volunteers (VHVs).

Methods: Action research with VHVs was performed in Sanpatong district, Chiang Mai province, from October 2020 to May 2021. The knowledge dissemination process consisted of five steps: (1) community analysis by in-depth interviews to identify areas of concern for oral cancer; (2) discussion with the VHV core team to develop the knowledge dissemination process; (3) production of a customized media and training program that fit the area population and VHVs; (4) purposive selection of 43 VHV trainees from 15 villages to attend the pilot program, use the media, and disseminate the knowledge in the community; (5) program evaluation by in-depth interviews and self-report questionnaires.

Results: The results indicated that VHVs showed a positive attitude toward oral cancer screening and expressed eagerness to disseminate knowledge to people in their communities. Trained VHVs learned the benefits of self-screening in the at-risk population and gained confidence in inviting people to practice oral self-screening. The key factors for program success were (1) community and oral cancer concern analysis, (2) a customized media design and training program, and (3) participation of the target group.

Conclusions: The five steps of knowledge dissemination were effective in increasing VHVs' recognition of the benefits of early oral cancer detection and self-screening behaviors in the community.

Keywords: knowledge dissemination, potentially malignant disorders, oral cancer, oral self-screening, village health volunteers

Introduction

Oral cancer survival rates have seen improvement in developed countries. In the United States, for example, the 5-year survival rate was 54.7% in 1992-1996 and increased to 65.9% by 2002-2006.⁽¹⁾ Currently, the global survival rate is estimated to be 50%⁽²⁾, though survival in Thailand is only 25.9%.⁽³⁾ The low survival rate in Thai

patients with oral cancer is primarily due to late diagnosis, as prognosis depends on the cancer stage at diagnosis. The earlier the cancer is diagnosed, the better the patient's chances of survival.⁽¹⁻⁶⁾ According to the National Cancer Institute of Thailand, oral cancer was the sixth-most common cancer in Thailand, with 43% of patients diagnosed at Stage IV and only 12% diagnosed at Stage I.⁽⁶⁾ Data

from the registry of Sanpatong Hospital in Chiang Mai province showed rates similar to the national data. Most patients arrive at the hospital already in Stage III or IV of the disease, when oral lesions become large or painful. The reasons for their delayed diagnosis are often fear of being diagnosed with cancer, fear of biopsy, or belief that the lesions were aphthous ulcerations; these delays have caused the annual survival rate of patients with oral cancer at Sanpatong Hospital to be less than 25%. Similar reasons for delayed treatment have been cited in other studies.⁽⁷⁻¹¹⁾

The people of Sanpatong are in a low socioeconomic status (SES), and the average family income and education level are under the national standard. Low SES is one of the risk factors for oral cancer, with people with low education, occupational social class, and income demonstrating a higher risk of developing oral cancer compared to high-SES individuals.⁽¹²⁾ The poorer circumstances of low-SES individuals affect their lifestyles and risk behaviors.⁽¹³⁾ Factors related to SES may constitute one of the reasons for high rates of oral cancer in Sanpatong, where approximately 75% of people have low SES based on a low-income definition.⁽¹²⁾ Sanpatong district is an agricultural area where most of the population comprises farmers and laborers. A previous study identified numerous factors related to oral cancer, such as smoking, alcohol consumption, long-term exposure to direct sunlight in farmlands or rice fields, prolonged irritation from sharp teeth, and improper prostheses made by unauthorized technicians.⁽⁸⁾ People have learned about the dangers of cigarettes for cancer formation but many do not cease smoking unless they have a strong reason to. In addition, cancer may be considered a karma-dictated disease more than a cigarette-induced disease, as some patients with oral cancer are non-smokers or quit smoking decades earlier, and some patients do not display any risk factors.^(7,8) Without symptoms, there is a low likelihood that people will comply with routine oral screenings by professional health care workers. Therefore, the knowledge and skills of oral screening and self-screening must be disseminated to people in Sanpatong to improve the chances of cancerous lesions being detected and treated early and optimize patients' survival and quality of life.

Oral cancer can be screened either by professional or trained health care workers or through self-screening.^(11,14,15) One study found that after consistent screening for oral lesions by trained health care workers in

Kerala, India, improved survival rates were observed in screened populations compared to unscreened populations.⁽¹⁵⁾ An example of self-screening in Roi-et, Thailand, showed that people could perform self-screening and self-identify oral potentially malignant disorders (PMDs) after being trained by village health volunteers (VHVs). Patients with PMDs were sent to oral specialists for biopsy to confirm for PMDs and oral cancer.⁽¹¹⁾ Although the effect of oral self-screening on survival rates is still controversial due to its low specificity⁽¹¹⁾, it remains an effective tool for encouraging early cancer detection and routine oral check-ups.^(16,17)

In this study, the theory of innovation diffusion by Rogers⁽¹⁸⁾ was used as a guiding principle for knowledge dissemination among the Sanpatong population, who were suburban community members who had never learned how to perform oral self-screening. Notably, when innovation is presented to a community, people's acceptance and ability to understand and continuously use the innovation vary. The innovators should consider that there are early and late adopters and individuals who may be slower to accept or even ignore the innovation. To ensure the long-term sustainability of an intervention, innovators should identify the most appropriate targets and channels of communication at the right time before attempting to introduce the innovation into the community. Following this theory, VHVs were the first target in this project, as they were early adopters who were involved in most of the local health care programs. Once VHVs realize the benefits of oral self-screening and develop the ability to perform screenings, they become key to further knowledge dissemination to the entire district population, including the at-risk group for oral cancer. The objective of this study was thus to create a knowledge dissemination process for oral self-screening to detect early oral cancer and PMDs in the Sanpatong district with the participation of VHVs.

Materials and Methods

Study design

This action research with VHVs was performed from October 2020 to May 2021. The study processes were divided into the following five steps: (1) community analysis by in-depth interviews to identify areas of concern regarding oral cancer; (2) discussion with the VHV core

team to develop the knowledge dissemination process; (3) production of a customized media and training program that fit the area population and VHVs; (4) purposive selection of 43 VHV trainees from 15 villages to attend the pilot program, use the media, and disseminate the knowledge in the community; (5) program evaluation by in-depth interviews and self-report questionnaires. The research protocols and interview questions were approved by the Research Ethical Committee of the Faculty of Dentistry, Chiang Mai University (No. 65/2020).

Recruitment and data analysis

We recruited participants for each step of the study in the following manner.

Step 1: We conducted a community analysis regarding oral cancer through in-depth interviews with 12 patients with oral cancer, their caregivers, and two local healers to obtain their perspectives on oral cancer prevention, cancer treatment-seeking behaviors, cancer-related quality of life, and community-related health care systems for oral cancer. Meanwhile, five VHVs from the Sanpatong district were randomly selected and interviewed for their opinions on oral screening, oral cancer concerns, and the roles of VHVs in oral cancer screening.

Step 2: Data from step 1 was presented to the VHV core team to educate them on the importance of oral screening and knowledge dissemination to the villagers. The core team agreed to choose 43 VHVs from 15 villages in the Yuwa and Kew Lae-Luang subdistricts to participate in a prototype of the program and assess the program's performance. The core team additionally provided feedback for program development, suggesting a short training with a hands-on workshop and pilot community exercises for knowledge and skill development. The demographic characteristics of the VHV trainees are displayed in Table 1.

Step 3: Data from steps 1 and 2 were used to design a customized media and training program that was relevant to the area population and the VHVs.

When designing the media component of the program, as the community data showed that people were frightened of seeing oral cancer, we avoided the use of oral cancer images in the training and presentation media. A brochure containing a guide for oral self-screening was tested at a dental clinic with 18 participants ($M_{\text{age}} = 53.44 \pm 9.66$ years) and was adjusted to the final version based on their feedback. A short video presenting the interviews of two

oral cancer survivors that focused on their stories of life after cancer, their coping strategies, and how they first noticed their cancers were presented during the training. One VHV played the role of the interviewer in this video. The training program was specifically designed with simple tools to ensure that all important topics were easy to memorize. The training tools included the survivor interview video, self-screening brochures, an oral self-screening checklist from the Bureau of Dental Health⁽¹¹⁾, a self-screening orientation video from the Department of Oral Biology and Oral Diagnosis Science of Chiang Mai University, and simulated PMDs in the mouth of a phantom head provided by the Intercountry Center of Oral Health of Chiang Mai.

Step 4: VHV participants were informed of the study and signed consent forms before the training began. VHVs were given a short lecture focusing on PMDs and early signs and symptoms of oral cancer. In-class practice included oral self-screening in front of a mirror, performing oral check-ups with another VHV, and practicing screening for PMDs using the phantom head.

All 43 VHVs performed a community exercise in disseminating knowledge by distributing brochures and informing villagers about oral cancer screening. In addition, five trained VHVs who were scheduled to work in the Elderly Rehabilitation Center assisted in a self-screening training class with 30 older adults. The five VHVs were interviewed immediately after the class regarding their experiences and were asked to evaluate the program.

Step 5: Self-report questionnaires were mailed to the trained VHVs 2 months after they completed training, and we randomly selected VHVs to participate in in-depth interviews. The questionnaire and interview questions were assessed for content validity by three experts. The field notes and audio recordings of all interviews were transcribed verbatim for data analysis. All interviews took place at the homes of the VHVs. We continued interviewing VHVs until the answers were repetitive and saturated, ceasing after the eleventh interview. Narratives from the interviews were transcribed, coded by their meaning, and analyzed using content analysis. The emergent themes were interpreted and verified by assessing their transferability, credibility, dependability, and confirmability.⁽¹⁹⁾ The demographic data of the 11 VHVs who gave interviews are presented in Table 2.

Table 1: Demographic data of VHV's who participated in training program (n=43)

	Data	Number	Percentage
Gender	Male	2	4.65
	Female	41	95.35
Age (years)	30 -39	7	16.28
	40-49	5	11.63
	50-59	10	23.26
	60 and above	21	48.83
	Average (standard deviation)	56.23 (7.13) min. 31 max. 78	
Volunteer experiences (years)	1-5	13	30.23
	6-10	5	11.63
	11-20	14	32.56
	21-30	7	16.28
	31 and above	4	9.30
	Average (standard deviation)	15.6 (10.73) min. 2 max. 39	
Education level	No education	3	6.98
	Primary school	25	58.14
	Secondary school	8	18.60
	High school	5	11.63
	Bachelor's degree	2	4.65
Occupation	No occupation	4	9.30
	Self-employees	35	81.40
	Merchants	3	6.98
	Retirement	1	2.32

Table 2: Personal information of VHV's who participated in-depth interviews (n=11)

Number	Gender	Age (years)	Volunteer experiences (years)	Education level	Careers
1	Female	68	5	Bachelor	Retirement
2	Female	61	17	Primary school	Self employed
3	Female	56	27	Secondary school	Self employed
4	Female	69	26	Primary school	Self employed
5	Female	46	6	Primary school	Farmer
6	Female	62	12	Primary school	Self employed
7	Female	75	37	Primary school	Self employed
8	Female	56	28	Secondary school	Self employed
9	Female	43	8	Primary school	Self employed
10	Female	73	20	Primary school	Self employed
11	Female	61	6	Primary school	Self employed

Results

Results from each step are consecutively reported.

Step 1: The community analysis regarding oral cancer showed that people had low knowledge regarding routine oral cancer screening, as self-screening information and skills had never been shared with people in this region. Most of the older adults in this rural area worked outdoors with direct exposure to the sun in the rice fields or other labor settings, and smoking was common among workers in these settings. Typically, these adults sought medical attention when they felt ill but rarely went to the doctor for health checks unless they already had appointments. Not all high-risk individuals would comply with screenings unless someone in their village had died from that disease. Concerning oral cancer, the adults had never been educated on oral cancer self-screening or the early signs and symptoms of oral cancer. Oral cancer patients went to the hospital when they felt pain or when their lesions became obviously large. Typically, it took approximately 3 months from the day they noticed their oral lesions for them to see the doctor.

The VHVs stated that no one in this region had ever been educated on oral cancer self-screening. In addition, they did not know that people were able to screen themselves or how to detect early cancer lesions. The VHVs were unaware that PMDs occurred before the development of cancer, as they thought that a cancerous mass occurred with no warning. Furthermore, because the number of oral cancer cases in this region was fewer than other cancers, little attention was paid to oral cancer, and some VHVs did not know of any oral cancer patients in their community. The VHVs expressed that they felt uncomfortable seeing oral cancer because the mass was bloody and quite frightening when it appeared on a person's face.

Step 2: As the VHV core team was a critical component of the early stage of the oral cancer screening project, the dental health professionals worked with them to plan the knowledge dissemination program. They recommended that the training should be concise and easy to memorize with a hands-on workshop. Therefore, we decided to develop a half-day training program employing multiple tools for hands-on practice and community exercises. They were pleased to work with dentists during the village oral cancer screening program but did not want to lead the program alone.

Step 3: The media and training program was designed and prepared as outlined above. Details on the brochure are shown in Figure 1.

Step 4: The customized training and community exercises focused on developing the VHVs' understanding and personal skills of screening oral PMDs and detecting early cancer. During the training class, all VHVs developed their self-screening skills and gained knowledge regarding oral screening. They were able to perform the correct oral self-screening steps and discuss the benefits of oral screening for early cancer detection. As VHVs shared their ideas on how to disseminate the new knowledge to other villagers, VHV no. 1 said, *"At the beginning, I didn't intend to join the training, but it was my turn to do VHV training. It turns out that I'm pretty much enjoying today. I learned how to do self-screening, and I will tell my family members to do so."* Another VHV recommended, *"Why don't we go to the elderly school at Yuwa Center and train them to do oral self-screening? It will benefit the older adults, and we will be delighted to join you."*

Step 5: Program evaluation was performed using a self-report questionnaire and in-depth interviews with 11 VHVs at their homes and five VHVs at the Elderly Rehabilitation Center. The questions focused on the following: 1) attitudes toward oral cancer self-screening, 2) self-screening behaviors, 3) understanding of PMD appearance and early cancer signs and symptoms, and 4) attitudes concerning knowledge dissemination. In the questionnaire, VHVs were asked to indicate their level of agreement on a 5-point scale (1=disagree, 2=uncertain, 3=quite agree, 4=agree, 5=strongly agree). We mailed the questionnaires to all 43 VHVs and received completed surveys from 30 VHVs. The data from the questionnaires showed that all participants agreed or strongly agreed that their level of understanding of oral cancer, PMDs, and early cancer screening increased. After being trained, 56.67% of VHVs had more confidence in informing other people of the early signs of oral cancer and how to perform self-screening. They agreed or strongly agreed that early oral cancer was treatable, that people can be taught to screen themselves for early signs of cancer, and that those who detect PMDs should see their doctors as soon as possible. When asked about screening behaviors, 26.67% answered that they self-screened every day, 26.67% self-screened once a week, 46.67% self-screened more than once a week, and 36.67% would self-screen more of-

ten if they had symptoms. The recommendations for the program were to further spread the screening knowledge to people in the community and continue training all VHV in the district.

At the Elderly Rehabilitation Center, trained VHV assisted in a self-screening class and showed older adults how to perform oral self-screening. They hesitated slightly at the beginning of the class, but when the program moved to the practical portion, the VHV were ready to show the older adults how to perform oral self-screening in front of a mirror. They stated that they were eager to assist and felt comfortable discussing oral self-screening with this population.

During in-depth interviews, we asked VHV to compare themselves before and after being trained. In particular, we wanted to know the following: How did they feel about the training class? Had they screened themselves at home and how often? To whom did they give the brochures and how did they respond? Had they found oral cancer screening to be beneficial? Did they have more confidence in spreading their knowledge to other people? What did they plan to do to spread new knowledge to their community members and who would be their targets? The VHV were also asked to share their experiences and opinions regarding oral cancer screening. The narratives of the five VHV who assisted in the older adult program and 11 VHV who participated in the training were analyzed using content analysis. The following three key success factors for the knowledge dissemination process emerged from the interviews.

Community and oral cancer concern analysis

Two significant topics related to early oral cancer detection in this community were (1) lack of understanding and oral self-screening skills and (2) negative images of oral cancer. These two topics became the focus of all subsequent activities. VHV as the first target group were selected for the trial program to create a new image of oral cancer and increase self-efficacy for early PMD and symptom detection.

After training, VHV recognized the benefits of oral cancer screening and realized that the general public could perform oral self-screening. This was the first time they had learned about PMDs and the early signs and symptoms of cancer. Before training, they did not believe that people could perform self-screening. Further, they did not know the early signs and symptoms of oral cancer, what to look for, how to screen, and what to do after lesions were detected. VHV no. 10 said, *“I have been working as a VHV for 20 years; this is my first time learning about oral cancer this way. If I did not join the training, I would not be concerned about oral cancer or know that we can see it from the very beginning.”*

VHV realized the importance of oral cancer screening and agreed that self-screening steps were simple and easy to follow. As VHV no. 9 said, *“We gained knowledge after training. I screen my oral cavity every day and told my family to do so.”* VHV no. 3 also shared positive thoughts on the training, stating, *“Before being trained, I thought every oral lesion was an aphthous ulcer. I have never thought about cancer. Now, I know a lot more about*



Figure 1: Oral self-screening brochure; left to right; front page, middle pages, back page

oral lesions, and I will further spread the knowledge to others in my village.”

Beliefs regarding oral cancer among the VHVs evolved from seeing it as a karma-dictated disease to a self-detectable disease that is treatable when it is in its early stage. Viewing early oral cancer as treatable motivated VHVs to help high-risk individuals access early treatments. Cancer was still considered to be frightening, but they knew that early detection would reduce disease severity. As VHV no. 11 expressed, *“I saw the survivors in the video and realized that cancer patients could be saved by early detection. Hence, I told people around me to let me know if they have white plaques on their cheeks or tongue or if oral lesions have not gone away after 2 weeks. In those cases, I will send them to the hospital as soon as possible.”*

A customized media design and training program that fit the area population

The outputs of the community and oral cancer concern analysis were a customized training program for VHVs, a survivor video, and an oral self-screening guide brochure.

During the training program, workshops with multiple tools were used to encourage VHVs' interest in oral cancer screening. The hands-on portion enabled them to master the screening steps. As VHV no. 2 shared, *“While I practiced, I followed the oral-screening brochure, so I did not miss the screening steps.”* VHVs agreed that the brochure was the proper medium to provide information to other villagers. VHV no. 5 said, *“The brochure is easy to understand. I brought it to the other villagers and explained to them how to check their mouths. I told them to check themselves once a week. If they find any strange lesions that last for over 2 weeks, they should hurry to see the doctor.”* VHV no. 7 confirmed the importance of the brochure, stating *“The brochure with pictures of lesions and screening steps made it easy to recognize. Practicing every step over again at home helped me to memorize what we have learned from the training.”* Moreover, VHVs agreed that the phantom head helped them understand what lesions would look like in the oral area.

The trained VHVs primarily shared their knowledge with their families and neighbors, and they were able to disseminate the brochure and discuss self-screening with other people. As VHV no. 3 said, *“I could screen myself and brought the brochures to my neighbors. They said it*

was easy to understand, and I felt comfortable communicating with my neighbors. I run a grocery shop; thus, I also brought it to the shoppers and explained to them how to practice.” Another VHV shared that she spread the knowledge to others while she checked the mosquito larvae in her neighborhood, stating, *“I did a mosquito larvae survey and spread the oral cancer screening brochure at the same time. I brought the brochures and talked to my neighbors about the importance of oral screening. If they find any lesions, I will contact the doctor for them.”*

Participation of the target group

The participation of the VHV core team and VHVs from each village was key to the success of the program. The customized training program for VHVs facilitated a positive attitude toward oral cancer screening and constituted the first step in disseminating self-screening information to the community. As a result of the training, the VHVs consistently investigated their oral cavities at home, gained an understanding of the benefits of self-screening, and realized the possibility of knowledge dissemination in their communities. They recommended that dentists and VHVs work together to conduct future training classes and that older adults should be the first target group of knowledge dissemination, as they represent the group with the highest prevalence of the disease. VHV no. 1 said, *“I feel more confident in telling people about oral cancer screening. Previously, I would check only decays and tooth mobility. Now, I also look for lesions in my mouth, on my tongue, and my cheek. It will be good if everyone could do the same as me. I think we should continue to make a self-screening course for our older adults and other VHVs who missed the previous training.”* VHV no. 8 added, *“The villagers trust doctors more than VHVs, so dentists should be the ones who give the lecture and VHVs will assist in the practicing part.”*

Discussion

Promoting a community-based oral cancer screening program is one strategy to enhance the awareness of oral cancer and early screening in general populations.^(16,17,20) The community and oral cancer concern analysis was the first step in developing a process for disseminating oral cancer screening information, as each community has distinct experiences and thoughts regarding oral cancer. From this step, two recommendations were identified to guide the development of the training program: (1) outline the

knowledge and skills necessary for early cancer detection and (2) select images of oral screening that do not frighten or repulse readers but instead encourage daily self-checks. Meanwhile, the target group was chosen for the customized media and training program. In this study, VHVs were the first target, as they had experience in health care programs and were early adopters who would continue oral self-screening after receiving the knowledge and further disseminate this knowledge to their communities.

To improve the understanding and skills of VHVs who had never received education on oral cancer, a variety of methods were included in the training and the rationale behind each method was explained. Learning from survivors' experiences and community exercises are commonly employed techniques in adult learning.⁽²⁵⁾ VHVs mastered the self-screening steps by practicing on themselves and talking to people in their neighborhoods. Learning from the survivor video confirmed the role of early detection in survival. While breast and cervical screening programs were promoted for four years and covered almost 70% of at-risk individuals, an oral screening program had not been introduced to people in this region. Although screening is an effective tool for early detection and treatment^(17,20-22), at-risk individuals tend to skip routine oral cancer screening, and the delay in oral cancer diagnosis has been estimated to be approximately 3-6 months in many studies.^(7,8,23,24) During this time, the cancer may progress to more aggressive stages. Therefore, emphasizing the benefits and techniques of performing self-screening to VHVs and the general population is an important step, as self-screening can be performed before seeking professional attention, which may occur too late.

To ensure that the images related to oral screening reflected the comfort level of the residents of this region and encouraged daily self-checks, all media used in this study were based on community data. Media influence people's interests and guide them to perform target behaviors.⁽²⁵⁾ In addition, channels of communication should contain both vertical and horizontal dimensions.⁽¹⁸⁾ In this study, VHVs learned from a customized training program and media. Dentists, as the innovators who brought oral self-screening into the community, vertically communicated with the VHVs by presenting oral cancer information to them and encouraging them to practice oral self-screening. The communication between the dentists and VHVs increased the VHVs' understanding

and skills concerning oral cancer. In contrast, horizontal communication is effective during community actions. In this case, VHVs conducted a self-screening workshop for older adults at the rehabilitation center, distributed brochures to neighbors and families, discussed oral cancer screening with neighbors, and provided feedback on the screening program to the dentists. As a result of this process, VHVs embraced the idea of oral self-screening as an early cancer detection tool and disseminated their knowledge in their communities.

The five steps employed to disseminate oral self-screening knowledge with the participation of VHVs were appropriate in this suburban region where high-risk individuals did not recognize the benefits of early cancer check-ups. Once VHVs understood the benefits of oral screening and its effectiveness in detecting PMDs, they were eager to participate more in personal and professional oral screening. All steps involved in the early stages of the process are summarized in Figure 2. The emergent themes represented the key success factors for knowledge dissemination and included (1) community and oral cancer concern analysis, (2) a customized media design and training program that fit the area population and (3) participation of the target group. These principles may be adapted for use in other regions to promote oral self-screening in high-risk groups or older adults. Developing a customized media and training program is required to cultivate an interest in and effectively communicate the benefits of oral self-screening to the target group. This knowledge should be disseminated to all age groups, as oral cancer self-screening is necessary for everyone in the community.

The strength of this study was the willingness of the VHVs to share their experiences. All VHVs were born and raised in this region; therefore, they were known to the community members as village representatives for healthcare monitoring and communication with healthcare professionals. Their years of experience working on many health care projects facilitated their acceptance of new healthcare knowledge being diffused into their communities. A limitation of this study was that other key community representatives, such as village headmen or municipal officers, were not included at this time. We plan to invite more participants to join our effort and help develop oral screening programs for their communities in the next community diffusion steps.

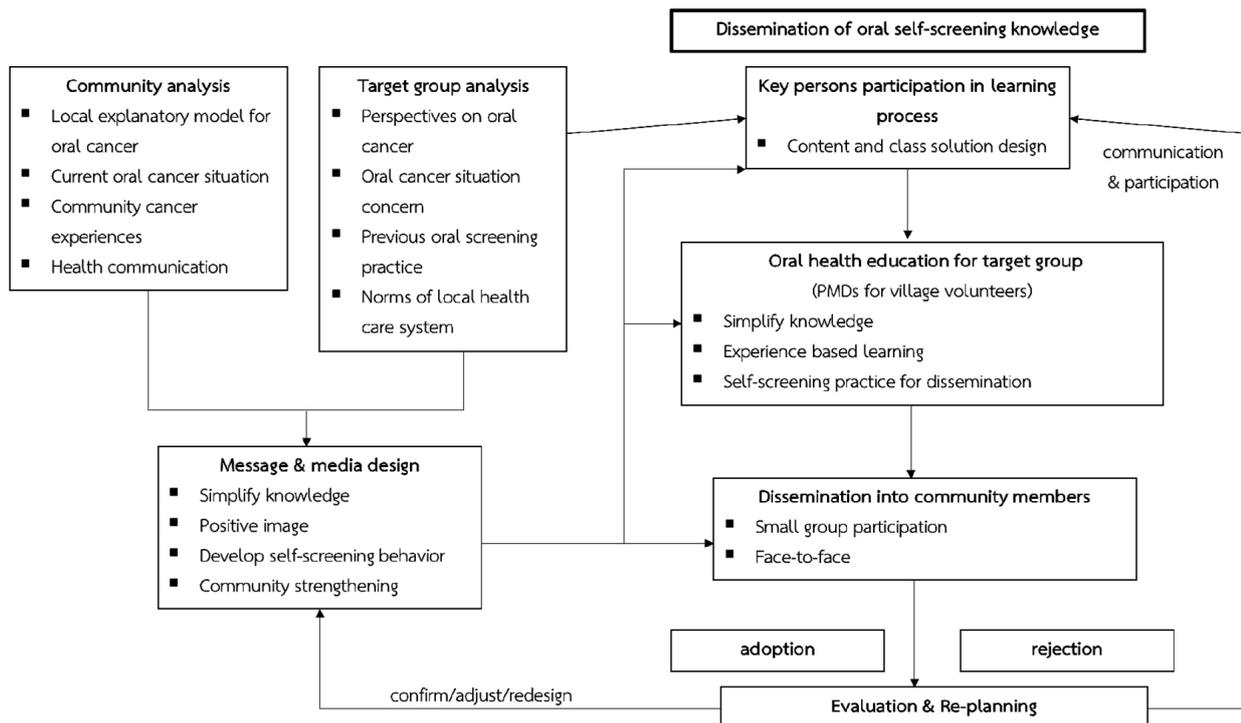


Figure 2: Model and components of oral self-screening knowledge dissemination process

Conclusions

The process for promoting oral cancer screening in suburban regions, where people know little about oral self-screening, must be carefully planned before the program begins. This study created and tested a five-step knowledge dissemination process as a practical guideline. The important steps of the oral cancer screening dissemination process were (1) performing community and oral cancer concern analysis, (2) producing a customized media design and training program that fit the area population, and (3) facilitating the participation of the target group. This customized program for VHVs resulted in an increased understanding of the benefits of oral self-screening and an agreement to further disseminate oral self-screening knowledge to high-risk groups in the community.

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Conflicts of interest

The authors declare no conflicts of interest.

References

1. Pulte D, Brenner H. Changes in survival in head and neck cancers in the late 20th and early 21st century: a period analysis. *Oncologist*. 2010;15(9):994-1001.
2. Jemal A, Bray F, Center MM, Ferlay J, Ward E, Forman D. Global cancer statistics. *CA Cancer J Clin*. 2011;61(2):69-90.
3. Tangjaturonrasme N, Vatanasapt P, Bychkov A. Epidemiology of head and neck cancer in Thailand. *Asia Pac J Clin Oncol*. 2018;14(1):16-22.
4. Sankaranarayanan R, Black RJ, Swaminathan R, Parkin DM. An overview of cancer survival in developing countries. *IARC Sci Publ*. 1998;(145):135-73.
5. Komolmalai N, Chuachamsai S, Tantiwipawin S, Dejsuvan S, Buhngamngkol P, Wongvised C, *et al*. Ten-year analysis of oral cancer focusing on young people in northern Thailand. *J Oral Sci*. 2015;57(4):327-34.
6. Imsamran W, Pattatang A, Supattagorn P, Chiawiriyabunya I, Namthaisong K, Wongsena M, *et al*. *Cancer in Thailand Vol. IX, 2013-2015*. Bangkok: New Thammada Press (Thailand);2018.

7. Saladyanant T, Chatiketu P, Iamaroon A, Chitapanarux I. Patterns of health-seeking behavior among oral cancer patients. *Thaksin Procedia*. 2020;1:13-23.
8. Saladyanant T, Chitapanarux I, Win SS, Chatiketu P. Oral cancer patients' perspectives to quality of life: a qualitative study in the context of northern Thailand medical and cultural systems. *CM Dent J*. 2021; 42(3): 23-33.
9. Jafari A, Najafi S, Moradi F, Kharazifard M, Khami M. Delay in the diagnosis and treatment of oral cancer. *J Dent (Shiraz)*. 2013;14(3):146-50.
10. Peacock ZS, Pogrel MA, Schmidt BL. Exploring the reasons for delay in treatment of oral cancer. *J Am Dent Assoc*. 2008;139(10):1346-52.
11. Prasertsom P, Leela-Adisorn N, Tangcharoendee N, Aroonpraphan S. Prevalence and incidence of potential malignance disorder and oral cancer by organized community screening model in 5 districts of Roiet province. *Th Dent PH J*. 2018;23:46-54.
12. Conway DI, Petticrew M, Marlborough H, Berthiller J, Hashibe M, Macpherson LM. Socioeconomic inequalities and oral cancer risk: a systematic review and meta-analysis of case-control studies. *Int J Cancer*. 2008;122(12):2811-9.
13. Hiscock R, Bauld L, Amos A, Fidler JA, Munafo M. Socioeconomic status and smoking: a review. *Ann N Y Acad Sci*. 2012;1248:107-23.
14. Chuang SL, Su WW, Chen SL, Yen AM, Wang CP, Fann JC, et al. Population-based screening program for reducing oral cancer mortality in 2,334,299 Taiwanese cigarette smokers and/or betel quid chewers. *Cancer*. 2017;123(9):1597-609.
15. Sankaranarayanan R, Ramadas K, Thomas G, Muwonge R, Thara S, Mathew B, et al. Effect of screening on oral cancer mortality in Kerala, India: a cluster-randomised controlled trial. *Lancet*. 2005;365(9475):1927-33.
16. Logan HL, Guo Y, Emanuel AS, Shepperd JA, Dodd VJ, Marks JG, et al. Determinants of first-time cancer examinations in a rural community: a mechanism for behavior change. *Am J Public Health*. 2015;105(7):1424-31.
17. Singh K, Sharma D, Kaur M, Gauba K, Thakur JS, Kumar R. Effect of health education on awareness about oral cancer and oral self-examination. *J Educ Health Promot*. 2017;6:27.
18. M.Rogers E. *Diffusion of Innovations*. 5th ed. New York, USA: The Free Press; 2003.
19. Loh J. Inquiry into Issues of trustworthiness and quality in narrative studies: a perspective. *TQR*. 2013;18(65):1-15.
20. Macpherson LMD. Raising awareness of oral cancer from a public and health professional perspective. *Br Dent J*. 2018;225(9):809-14.
21. Warnakulasuriya S, Fennell N, Diz P, Seoane J, Rapidis A, Programme LDVLL. An appraisal of oral cancer and pre-cancer screening programmes in Europe: a systematic review. *J Oral Pathol Med*. 2015;44(8):559-70.
22. Logan HL, Shepperd JA, Pomery E, Guo Y, Muller KE, Dodd VJ, et al. Increasing screening intentions for oral and pharyngeal cancer. *Ann Behav Med*. 2013;46(1):96-106.
23. Scott SE, Grunfeld EA, Main J, McGurk M. Patient delay in oral cancer: a qualitative study of patients' experiences. *Psychooncology*. 2006;15(6):474-85.
24. Cheng CH, Wang TJ, Lin YP, Lin HR, Hu WY, Wung SH, et al. The illness experience of middle-aged men with oral cancer. *J Clin Nurs*. 2013;22(23-24):3549-56.
25. Bandura A. *Social cognitive theory of mass communication*. *Mediapsychology*. 2001;3:265-99.