

# THE PREVALENCE OF PERIODONTAL DISEASE AND ORAL HYGIENE CARE IN SAVANNAKHET PROVINCE, LAO PEOPLE'S DEMOCRATIC REPUBLIC

Somsak Chuckpaiwong<sup>1</sup>, Sengphouvanh Ngonephady<sup>2</sup>, Jirawan Dharmhibhit<sup>3</sup>, Julalux Kasetsuwan<sup>3</sup> and Mullika Sirirat<sup>3</sup>

<sup>1</sup>Department of Hospital Dentistry; <sup>3</sup>Department of Oral Medicine, Faculty of Dentistry, Mahidol University, Bangkok 10400, Thailand; <sup>2</sup>Department of Therapeutic Dentistry, Medical University, Vientiane, Lao People's Democratic Republic

**Abstract.** The objective of this study was to evaluate the prevalence of periodontal diseases in Savannakhet Province, Lao PDR. This survey was conducted 14 years after the country reformed its economic structure towards the free market. Thirty villages were picked by simple random sampling from a total of 1,560 villages. Two thousand four hundred and fifty-three individuals, aged twelve and over, were interviewed about oral hygiene practice, and were examined for periodontal health status using the community periodontal index of treatment needs (CPITN) index.

Forty percent of the sample had regular practices, 56.5% occasional practices and 3.5% were ignorant about oral hygiene. Oral hygiene practices were performed in the morning by using a toothbrush (61.1%) and the index finger (24.8%). The cleaning agent was water alone for 68.6% and salt powder for 28%. The prevalence of healthy gingiva was nearly zero in all age groups. Gingival bleeding was very low. The most common periodontal problem was calculus deposits, found in 3-5 sextants of all age groups. The pocket depth was 4-5 mm on average; however a depth of more than 6 mm was not observed.

## INTRODUCTION

Savannakhet is the largest city of the southern part of Lao PDR. This province is leading in economic growth and rapid social transformation. Its population was 671,583 inhabitants in the 1997 census compared to a total population of 5.5 million projected for the whole country in the year 2000 (Foley and Vonsak, 1991). The population growth rate is high and 43% of the population were in the 0-14 age group (Frisen, 1991). Due to the internal political situation, there has been no survey of periodontal conditions for 20 years. Under the New Economic Mechanism applied in 1985, reform of the nation's economic structure caused a rapid social and economic transformation. This had an impact on the traditional way of life, including health and sanitation, although the traditional way of living is still practised in many communities of the remote areas (Saignasith, 1999). Rapid changes of lifestyle and nutritional habits towards western culture, while oral hygiene and treatment implementation are scarce, caused oral diseases to develop freely. The objective of this study was to

obtain baseline data on the prevalence of periodontal diseases and oral hygiene practices in Savannakhet Province, Lao PDR.

## MATERIALS AND METHODS

The survey was conducted in a population  $\geq 12$  years of age from 30 villages by simple random sampling from 1,560 villages in 13 districts. Two thousand four hundred and fifty-three subjects were sampled and interviewed regarding oral hygiene practices. Oral examination for periodontal condition used the community periodontal index of treatment needs (CPITN) method (WHO, 1997; Ainamo *et al*, 1982; Carlos *et al*, 1986).

## RESULTS

Table 1 shows the total sampled population participating in the study: 2,453 consisting of 1,123 males (45.8%) and 1,330 females (54.2%). The highest proportion of the total sample was in the 12-18 year-old age group (29.1%).

Oral hygiene practices showed 40% as having regular oral hygiene practice, 56.5% with occasional practice and 3.5% ignorant of practice (Table 2).

Correspondence: Dr Somsak Chuckpaiwong, Department of Hospital Dentistry, Faculty of Dentistry, Mahidol University, Yothi Street, Bangkok 10400, Thailand.

Table 1  
The percentage of sampled population distributed by age and sex.

Age (years)	Male			Female			Total	
	No.	% male	% total	No.	% female	% total	No.	%
12-18	355	31.6	14.5	360	27.1%	14.7	715	29.1
19-27	162	14.4	6.6	233	17.5	9.5	395	16.1
28-34	108	9.6	4.4	157	11.8	6.4	265	10.8
35-44	177	15.8	7.2	243	18.3	9.9	420	7.1
45-54	149	13.3	6.1	156	11.7	6.4	305	12.4
55-64	90	8.0	3.7	107	8.0	4.4	197	8.0
65-74	60	5.3	2.4	56	4.2	2.3	116	4.7
75-99	22	2.0	0.9	18	1.4	0.7	40	1.6
Total	1,123	100.00	45.8	1,330	100.00	54.2	2,453	100.00

Table 2  
Regularity of oral hygiene practices.

	Regularly	Occasionally	Ignorant	Total
Male	455 (18.6%)	612 (25.4%)	44 (1.8%)	1,120 (45.8%)
Female	522 (21.4%)	760 (31.1%)	42 (1.7%)	1,324 (54.2%)
Total	977 (40.0%)	1,381 (56.5%)	86 (3.5%)	2,446 (100%)

Table 3  
The convenient time chosen for oral cleaning.

	Morning	By chance	Other
Male	42.8%	1.6%	1.1%
Female	51.4%	1.6%	1.4%
Total	94.2%	3.2%	2.5%

Oral hygiene practices usually occurred in the morning (94.2%); 3.2% practised their oral hygiene depending on the occasion. The rest practised at bathtime or bedtime as shown in Table 3.

Use of toothbrushes, either commercial or traditional sticks, was 61.1%. The index finger was used by 34.8% and 1.3% never cleaned their teeth. About 1.5% rinsed with water only (Table 4).

Table 5 shows cleaning agents: water was commonly chosen (68.6%) followed by salt powder (28%). Others, such as sand grains, charcoal powder or fruit husks were used by less than 2% of the population.

Only 0.27% of the 12-18 year-old age group

had healthy periodontal status; 0.1% had bleeding gums and 99.21% calculus deposits. 0.42% had 4-6 mm-deep pockets. Pockets deeper than 6 mm were not observed. In the 19-27 year-old age group only 0.51% had healthy gingiva, 0.25% had bleeding gums, 0.51% had shallow pockets and 0.25% had deep pockets. Calculus deposit was the major problem in this age group (98.49%). Everybody in the >27 year age group had periodontal problems. Periodontal pockets and calculus deposit increased with age. As for the younger age groups, these were the major problems (Table 6).

The mean number of sextants of periodontal status are shown in Table 7. In this group, healthy gingival tissue had lower sextant involvement than the group with calculus deposits. Periodontal pockets were found in increasing numbers as age increased. About 0.5% had pockets at an early age, suggesting early onset of periodontitis.

## DISCUSSION

The evidence from this survey indicates that periodontal diseases are endemic in this population and should be considered as a crucial oral health

Table 4  
The frequency distribution of oral hygiene practices in Savannakhet.

	Male	Female	Total
No	18 (0.8%)	13 (0.5%)	31 (1.3%)
Brush	724 (30.2%)	740 (30.9%)	1,464 (61.1%)
Tooth pick	5 (0.2%)	2 (0.1%)	7 (0.3%)
Cloth		1 (0.0%)	1 (0.0%)
Finger	335 (14.0%)	498 (20.8%)	833 (34.8%)
Coconut husk		24 (1.0%)	24 (1.0%)
Solely rinse	18 (0.8%)	18 (0.8%)	36 (1.5%)
Total	1,100 (45.9%)	1,296 (54.1%)	2,396 (100%)

Table 5  
The percentage distribution of cleaning agents used among the Lao population.

	% Female	% Male	% Total
No	0.8	0.6	1.4
Water	33.8	34.9	68.6
Salt	10.4	17.6	28
Sand grain	0.6	0.9	1.5
Tobacco	-	-	-
Charcoal powder	0.1	0.3	0.4
Total	45.9	54.4	100

Table 6  
Percentage distribution of periodontal status.

Age (years)	Percentage of subjects with CPITN score by age				
	0	1	2	3	4
12-18	0.27	0.1	99.21	0.42	0.00
19-27	0.51	0.25	98.49	0.51	0.25
28-34	0	0.00	98.87	1.13	0.00
35-44	0	0.23	93.58	4.05	2.14
45-54	0	0.33	88.53	5.90	5.24
55-64	0	0.51	79.70	10.15	9.64
65-74	0	0.00	69.83	17.24	12.93
75-99	0	0.00	62.5	22.5	15

problem. Healthy gingiva were found in less than 0.5% of the population sample. Calculus deposits were the most common problem. Although more than half of the population practised oral hygiene, calculus deposits were found in more than 90%, from an age as young as 12 years. These could be due to the lack of information on proper hygiene practice and motivation. The traditional brushing stick was not the problem so much as how to use

it properly. Local cleaning agents like salt and charcoal powder were used as an alternative to brushing with water. Motivation for oral hygiene care at other times such as after meals and before bedtime must be encouraged.

In comparison to other epidemiologic surveys in Thailand, the oral hygiene problem in Lao PDR was slightly more severe than in rural areas of Thailand. The prevalence of gingivitis and calculus

Table 7  
Mean number of sextants of periodontal status.

Age (years)	Mean number of CPITN-sextants				
	0	1	2	3	4
12-18	0.28	0.00	5.71	0.00	0.00
19-27	0.29	0.01	5.70	0.01	0.00
28-34	0.12	0.00	5.85	0.02	0.00
35-44	0.83	0.00	5.74	0.06	0.02
45-54	0.23	0.00	5.64	0.08	0.08
55-64	0.01	0.00	5.40	0.13	0.12
65-74	0	0.00	4.44	0.28	0.19
75-99	0.02	0.00	3.52	0.25	0.2

deposits also increased with age but it was less severe than in Thailand (Dental Health Division, 1995; Laosrisin, 1999). Hemorrhagic gingivitis was uncommon, implying the population had calculus deposits but no severe periodontal inflammation. Calculus appeared in the 12-18 year-old age group, varied from 99.21% to 62.5% in the 75-99 year-old age group. The absence of oral hygiene could be used as an indicator of initial periodontal disease (Christersson *et al*, 1992; Baehni and Bourgeois, 1998; Hillam and Hull, 1977; Lang *et al*, 1977). These data revealed that at the age of 28 years, there were already shallow pockets and deep pockets. The present study also showed a higher prevalence of calculus deposits than other studies from Asia, Europe and Japan (Pilot *et al*, 1986; 1987; Pilot and Miyazaki, 1994).

Periodontal pockets or progression of periodontal destruction were present, especially in older subjects. At the age of 28 years, the prevalence of shallow pockets was nearly 1.5%. It increased to 4% in the age group 35-44 years, 6% in the age group over 45 years and up to 22.5% in the age group over 75 years. This increase was similar for shallow and deep pockets but the percentages were lower when compared to the Thai population (Dental Health Division, 1997).

The oral hygiene of the Savannakhet population was not satisfactory. The presence of calculus deposits has to be considered as a mild gingivitis and an initial stage of periodontal disease. These problems could be resolved by scaling sufficiently and by proper tooth brushing. Oral hygiene education and the promotion of oral health care promotion in schools and communities is suggested as a tool to reduce the problems.

## CONCLUSIONS

The results identify the present problems of periodontal diseases in Lao PDR. The high prevalence of calculus deposits was the most common problem. Although oral hygiene was practised by a significant fraction of the population, the results were unsatisfactory. Proper planning of scaling treatment and oral health care promotion are strongly advised in order to prevent further progression to more severe diseases.

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