

*Original article***Practice in Oral Health Care and Dental Caries Prevalence among the Village Health Volunteers in Warin Chamrap District, Ubon Ratchathani Province, Thailand***Received: May 13, 2019**Accepted: Nov 11, 2019;**Published: Mar 16, 2020*Panawat Kingmala<sup>1</sup>, Chalinee Phasunon<sup>1</sup>, Thanatta Kaewkanya<sup>2</sup>,  
Watcharapong Benmat<sup>1</sup>, Ampika Phoban<sup>1</sup>, Kaewjai Maleelai<sup>1</sup>,  
Wanpen Somhom<sup>1</sup><sup>1</sup>Sirindhorn College of Public Health Ubon Ratchathani, Ubon Ratchathani Province, Thailand<sup>2</sup>Maisamakkee Primary Health Promoting Hospital, Selaphum District, Roi-et Province, Thailand**Abstract**

Improving dental health care is an important priority for Thailand. According to the 8th oral health survey in 2017 by Thai Bureau of Dental Health, the prevalence of dental caries was 91.8 % in a nationwide study of people 35-44 years old. The average number of decayed, missing, and filled tooth (dmft) was 6.6. Primary healthcare is a public health service that provides services at the subdistrict and village. Promoting oral and dental health is important to prevent dental caries, reduce the cost of treatment, and prevent loss of permanent teeth. The Village Health Volunteers (VHVs) play an important role in primary dental health care by leading changes in health behavior and by integrating public health work with local government organizations. This cross-sectional descriptive study aimed to study oral health care practices and the prevalence of dental caries among the village health volunteers in Warin Chamrap district, Ubon Ratchathani province. 155 VHVs were recruited in the Warin Chamrap district, Ubon Ratchathani province using a random sampling method. Data were collected by the questionnaires and dental health status examinations form. The results showed that 69.68% of VHVs practiced oral health care at a moderate level ( $\bar{x}=2.99$ , S.D.=0.35). VHVs had an 80% prevalence of dental caries. The average number of dmft was 7.98, which is slightly higher than the Thai national average. The results of this study may be used for dental service planning and dental health promotion, and to encourage VHVs to be good models of oral health care.

**Keywords:** Practice in oral healthcare, dental caries, village health volunteers**Corresponding author:** Kaewjai Maleelai; Email: kaewjai@scphub.ac.

## Introduction

According to the report of the 8<sup>th</sup> oral health survey in 2017 by the Bureau of Dental Health, Department of Health, Thai Ministry of Public Health, the national prevalence of dental caries of Thailand was 91.8 % among 35-44 year olds. The average number of decayed, missing and filled teeth (dmft) was 6.6 teeth per person. 4.1 % of the “working-age group” (35-44 years old) population had tooth decay at root cavities. The prevalence of root decay was 4.7 % in a rural area, 3.9% in urban area, and 1.7 % in Bangkok. In rural areas, there was a high percentage of people who needed treatment services. 44.2 % of people who needed to fill tooth caries. 31.4 % of people needed tooth extractions. The northeastern region has the highest percentage of patients (48.0%) that need tooth fillings on one side. In the northeastern region, 72.0% of the working group (35-44 years old) reported never brushing teeth after breakfast. 76.2 % reported never brushing teeth after lunch. 6.7 % reported brushing before bedtime and going to bed immediately after brushing teeth. 4.9 % reported never brushing teeth before bedtime. 4.7% reported brushing teeth someday before bedtime and continuing to eat after brushing. 7% reported brushing teeth someday before bedtime and later going to bed. (Department of Health, 2018).

In Thailand, primary health care means providing health care for the people at the district level. Village communities participate in helping people care for themselves using technology and local wisdom able to solve public health problems within a village or community with self-sufficiency. Government officials provide assistance and support so that the community can connect with the public health service system efficiently (Department of Local

Administration, 2017). People who play an important role in primary health care are Village Health Volunteers.

The Village Health Volunteers (VHVs) are people who selected from the village community that receive training following the curriculum set by the Ministry of Health. They have important roles as leaders in health behaviour change (Change Agents). They are responsible for creation of media to communicate public health news. They disseminate health knowledge, as well as plan and coordinate health activities. VHVs also provide various health services in the community such as health promotion surveillance and prevention of disease control. They organize public health development activities in villages/communities (Department of Local Administration, 2017). VHVs are close to the people, and are considered important and respected leaders. They provide health services, act as community health planners, and integrate public health work with local government organizations. VHVs can help communities reach goals of having a health and happy society by linking to the district health fund and other funds, inside and outside the community (Sarak M, 2010).

To our knowledge, there have been no previous studies on practice in oral health care and dental caries prevalence among the village health volunteers in Warin Chamrap district, Ubon Ratchathani province. The results of this study can be applied to plan oral health promotion or dental health education program to encourage VHVs to be good models of oral healthcare. The objective of this study is to examine the oral health care practices and prevalence of dental caries among the Village Health Volunteers in Warin Chamrap district, Ubon Ratchathani province, Thailand.

## Research Methods

This study was a cross-sectional descriptive study. There were 253 village health volunteers under the Municipality of Muang Si Khai and Tat sub-district, Warin Chamrab district, Ubon Ratchathani Province in 2017. There were 135 VHVs in the Tat sub-district health service area and 118 VHVs in Muang Sri Khai sub-district. The inclusion

criteria for this study was that the VHV had at least 1-year working experience as a VHV. The exclusion criteria included the volunteer not showing up for an appointment with the research study twice. To determine the necessary sample size for our study, we used the following formula.

$$n = \frac{NZ^2pq}{d^2(N-1) + Z^2pq}$$

n = sample

N = population

d = sample error (0.05)

Z = the standard value at the significant level 0.05 equal to 1.96

P = the population proportion of interests (set p=0.80)

Based on our calculation, the desired sample size was 125 persons. To account for the fact that some participants may drop out or be lost to follow-up, we increased the sample size by 10 per cent. Our study participants were randomly selected from the 253 village volunteers using a simple random sampling technique. One hundred and fifty-five VHVs were selected for our study.

The questionnaire consisted of two parts as follows. Part 1 was about the demographic characteristics and work experience of the participants (7 questions). Part 2 was about the oral healthcare practices of participants (11 questions). Study staff recorded the number of dental caries using dental health status examinations form.

The ethics of the study was approved by the Ethics Committee of Sirindhorn College of Public Health, Ubon Ratchathani (No. SCPHUBS024/2559).

We tested the content validity of our questionnaire with three experts. We also

tested the reliability of the questionnaire among 30 people. Reliability of practice in oral healthcare measured by Cronbach's alpha coefficient was 0.95. We also tried to account for variation among different inspectors. We adjusted for a single inspector standards using Intra - Examiner Calibration. We also adjusted for variation in standards among more than one the inspector and adjusted for variation among multiple inspector standards (Inter - Examiner Calibration). We calculated the Kappa statistic to determine the validity of the inspector. The Kappa statistic was 0.8 - 1.00 (80% - 100%). The interpretation level of practice in oral health care dividing into 3 level. High level of practice in oral health care (score average 3.68-5.00). Moderate level of practice in oral health care (score average 2.34-3.67) and low level of practice in oral health care (score average 1.00-2.33) respectively.

## Results

### Part 1 Characteristics of Sample

The demographic characteristics of the 155 VHVs that participated in our study are shown in Table 1. Most of village health volunteers were female (85.20%). The majority of the village health volunteers were aged 51 to 60 years old (38.10%) or 41-50 years old (34.90%). Most of the village health volunteers' graduated from elementary school (52.30%), followed by secondary school (25.20%), and high school /vocational high school (20.0%). A majority (85.2%) of VHVs were married (85.2%).

The most common primary occupations for VHVs were in agriculture (60%), as housewives (15%), as general contractors (10.3%), and in the trade/personal business (9.7%). The VHVs had a variety of different years of experience including 10 to 19 years (34.80%), followed by during 4 to 9 years old (32.90%), and less than 4 years (16.10%). Most village health volunteers were selected by villagers/village councils (54.80%), were recruited by volunteering themselves (25.20%), or were recruited through health promotion workers (14.80%).

**Table 1.** General characteristics of Village Health Volunteers in the Warin Chamrap district, Ubon Ratchathani province, Thailand (N=155)

General characteristics	Number	%
<b>Gender</b>		
Male	23	14.80
Female	132	85.20
<b>Age</b>		
< 30 years	4	2.40
30 – 40 years	19	12.40
41 – 50 years	54	34.90
51 – 60 years	59	38.10
> 60 years	19	12.20
<b>Highest level of education completed</b>		
Primary school	81	52.30
Junior high school	39	25.10
High School/ Vocational	31	20.00
Certificate of Education (High Vocational Certificate)	2	1.30
Bachelor's degree	2	1.30
<b>Status</b>		
Single	11	7.10
Married	132	85.20
Divorced	12	7.70
<b>Career</b>		
Agriculture	93	60.00
A worker in a factory	6	3.90
Private /Business	15	9.70
A labor worker	16	10.30
Housewife	24	15.5
Other	1	0.60

**Table 1.** General characteristics of Village Health Volunteers in the Warin Chamrap district, Ubon Ratchathani province, Thailand (N=155) (Cont.)

General characteristics	Number	%
<b>Years of work experience as a VHV</b>		
<4 years	25	16.10
4 - 9 years	51	32.90
10 - 19 years	54	34.80
20 - 24 years	13	8.40
25 - 29 years	8	5.20
>30 years	4	2.60
<b>How participant qualified as a village health volunteer</b>		
Offer themself	39	25.20
Health Promotion Team	23	14.80
Villager / village council	85	54.80
Other	8	5.20

## Part 2 Self-Reported Oral Healthcare Practices among Village Health Volunteers

In Table 2, we show the self-reported oral health care practices of VHVs in our study. A majority of VHVs regularly used toothpaste containing fluoride when brushing (51.6 %). VHVs reported acting as a good role model in dental health care either regularly (42.6%) or often (34.8%). 20.6% of VHVs regularly demonstrated how to brush their teeth correctly for their community members. 46.5% of VHVs sometimes visited homes and made oral healthcare recommendations. VHVs reported that they examined the oral health of people in the community roughly either sometimes (40%) or once in a while (20.6%). 34.8 % of VHVs often followed news about dental health. 44.5% of VHVs

sometimes sought new knowledge about dental health. 29% of the VHVs often recommended that people in their community should eat food at specific times, and not eat little by little throughout the day. VHVs reported setting up a board to provide knowledge about harmful foods and benefits for dental health either once in a while (22.6%) or never (34.6%). VHVs recommended that people in the community choose hygienic accessories such as dental floss either sometimes (25.2%) or once in a while (34.6%). A majority of VHVs (58.60%) had never used erythrosine solution or food coloring from the Pharmaceutical Dyeing Organization to check for tooth plaque after brushing.

**Table 2.** Self-Reported Oral Healthcare Practices among Village Health Volunteers in the Warin Chamrap district, Ubon Ratchathani province, Thailand (N=155)

contents	Number reporting specific frequency of oral health care practice (%)				
	Regularly	Often	Sometimes	Once in a while	Never
1. You are a good role model in oral health care	66 (42.6)	54 (34.8)	24 (15.50)	9 (5.80)	2 (1.30)
2. You visited homes and recommended oral health care	19 (12.26)	36 (23.23)	72 (46.45)	18 (11.61)	10 (6.45)
3. You sought new knowledge about dental health	24 (15.50)	41 (26.50)	69 (44.50)	16 (10.30)	5 (3.20)

contents	Number reporting specific frequency of oral health care practice (%)				
	Regularly	Often	Sometimes	Once in a while	Never
4. You have examined the oral health of people in the community roughly	14 (9.00)	39 (25.20)	62 (40.00)	32 (20.60)	8 (5.20)
5. You use toothpaste that contains fluoride to brush your teeth	80 (51.60)	37 (23.90)	30 (19.40)	5 (3.20)	3 (1.90)
6. You demonstrated how to brush your teeth correctly in the community	32 (20.6)	35 (22.6)	50 (32.30)	22 (14.20)	16 (10.30)
7. How often do you use dental dyes (erythrosine solution) or food dyes from the Pharmaceutical Organization to check for plaque after brushing?	5 (3.20)	20 (12.90)	23 (14.80)	17 (11.00)	90 (58.60)
8. You recommended that people in the community choose hygienic accessories such as dental floss	9 (5.80)	16 (10.30)	39 (25.20)	29 (18.70)	62 (40.00)
9. You set up a board to provide knowledge about harmful foods/benefits of dental health	10 (6.50)	17 (11.00)	40 (25.80)	35 (22.60)	53 (34.20)
10. You recommended that people in the community eat food for a time and not eat it	19 (12.30)	45 (29.00)	58 (37.40)	16 (10.30)	17 (11.00)
11. You follow the news about dental health	28 (18.10)	54 (34.80)	46 (29.70)	20 (12.90)	7 (4.50)

Table 3 shows the distribution of VHVs among different levels of practice in oral health care, including low, moderate, and high. A majority of VHVs (n=108, 69.68%) demonstrated oral health care at a moderate

level ( $\bar{x}$ =2.99, S.D.=0.35). Thirty-five of VHVs (22.58 %) practiced oral health care at a high level ( $\bar{x}$ =4.05, S.D.=0.29). Twelve of VHVs (7.74%) practiced in oral health care at a low level ( $\bar{x}$ =1.98, S.D.=0.28). (Table 3)

**Table 3.** Level of practice in oral health care among village health volunteers (N=155)

Level of Practice in Oral health care	Number	%	$\bar{x}$	S.D.
High	35	22.58	4.05	0.29
Moderate	108	69.68	2.99	0.35
Low	12	7.74	1.98	0.28

**Part 3 Dental caries and decayed, missing, filled tooth (dmft) among village health volunteers**

Table 4 shows the distribution of decayed, missing, and filled teeth, as well as the prevalence of dental caries among VHVs in our study. 80% of VHVs showed dental caries. The

average number of decayed, missing, filled teeth (dmft) in VHVs was 7.98 dmft/person. (Table 4)

**Table 4.** Number, percentage and decayed, missing, filled tooth (dmft) of dental caries among village health volunteers (N=155)

VHVs With No Dental Caries	VHVs with Dental Caries	Decayed, Missing, Filled Teeth (dmft)			Average of Decayed, Missing, Filled Teeth Per Person
		D	M	F	
Number (%)	Number (%)				
31 (20)	124 (80)	668	473	96	7.98

**Discussion**

We found that most of the VHVs ( 69. 68% ) practiced oral health care at a moderate level ( $\bar{x}$ =2.99, S.D.=0.35) in the Warin Chamrap district, Ubon Ratchathani province, Thailand during November and December 2017. While, Chaichanapong and Pinitsootorn show differences with our study's findings. They were studied the knowledge, attitude and behaviour in preventing dental caries of public health volunteers in Mueang District, Nong Bua Lamphu Province. Chaichanapong and Pinitsootorn's study objective was to investigate the knowledge, attitude, and practices in preventing dental caries of public health volunteers in Mueang District, Nong Bua Lamphu province in 2015. The research found that VHVs volunteers had a fair level of knowledge about preventing dental carries. Only 20.90% of the VHV respondents had good attitudes and correctly perceived that brushing could prevent caries and periodontal disease. The VHVs understood how extracting teeth with necrosis resulting from betal nut chewing can prevent tooth decay (Manasanan C. & Somdej P., 2014).

The prevalence of dental caries among VHVs at Warin Chamrap district, Ubon Ratchathani was at 80 %. The average dmft was 7.98 teeth/person. In our study, VHVs represented a: 51 to 60 years old (38.10%), 41 to 50 years old (34.90%), a 30 - 40 years old (12.40%), over 60 years old (12.20%) and under 30 years ( 2.40% ) respectively. The dental caries prevalence among VHVs in our study was lower than the dental caries prevalence on a national level in Thailand (91.8%) and among North Eastern Thai populations ( 88. 6% ) . However, the data for the national level and

the North Eastern Thai populations is for working- age individuals from ages 35- 44 years old. The average dmft among VHVs in our study (dmft = 7.98) was higher than the average dmft on a national level in Thailand (dmft = 6.6) and among North Eastern Thai populations (dmft = 5.4) (Department of Local Administration, 2017). The prevalence of dental caries for the national level and North Eastern Thai populations.

The practice in oral health care among VHVs at Warin Chamrap district, Ubon Ratchathani province was mixed and can be improved. A little over half (51.6%) of VHVs usually used a toothpaste containing fluoride when brushing. Yet, 60.0% of VHVs never used dental floss . Without good brushing practices, some VHVs may have been unable to remove food debris or plaque from the teeth resulting in cumulative dental caries. VHVs in our study had a higher prevalence of dmft than the Thai people of the working-age group (35-44 years old) on a national level. While a large portion of VHVs demonstrated how to correctly brush teeth in the community regularly (20.6%) and often (22.6%), 32.30% of VHVs only sometimes performed demonstrations about how to correctly brush teeth to the community. Only 18.10% of VHVs regularly followed dental public health news. These shortcomings may have resulted in a relatively high level of tooth decay among VHVs in our study. VHVs played a role as good dental health care which is operating 42.6 %. These behaviors will lead VHVs to good at dental health care and act as a good role model for the community.

Previous research showed that dental health education programs can help prevent

dental caries. Arunrat and colleagues applied the motivation theory for disease prevention and social support to change dental caries preventive behaviours of VHVs. Then Arunrat and colleagues measured the effects of the dental health education program on knowledge of VHVs. The results showed that the experimental group had mean scores of knowledge and practice for dental caries prevention that were significantly higher than before receiving the dental education program and higher scores than the comparison group ( $p < 0.001$ ) (Chuenpalat A, 2017). A different study by Suttawat examined the effect of the dental health education program to solve dental health problems in the community served by the village health volunteers in Pho Yai Subdistrict, Warin Chamrap District, Ubon Ratchathani Province. This study found that the dental health education program significantly increased the positive oral

### Conclusion

A majority of VHVs were female (85.2%). The age of VHVs ranged from 24 to 67 years old. Most of VHVs completed primary school (52.3%), were married (85.2%) and worked in the agricultural industry (60%). Slightly more than one-third of VHVs (34.8 %) worked as VHVs between 1 -19 years. A majority (54.8%) of VHVs were selected by villagers/village councils. A one hundred and eight of VHVs (69.68%) practiced oral health care at a moderate level ( $\bar{x}=2.99$ , S.D.=0.35). 35 VHVs (22.58%) had practice in oral health care at a high level ( $\bar{x}= 4.05$ , S.D.=0.29). Only 12 VHVs (7.74%) practiced in oral health care at a low level ( $\bar{x}= 1.98$ , S.D.=0.29). Dental practiced well of VHVs were regularly

health care practices among VHV ( $p < 0.05$ ) (Srisombat S., 2016).

The results of this study can be applied to dental service planning. It can also be used to design dental health promotion messages that encourage VHVs to be good models of oral health care. The relevant government agencies for dental health should encourage VHVs to improve their knowledge of dental health care. They can provide VHVs with courses on how to properly brush teeth or how to use dental floss. Dental health education programs can help prevent tooth decay among VHVs. If VHVs have good dental health care and strong knowledge about dental health, they can advise and educate their community. As a result, VHVs and people of their community can have better dental health without fewer or no dental caries.

brushed their teeth with fluoride toothpaste (51.60 %) and demonstrated how to brushed their teeth correctly with their community (20.6%). VHVs (58.60%) never used dental dyes (erythrosine solution) or food dyes from the Pharmaceutical Organization to check a plaque after brushing and VHVs (40 %) never recommended people in their community used dental floss after brushing. Dental practiced that VHVs never practiced needs to improvement influence the design of future dental education programs for VHVs. A one hundred and twenty four of VHVs (80%) had dental caries at the time of this study. The average number of decayed, missing, filled teeth (dmft) was 7.98 teeth/person.

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