THE ORAL HEALTH OF ELDERLY POPULATION IN VIENTIANE CAPITAL, LAO P.D.R. 2008

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ABSTRACT

A cross sectional study was performed in Vientiane, Lao P.D.R using stratified sampling method. The objectives were to describe the oral health status and the exposure to risk factors in the elderly population, and to determine service needs. A total of 300 elderly people, aged 60 years and over were selected for oral examination and questionnaire interview. The study found the mean tooth loss to be 9.2 teeth per person and 2.3% were edentulous. The prevalence of dental caries was 84.0% and the mean DMFT was 7.7 teeth per person. These problems were not substantial in relation to the elderly in other countries in SE Asia. The prevalence of periodontal diseases was 89.5%. On the contrary, the severity was lower (89.5% had CPI = 2 and only 9.8% had pockets ≥ 4 mm). There was no substantial difference between elderly in municipality and non-municipality areas. Prevalence of root caries was also low (0.7%). However, heavy calculus deposition might cause under estimation of the prevalence of pockets and root caries. The majority reported that they brushed their teeth daily, but many had other risk factors such as chewing areca nut, snuffing, smoking, and alcohol drinking. The need for restoration and prosthesis were high, suggesting that oral health care planning needs to emphasize on prevention and promotion.

KEY WORDS: ORAL HEALTH/ TOOTH LOSS/ CARIES/ PERIODOTAL DISEASE/ ORAL MUCOSAL LESION/ HYPOSALIVATION/ *CANDIDA ALBICANS* .

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LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
C. albicans	*Candida albicans*
CD	Complete denture
CPI	Community Periodontal Index
CPITN	Community Periodontal Index of Treatment Needs
DMFT	Decay, missing, filled tooth
et al.	et alii (and others)
HALE	Healthy Life Expectancy
HIV	Human Immunodeficiency Virus
NECHR	National Ethics Committee for Health Research
NIDR	National Research of Dental Research
P.D.R	People's Democratic Republic
RCI	Root Caries Index
RPD	Removable partial denture
SD	Standard deviation
USA	United States of America
WHO	World Health Organization
≥	Equal or more than
/	Per
%	Percent
Km^2	Square kilometer
ml/min	Milliliter per minute
R-D	Decayed root surface
R-F	Filled root surface
R-N	Sound root surface

CHAPTER I
INTRODUCTION

1.1 Background

The United Nation reports that proportion of older people is growing faster than of any age group [(1)]. The growth rate of population aged 60 years and over is 1.9%, significantly higher than that of total population (1.2%). In 2002, approximately 600 million people are aged 60 years and over (Figure 1-1). From 2002 to 2025, this number will double to be almost 1,200 million, and 80% of them living in developing countries.

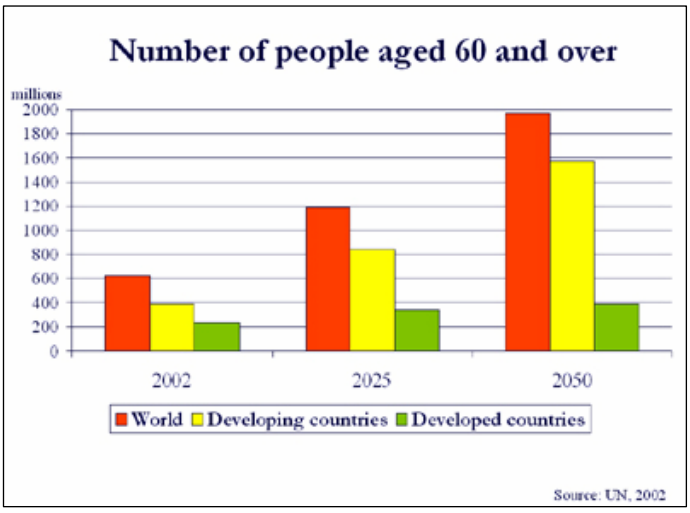

Figure 1-1: Number of people aged 60 and over. (www.who.int/ageing/events/idoprationale/en/index.html. 22 Jun 2007)

In 1988, according to the world health report, the need to strengthen health promotion amongst older people was emphasized [(2)]. Hence, in 1995, in response to the global challenges of the aging populations, the World Health Organization (WHO) launched a program on aging and health [(3)]. It was designed to advance knowledge about health care for elderly.

Oral health problems in older people mostly are associated with chronic and degenerative diseases. Among important ones are tooth loss due to dental caries experience and periodontal diseases in earlier life. Others include xerostomia due to medications for systemic diseases, and oral lesions associated with alcohol consumption, use of tobacco and betel nut chewing [4]. Oral health of elderly can have impact on general health. Reducing chewing performance as a result of tooth loss contributes to inability to maintain proper nutrition and poor quality of life. Furthermore, oral lesions and xerostomia present a barrier to tooth replacement. These problems are different than problems in other age groups. With the expanding of aging population, poor oral health of the elderly people becomes an important and growing burden to many countries worldwide.

1.2 Situation in Vientiane Capital, Lao People's Democratic Republic

This increasing elderly is also anticipated in the Lao People's Democratic Republic (P.D.R). The country is a land-locked country in mainland South East Asia, bordered by P.R China, Vietnam, Cambodia, Thailand and Myanmar. The United Nations projects the elderly population in Laos to increase from 5.6% of total population in 2000 to 7.0%, and 13.3% in 2025 and 2050 respectively [5]. This corresponds to increase of 5.3 millions to 11.4 millions people.

Figure 1-2: Map of Lao P.D.R. and Vientiane Capital.
(www.cia.gov/library/publications/the-world-factbook/geos/la.html. 25 July 2007)

Vientiane is the capital city of Lao P.D.R. and consists of nine districts. The city has the largest population, about 692,900 people in an area of 3,920 km^2. The population age 60 years and over is 38,271[i] (6).

Since there are limited numbers of dental personnel, about 82 persons in Vientiane Capital, the oral health of elderly might be the problem. However, there is no such information existing. Hence; this study intends to find out whether the elderly people in Vientiane have oral health problems. The study will also identify which factors are associated with these problems as well as the determination of service needs. This situation may be a great challenge to policy makers especially the ones who have the responsibility to establish the oral health programs in order to enhance the quality of life of the elderly in Lao PDR.

1.3 Objectives

1. To describe oral health status of the people age 60 and over in the Vientiane Capital, Lao P.D.R.
2. To describe factors related to oral health status of the people age 60 and over in the Vientiane Capital, Lao P.D.R.
3. To determine the service needs for the people age 60 and over in the Vientiane Capital, Lao P.D.R.

[i] Data file obtain from the National Statistic Office, Lao P.D.R. (Obtained May 2007)

CHAPTER II
LITERATURE REVIEW

The oral health status of the elderly group can be a predisposing factor of other diseases. The oral health problems in older people include tooth loss, periodontal disease, and root caries, oral lesions related to prosthetics, candidiasis and xerostomia [(7)]. Improper restoration via prosthesis such as removable dentures can also lead to candidiasis, dental caries, and periodontal diseases. This review of the existing literature will introduce some factors related to the oral status of an elderly patient in details.

2.1 Edentulous

Tooth loss is one of the problems that can be seen in children as well as adults. Tooth loss can have an impact on an individual's quality of life as it affects chewing, mastication, phonetics, esthetics and taste [(8)]. Poor diet intake of diet can lead to malnutrition risking the health in including mental health.

Tooth loss and edentulous teeth are common in elderly. A study of 690 elderly aged 65 years and older in the South East Lower Government Area in Ibadan, Nigeria reports that 52% had loss 1 or more teeth and 1.3% were edentulous [(9)]. The mean tooth loss was 4.50±7.60 teeth. Among those who lost 1 or more teeth, the mean tooth loss was 8.80±8.35 teeth.

2.2 Periodontal diseases

Periodontal disease is a chronic disease and it is a major problem in elderly populations globally. Poor oral hygiene, caused by a reduction in manual dexterity, can further exacerbate the progression of periodontal diseases. Last decades, periodontal disease can be broadly divided into gingivitis and periodontitis. In 1999, the classification of periodontal diseases was revised by the International Workshop

for a Classification of Periodontal Diseases and Conditions [10]. The periodontal diseases and conditions and periodontal diseases were divided into eight categories, namely gingival disease, chronic periodontitis, aggressive periodontitis, periodontitis as a manisfestation of systemic disease, necrotizing periodontal diseases, abscess of the periodontium, periodontitis associated with endodontic lesions, and development or acquired deformities and conditions.

The factors associated with periodontal disease, reported in literatures include sex, socioeconomic status, number of teeth, smoking, aging, diabetes mellitus, herpes related gingivitis, loss of bone density, autoimmune diseases, and number of bacterial pathogen.

In 1978, the WHO has introduced the Community Periodontal Index of Treatment Needs (CPITN) for use in epidemiologic surveys. The CPITN has been used extensively to assess the treatment needs of the population around the world. This index assesses gingival bleeding, calculus, and periodontal pocket [11]. The probe for CPITN has ball tip with 0.5 mm. in diameter, and lines at 3.5, 5.5, 8.5, and 11.5 mm. from the tip. The index has four scores as shown in Table 2-1.

Table 2-1: Community Periodontal Index of Treatment Needs

0 = Normal gingiva 1 = Bleeding after probing, No calculus and periodontal pockets are less than 4 mm. 2 = Calculus felt during probing, but pocket are less than 4 mm. 3 = Pocket 4 or 5 mm. 4 = Pocket ≥ 6 mm.

The teeth are divided into 6 sextants and the teeth to be examined are 11, 16, 17, 26, 27, 36, 31, 46, and 47. If any sextant has less than 2 teeth with no indication for extraction, that sextant will not be recorded. If the index teeth are in anterior sextant, all the teeth in that sextant will be examined and the highest score will be recorded. This survey will use this index to assess the periodontal condition of the elderly.

Periodontal disease is an important oral health problem in elderly. A review literature study reports that prevalence of periodontal diseases in the elderly in North

America is higher than younger age groups [12]. In 1981, the Dental Health Outcomes Surveys examined 7,078 persons age 19 years and older in 2,428 households living in the USA except Alaska and Hawaii. The prevalence of periodontitis was found to be 28.8% in age group 19-44 years old, and about 48% in 45-64 and 65 years or older age groups. In addition, the National Survey of Oral Health in the US of Employed Adults and Senior, conducted by the National Institute of Dental Research (NIDR) in 1985-1986 reports prevalence of probing depth ≥4 mm in 18-19 years old and 60-64 years old to be 14.3% and 22.2%, respectively. However, the prevalence of gingival bleeding in 18-19 years old to be lower than in 60-64 years old (48% and 40% respectively).

The prevalence of periodontitis in elderly in Laos PDR is also higher than in younger age group. A survey in Savannakhet Province in 2000 found that prevalence of CPI=3 and 4 was 0.76% in 19-27 years old, 19.79% in 55-64 years old, 30.17% in 65-74 years old, and 37.5% in 75-99 years old [13].

2.3 Root caries

Root surface caries is defined as “a cavitation or softened area in the root surface which might or might not involve adjacent enamel or existing restoration”. [14]. Bating and Ellen indicated that root caries can be detected when the lesion, located at CEJ or on root surface, is discrete, discolored, and soft with some resistant to explorer withdrawer [15]. Furthermore, another survey distinguishes active root caries from inactive root caries [16]. In this study, active root caries is yellow to light brown with leathery or soft surface when probing with moderate pressure, while inactive caries is brown to black with smooth and hard surface upon probing.

Root surfaces are exposed to oral cavity when there is gingival recession. As a consequence, root surfaces are exposed to oral environment, increasing areas for plaque accumulation. In addition, root surface is relatively more rough and easier for plaque to accumulate than enamel. Therefore, the primary caries lesion on root surface is progress in horizontal direction because of plaque accumulate along the gingival margin [17].

The WHO Oral Health Assessment uses the Root Caries Index (RCI) to assess the prevalence and severity of root caries [11]. The RCI is based on the above assumption that root caries develop from gingival recession. Therefore, gingival recession must be evident at the time of examination [14]. The RCI is defined as the "number of decayed (R-D) and filled (R-F) root surfaces with gingival recession in proportion to number of decayed, filled, and sound (R-N) root surface with recession" [18]. And, RCI is calculated from the below formula:

$$RCI = \frac{(R\text{-}D) + (R\text{-}F)}{(R\text{-}D) + (R\text{-}F) + R\text{-}N} \times 100$$

Root caries is associated with decrease salivary flow or xerostomia, high sugary candies to relieve the effect of dry mouth, use of medication for chromic disease such as Parkinson's Disease, stroke, arthritis, Alzheimer's Disease, Sjögren syndrome, and diabetes mellitus, and radiation treatment. These conditions are common in elderly people. Thus, prevalence of root caries in elderly is higher than in younger age group. This is supported by the finding from a survey of 79 institutionalized patients aged 35 years old or older, at Parkwood Hospital, Ontario, Canada. The study reported that those who had root caries had higher mean age than those who did not have root caries (71.4 and 57.5 years old respectively) [15].

Reviewed literature reports the prevalence of root caries in elderly varies depending on the study criteria. A survey of elderly aged 55 years or older at Bang Sue Health Center, Bang Sue Elderly Social Center, and Din Dang Elderly Social Center in Bangkok, Thailand found prevalence of root caries to be 34.1% [18]. In this study, the elderly included in the examination were those who had 12 or more natural teeth, and teeth with prosthetic crown were excluded. Two other studies that included all elderly who had at least one natural tooth in the examination found higher prevalence. One of these studies was the survey of elderly aged 60 years and older who participated in the Senior Citizen's College Programme in Osaka, Japan (an educational programme for elderly). The prevalence of root caries was 53.3% [16]. In

the other study, prevalence of root caries is reported to be as high as 85 – 93% in 55, 65, and 75 years old elderly living in Gothenburg, Sweden [19].

The RCI of these three studies also varied greatly. The mean RCI of 55 years old or older elderly in Bangkok was 14.26±25.56, similar to 15.5±15.1 for male and 17.2±15.0 for female aged 55, 65, and 75 years old in Gothenburg. On the contrary, the mean RCI of 60 years old or older elderly in Osaka were only 1.31 and 2.26 for those who had 10 – 19 and 20 or more natural teeth respectively. Since RCI represents proportion of decayed and filled root caries over all root surfaces examined, this variation reflects difference in the severity of root caries in countries.

2.4 Oral lesions

Some oral lesions are more commonly found in the elderly population than in younger age groups. For example, Handa *et al*. [20] reported that prevalence of leukoplakia in Kandal Stung District, Cambodian population to be 1.0% among 50-59 years old. The prevalence was slightly higher in the group of 80-90 years of age, 7.3%.

The common lesions in elderly include denture stomatitis, irritative hyperplasia, traumatic ulcers, oral mucosa varicosities, frictional keratosis, and leukoplakia. Denture stomatitis was found to be the most common lesions found in the elderly in many studies. A survey of elderly age 65 years or older living in Santiago, Chile reported prevalence of denture stomatitis to be 22.3%, the highest prevalence [21].

Some of the lesions are associated with wearing dentures. For example, a survey of 65 – 74 years old Hong Kong Chinese found that among those who wear dentures, 10% had denture stomatitis, 9% had denture hyperplasia, 6% had frictional keratosis, 5% had traumatic ulcer, and 1% angular cheilitis [22].

The prevalence of oral lesions is higher in elderly who smoke and drink alcohol. The survey of Hong Kong Chinese found that 67% of non-smoker and non-drinker had no oral lesion while only 59% of the smokers and 65% of drinkers had no oral lesions [22]. The Cambodian study reported a strong relationship between smoking and leukoplakia [20].

Good lighting is important for accurate diagnosis and differentiation of oral lesions. Since this study is a field survey, the lesions are grouped into fissured tongue, red lesions, and white lesions, mixed red and white lesions, solitary ulcers, exophytic lesions, and pigmented lesions.

2.5 Oral Candidiasis

Yeast is frequently found in oral cavity as normal flora. Yeasts are opportunistic pathogens that can cause mucosal infection when patients are in compromised conditions. The most dominant species in oral cavity is *Candida albicans* [(23)]. It was reported that the prevalence of C. albicans isolated from oral cavity is higher in residents of long term care facilities (65 – 88%), HIV infections and AIDS (90%) than in healthy adults (30 – 45%) [(24)].

In addition, Candidiasis is found to be common among patients wearing removable dentures, and higher prevalence of oral Candida among people wearing denture to sleep than those who do not [(25)]. A study of healthy removable dentures patients at the Araraquara Dental School, Sao Paulo State University, Brazil also confirms this claim [(26)]. In this study, the patients were divided into two groups. The first group wore removable dentures to sleep the first night and did not wear the dentures for the subsequent nights, while the second group did not wear dentures the first night but wore them in the subsequent nights. The study found that, in the first night, those who wear dentures to sleep had higher concentration of Candida than those who did not. In the following nights, the concentration of Candida found in those who wore dentures at night had decreased when they stopped wearing dentures at night. On the other hand, the concentration of Candida increased when those who did not wear dentures at the beginning had started wearing dentures later.

2.6 Xerostomia

Xerostomia is defined as “a subjective complaint of dry mouth that may result from a decrease in the production of saliva” [(27)], while hyposalivation is the reduction in salivary secretion. The normal volume of saliva produced in day is 1.0 – 1.5 liters

and 90% are from parotid and submandibular glands [28]. The normal unstimulated flow rate is 0.3 – 0.5 ml/min and the normal stimulated flow rate is 1 – 2 ml/min [29]. However, Guggenheimer stated that the unstimulated flow rate of less than 0.12 – 0.16 ml/min is considered to be hyposalivation [27].

The most common cause of hyposalivation is the side effect of medications [27]. These medications include antihistamines, pseudoephederine, antidepressants, anticholinergic agents, anorexiants, antihypertensive agents, antipsychotic agents, anti-Parkinson agents, diuretics, sedatives, muscle relaxant agents, analgesics, and anxiolytic agents. Other less common causes are autoimmune diseases, head and neck radiation treatment, mechanical blockage, dehydration, emotional stress, infection of the saliva glands, local surgery, trauma, vitamin A deficiency, anemia, connective tissue diseases, Sjögren's Syndrome, diabetics mellitus, and congenital factors [27, 28].

Xerostomia patients often complain of sticky or dry feeling in the mouth, burning sensation, difficult swallowing, loss or impairment of taste, mouth sore, cracked lips, or dry nasal passage [28]. Thus, subjective complaint is often used for identification of xerostomia. Fox *et al.* [30] presented nine questions to assess xerostomia as shown in Table 2-2 below. Any positive answer to these questions was shown to have association with xerostomia.

Table 2-2: Questions to assess xerostomia

Does your mouth feel dry at night or on awaking?
Does your mouth feel dry at other times of the days?
Do you keep a glass of water by your bed?
Do you sip liquids to aid in swallowing dry foods?
Does your mouth feel dry when eating meals?
Do you have difficulties swallowing any foods?
Do you chew gum daily to relive oral dryness?
Do you use hard candies or mints daily to relieve oral dry ness?
Does the amount of saliva in your mouth seem to be too little, too much, or you don't notice it?

Many studies used subjective complaint to assess prevalence of xerostomia. A study of Finnish elderly aged 74 – 87 years old living in Helsinki found that 46% had a subjective complaint of mouth dryness [31], while 39% of elderly aged 65 years and older living in Florida reported that their mouth sometime felt dry [32]. The findings from these studies also found relationship between use of medication, increasing age and with subjective dry mouth. The Logistic model of the Floridian elderly study found that number of medication taken, having Diabetic Mellitus, and age were significantly related to the complaint of feeling that their mouth sometime dry. Similar results were reported in a survey of elderly living in private household in Ontario, Canada. The study found that 22.6% of elderly age 65 or older reported oral dryness, significantly higher than 14.2% of those age 50 – 64 years old, and 21.0% of those using medications had oral dryness compared to only 10.8% in the non-medication users [33].

To confirm the diagnosis of xerostomia, oral examination and/or other examinations such as sialography, salivary scintiscanning, salivary gland biopsy, or haematology are needed [28]. However, these tests and examinations besides questionnaire and oral examination are not appropriate to be used in a field survey.

From oral examination, clinical sign of hyposalivation may include coated tongue, fissuring or angular cheilosis, inflammation of the oral mucosa, increase

incidence of dental caries, especially root caries, pale, dry buccal mucosa due to the epithelium atrophy and of the mucosa coating normally seen on its surface, inability to express saliva from the orifices of the major glands, oral ulcers, Candidiasis, and parotid enlargement [28]. In other study, Navazesh *et al.* [34] has developed a mathematical model consisting of the lip dryness score, buccal mucosa dryness score, score of saliva from Wharton's or Stensen' ducts upon palpation, and DMFT score to indicate xerostomia. However, this model may not be valid for the population under this survey since it is developed from population with different oral health status.

Perceived and normative needs of denture in elderly people was mentioned the criteria as normative need that which the expert or professional defines as need in any given situation; perceived need is a felt need, which is equated with want by the patients [35].

A study of 300 elderly subjects aged 65 and above found that 74% of subjects were edentulous, but only 57% needed prosthetic treatment as assessed by the dental status and normative treatment needs. Only 68% of the normative treatment needs wore the dentures [36]. However, the reported perceived treatment need of elderly people in Tanzanian aged 50 or more was 38.6 % for partial dentures and 3.2% for complete dentures [37].

CHAPTER III
METERIALS AND METHODS

3.1 Study design

The study design was a cross-sectional survey using oral health examination, examination of prosthesis, saliva collection, and interview with questionnaire to determine oral health status, identify factors related to oral health status, and determine service needs for the elderly in the Vientiane Capital, Lao P.D.R.

3.2 Study population

The study population was the people aged 60 years and over, living in the Vientiane Capital. The study excluded those who live in institutions such as temple, prison, and nursing home.

3.3. Study site

The study was conducted in the Vientiane Capital. The Capital consists of nine districts (Figure 3-1 and Table 3-1). Four districts are in municipal areas and the other five are outside municipal areas.

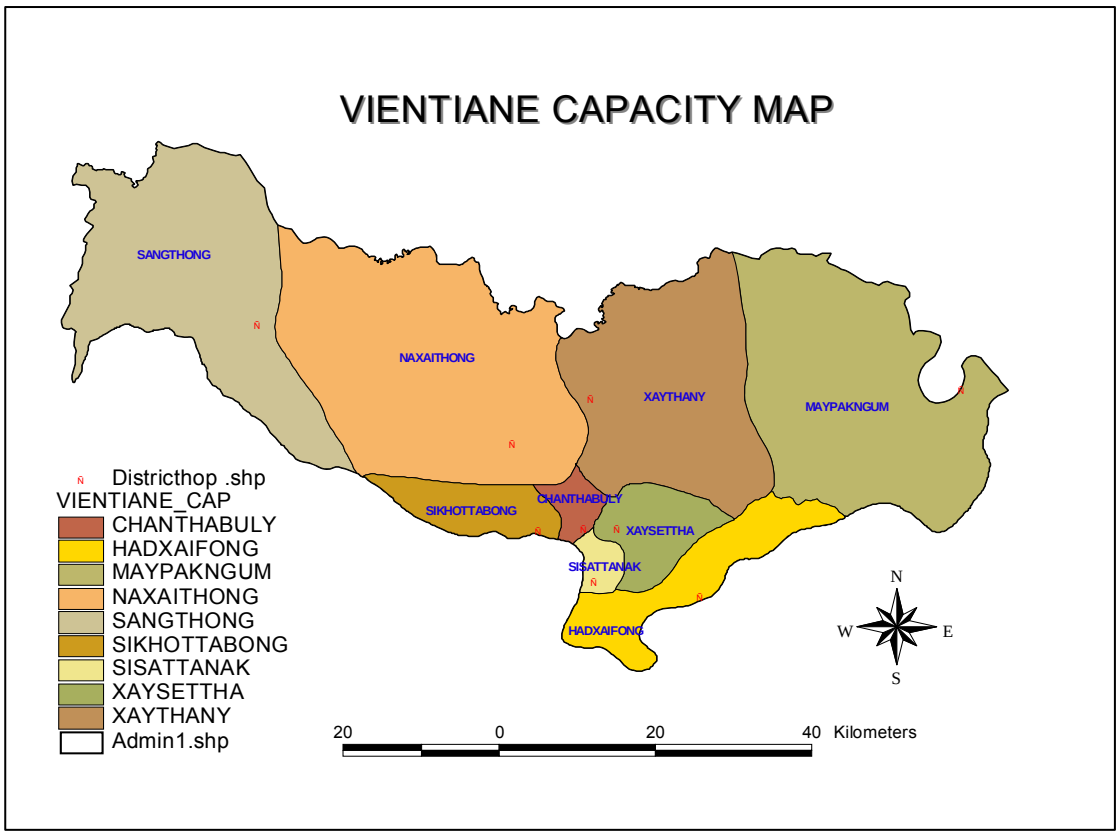

Figure 3-1: Vientiane Capital Map

(Modified from the software of arc view GIS version 3.2 from WHO 2002).

Table 3-1: Number of the elderly in each district in the Vientiane Capital

Districts		Number of elderly
Municipal areas	Chanthabouly	3,691
	Sikhotabong	5,495
	Xaysettha	4,860
	Sisattnak	3,669
Non-municipal areas	Naxaithong	1,372
	Xaythany	7,628
	Hadxaifong	4,975
	Sangthong	3,742
	Parkngum	2,839

3.4. Sample size:

The sample size was calculated using the following formula for a finite single population:

$$n = N z^2 P Q / d^2 (N - 1)$$

Where: N = Total population (= 38,271)

z = 1.96 for 95% confidence level

P = Estimated proportion of oral health problems in the population (= 0.62). This is because the prevalence of oral health problems in elderly in Lao PDR are unknown and from the national oral health survey in Thailand in 2000 reports 61.6% of the 60 years old and older have periodontal problems and 70.9% need prosthesis [38].

Q = 1 – P (= 0.38)

d = Maximum error deems acceptable (= 6%)

Therefore:

$$n = 38271 (1.96)^2(0.62) (0.38) / (0.06)^2 38270$$

$$\sim 250$$

This sample size is added with 20% for design effect and round up to be

Final n = 250 + 50

= 300 samples

3.5. Sampling design

Number of elderly persons in municipal and non-municipal areas are approximately equal (17,715 and 20,556 respectively). Therefore, about 150 samples were drawn from municipal areas and 150 samples from non-municipal areas.

In the municipal areas, two districts, Chanthabouly and Xaysettha, were selected. Chanthabouly is the business areas where three out of four hospitals in the areas situate. Xaysettha is the representative of the other three districts in the municipal areas.

In the non-municipal areas, Xaythany and Hadxaifong were selected because of their unique characteristics that may have effect on oral health status. Xaythany is the district with tourist industry and Hadxaifong is the district with its border next to Nong Kai.

In each selected district above, 1 village with its elderly population higher than 75 persons was randomly selected with each district had equal chance of being picked. The final samples were 75 persons from each of the 4 villages, making a total of 300 persons.

Within each village, the elderly who agreed to study were asked to gather at center at the village such as temple or health facilities.

3.6. Data collection and research instrument

The study inspected dental caries, periodontal status, Candidiasis, patient's oral health care practice, oral lesions, medical conditions associated with prosthesis wearing, dry mouth symptoms, and normative and perceived needs for prosthesis (Table 3-2). The data collection methods composed of (1) oral health examination, (2) modified dip slide method for Candida infection assessment, and (3) questionnaire interview.

Table 3-2: List of variables and data collection methods

Variables	Data collection method
Dental caries	Oral examination
Periodontal status	Oral examination
Prevalence of Candida	Oral examination and modified dip slide method
Oral health care practice	Questionnaire interview
Oral lesions	Oral examination
Level of *C. albicans*	Modified dip slide method
Pertinent medical conditions	Questionnaire interview
Dry mouth symptoms	Questionnaire interview
Normative needs for prosthesis	Oral examination and inspection of existing prosthesis
Perceived needs for prosthesis	Questionnaire interview

3.6.1 Oral health examination

The oral examination was carried out by one examiner. Calibration was done by examining patients at the Mahidol University prior to the survey. The first examination was done in the morning and the second examination was done in the afternoon. When there was a disagreement, the case was re-evaluated until the final Cohen Kappa at tooth level was 0.95.

The examination instruments were mouth mirrors, WHO periodontal probes, trays for sterilized instruments and for used instruments, forceps, cups, sterilized gauze, alcohol, and oral health examination form.

The oral health examination form was developed by the modification of the WHO assessment form 1997 [(11)] and reviewed literatures. The caries status of crown and root of 28 teeth was examined and recorded using the same definition as in the WHO oral health survey methods. A modification was made to include a retained root as a decayed tooth. For periodontal status, Community Periodontal Index (CPI) was used. The teeth examined were the same as indicated in the WHO oral health survey methods as well.

The examination of oral mucosa was focused on normal variations and lesions that were related to prosthesis use and fabrication. Upon examination completion, the lesions were re-grouped according to the frequency of findings. Dry mouth condition was assessed since it was important considerations for prosthesis fabrication. The criteria for dry mouth conditions were taken from clinical signs & symptoms of hyposalivation [30]. The oral dryness was measured by questionnaire interview discussed later in subsection 3.6.3.

The last part of oral examination form was the assessment of prosthesis. The conditions of existing prosthesis and the normative needs were determined. These data were compared with subjective needs measured using interviewed questionnaire.

3.6.2 Modified Dip Slide method for prevalence of Candida

The modified dip slide method has been validated with the conventional agar plate count method for the estimated salivary Candida [39]. The technique was relatively simple for field study. The materials needed were plastic cups to collect saliva, dip-slides, a 5% CO_2 incubator, and a chart for organism scores.

Participants were asked to chew a piece of paraffin for five minutes to stimulate saliva. The saliva was collected and poured over the surface of a dip-slide containing selective media for the organisms. Excess saliva was removed by blotting the edge on absorbent paper and the dip-slide was placed into a plastic tube. The tube was placed in an incubator at 37º C and 5% CO_2 for 48-72 hours. The density of Candida growth was scored by comparing the dip-slides with a chart.

3.6.3 Questionnaire interview

The questionnaire composed of six parts, i.e. demographic, general health, social history, oral health care practice, self reported oral health status, and perceived needs for dental care (Appendix B). Demographic contained questions regarding name, date of birth, and sex. General health and social history section contained 12 questions concerning medical and social conditions associated with oral health status of elderly. Section on oral health practice included questions on tooth cleaning as well as prosthesis cleaning. The last section contained questions regarding perceived needs for prosthesis.

The questionnaire was tested with 10 elderly living in the Vientiane Capital areas in July 2007. Some questions were difficult to understand and modifications were made accordingly.

Questionnaire interview was carried out by a research assistant. The researcher trained the interviewer on how to collect data in a systematic manner and the understanding of all the questions and answers.

3.7 Data Analysis

Data analysis was carried out using SPSS statistical package. Descriptive statistics were used to describe the oral health status and service needs variables. The data were described in terms of frequencies, percentages, proportion, mean, and standard deviations. Chi-square test was used to determine potential bias from missing data, i.e. whether the distribution of non-respondent was significantly different from the respondent. Only the determination of C. albicans had missing data. The analysis showed that there was no significantly difference in relation to the CPI score group, whether they wear removable prosthetics or not, whether they wear prosthetics to sleep or not, and whether they have clinical sign of hyposalivation or not.

3.8 Limitation of Study

The study excluded those who did not want to participate in the study, and those who were not in the mental and physical conditions suitable to be examined nor interviewed. Examples were developmental disability persons, dementia, persons who were severely ill, persons in intoxicated or lethargic stage. Elderly who lived in institution such as temple, prison, nursing home, were excluded as well. However, the number of these excluded elderly was almost zero and had negligible influence on the inference of the study results to the studying population.

Within a village, the recruited elderly could not be obtained by random since many elderly still worked in the field. However, there was no indication that there was any significant difference in related factors between those who still worked or stayed at home.

3.9 Ethical Consideration

Permission to conduct the study was sought from the ethics committee of the National Ethics committee for Health Research (NECHR) in Lao P.D.R. before the commencement of the research. The researcher was abided by the ethics strictly.

Only the elderly who are capable to understand the objectives of the survey, the scope of involvement, and the risk and benefits of the survey, and subsequently give written informed consent voluntarily were recruited to the study. The information for the samples and the informed consent form was in Lao language. The participants had the right to withdraw from the study at any time and for any reason, without having any negative effect on their rights for health care.

CHAPTER IV
RESULTS

4.1. Demographic

4.1.1 Sex

The samples of this study consisted of 300 elderly people. There were 112 (37.3%) males and 188 (62.7%) female. In municipality areas, 39.3% were male and 60.7% were female. In non municipality areas, 35.3% were male and 64.7 were females (Table 4-1).

Table 4-1: Number and percentage of male and female elderly

	Male (n, %)	Female (n, %)	Total (n, %)
Municipality	59 (39.3)	91 (60.7)	150 (100)
Non-municipality	53 (35.3)	97 (64.7)	150 (100)
Vientiane	112 (37.3)	188 (62.7)	300 (100)

4.1.2 Age

Among the samples, 33.3% aged 60 – 64 years old, 19.3% aged 65 – 69 years old, and 47.3% aged 70 years and over (Figure 4-1). In municipal areas, 39.3% were 60 – 64 years old, 18.7% were 65 – 69 years old, and 42.0% were 70 years and over. In non-municipal areas, 27.3% were 60 – 64 years old, 20.0 % were 65 – 69 years old, and 52.7% were 70 years and over.

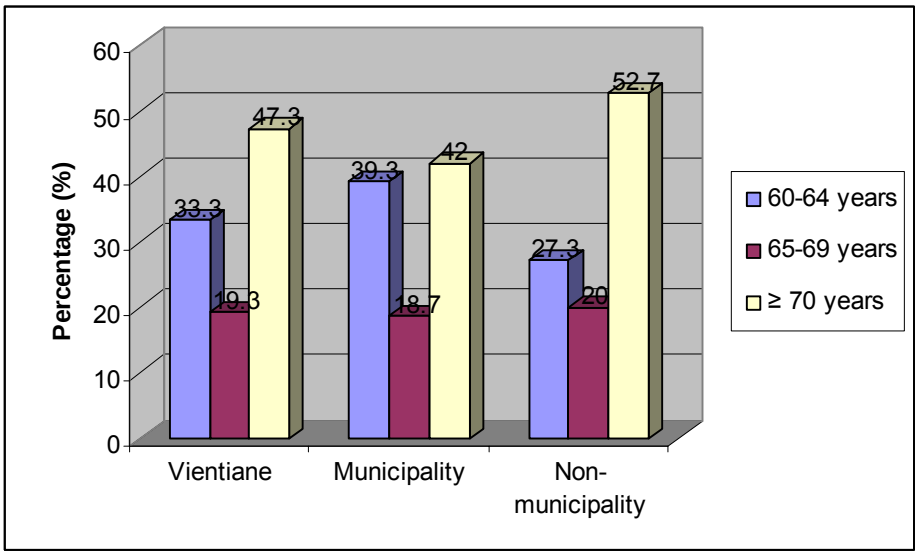

Figure 4-1: The age distribution of the elderly subjects

4.2. Oral health status

4.2.1 Tooth loss

Of the samples, 276 (92.0%) had lost some teeth, 58.3% had missing teeth due to caries, and 34.0% had missing teeth from periodontal problem. Table 4-2 shows that 7 (2.3%) were edentulous, the mean tooth loss was 9.2 teeth/person, and the mean tooth present in the mouth was 22.3 teeth/person. Compared with elderly in non municipality areas, the prevalence of edentulous and average number of tooth loss of elderly in municipality areas were about the same.

Table 4-2: Prevalence of edentulous and severity of tooth loss

Vientiane	n	Edentulous (n, %)	Mean±SD (teeth/person)	
			Tooth loss	Tooth present
Municipality	150	4 (2.7)	8.9 ± 8.9	22.5 ± 8.9
Non-municipality	150	3 (2.0)	9.4 ± 8.6	22.1 ± 8.5
Total	300	7 (2.3)	9.2 ± 8.8	22.3 ± 8.7

4.2.2 Dental caries

In order to study prevalence and severity of dental caries among elderly, the samples were examined for decayed (D), missing (M), and filled teeth (F). The results revealed that the prevalence of dental caries was 252 (84.0%) and the average DMFT was 7.7 teeth per person (Table 4-3). The prevalence and severity for elderly in municipality areas were a little higher than for those in non-municipality (86.7% versus 81.3% and 8.0 versus 7.4 respectively). The average missing teeth due to caries was 4.5 teeth per person, with elderly in municipality a little higher than in non-municipality. None had filled teeth.

Table 4-3: Prevalence and severity of dental caries

Vientiane	n	Prevalence (n,%)	Mean±SD (teeth/person)			
			D	M	F	DMFT
Municipality	150	130 (86.7)	2.8 ± 4.7	5.2 ± 7.1	0	8.0 ± 8.3
Non-municipality	150	122 (81.3)	3.5 ± 4.8	3.9 ± 6.3	0	7.4 ± 8.5
Total	300	252 (84.0)	3.1 ± 4.7	4.5 ± 6.7	0	7.7 ± 8.4

4.2.3 Root caries

When inspecting the status of root caries, almost all of them 289 (96.3 %) had sound root, and only 2 persons had root caries.

4.2.4 Periodontal status

To assess periodontal status, the Community Periodontal Index was employed. It was revealed that of 275 people who had index teeth present, 246 (89.5%) had calculus deposits, 27 (9.8%) had pockets 4 to 5 mm. deep, and none had bleeding gingival nor pocket deeper than 5 mm (Table 4-4). A higher prevalence of calculus (100% of 135 people) was evidenced in municipality areas.

Table 4-4: The periodontal status

Vientiane	CPI=0 (n, %)	CPI=1 (n, %)	CPI=2 (n, %)	CPI=3 (n, %)	Total (n, %)
Municipality	0 (0.0)	0 (0.0)	135 (100.0)	0 (0.00)	135 (100.0)
Non-municipality	2 (1.4)	0 (0.0)	111 (79.3)	27 (19.3)	140 (100.0)
Total	2 (0.7)	0 (0.0)	246 (89.5)	27 (9.8)	275 (100.0)

Note: 25 persons have no index teeth for examination

4.2.5 Oral mucosa lesions

The oral examination had found the prevalence of oral mucosa lesions is 149 (49.7%) (Table 4-5). About 5 (1.7%) had fissure tongue, 2 (0.7%) had solitary red lesions, 3 (1.0%) had generalized red conditions and multiple ulcerations, 30 (10.0%) had red conditions of the tongue, 22 (7.3%) had white lesions (unable to be scraped off), 19 (6.3%) had pseudo-membranous necrotic white lesions (able to be scraped off), 7 (2.3%) had red and white lesions (keratotic component), 9 (3.0%) had red and white lesions (necrotic component), 16 (5.3%) had tumors, and 36 (12.0%) had pigmented lesions.

Table 4-5: Number and percentage of elderly with oral lesions (n = 300)

Oral mucosa lesions	n	%
Fissure tongue	5	1.7
Solitary red lesions	2	0.7
Generalized red Conditions and multiple ulceration	3	1.0
Red conditions of the tongue	30	10.0
White lesions (unable to scrape off)	22	7.3
Pseudo-membranous necrotic white lesions (able to scrape off)	19	6.3
Red and white lesions (keratotic component)	7	2.3
Red and white lesions (necrotic component)	9	3.0
Tumor	16	5.3
Pigmented lesions	36	12.0

4.2.6 Hyposalivation and oral dryness complaint

The problem of hyposalivation was evaluated by examining the clinical signs of reduced saliva flow and interviewing elderly about problem associated with oral dryness. Of all samples, only 39 (13.0%) had neither sign of hyposalivation nor oral dryness complaint, 131 (43.7%) had hyposalivation but no complaint, 27 (9.0%) had oral dryness complaint but no sign for hyposalivation, and 103 (34.3%) had both.

Majority of the samples (215 persons, 71.7%) had some signs of hyposalivation. Eleven (3.7%) had dry, friable, and glazed mucosa; 24 (8.0%) had no saliva on the floor of the mouth, 11 (3.7%) had thin line of frothy saliva, 11 (39.7%) had dry mucosa that stuck to the mouth mirror, and 50 (16.7%) had red tongue with de-papillation (Table 4-6).

Table 4-6: Clinical signs of the hyposalivation (n = 300)

Sign and symptom of hyposalivation	n	%
Dry, friable, and glazed mucosa	11	3.7
No saliva in the floor of the mouth	24	8.0
Thin line of frothy saliva	11	3.7
Mucosa sticks to mouth mirror	119	39.7
Red tongue with de-papillation	50	16.7

The results of perceived oral dryness showed that only 65 (21.7%) reported no problem at all. On the other hand, 145 (48.3%) had sore gums, 143 (47.7%) had reported soreness when chewing, 115 (38.3%) had bad breath, 108 (36.0%) had dry mouth sensation, 108 (36.0%) needed to sip water frequently, 123 (41.0%) had difficulty swallowing dried food, 56 (18.7%) had burning sensation, 25 (8.3%) had a bitter or metallic taste, 19 (6.3%) had a loss of taste sensation, and 15 (5.0%) had difficulties speaking (Table 4-7).

Table 4-7: Subjective complaint of oral dryness (n = 300)

Oral dryness complaints	n	%
Loss of taste sensation	145	48.3
Sore gums	143	47.7
Sore when chewing	115	38.3
Bad breath	108	36.0
Dry mouth sensation	108	36.0
Need to sip water frequently	123	41.0
Difficulty swallowing dry food	56	18.7
Burning sensation	25	8.3
Bitter or metallic taste	19	6.3
Loss of taste sensation	15	5.0

4.2.7 Prevalence of *Candida albicans*

To determine the prevalence of *Candida albicans* (*C. albicans*), saliva samples were collected, using modified dip slide method. Only 117 elderly agreed to have the sample collected. The results reported that 29 (24.8%) persons had no *C. albicans* and 88 (75.2%) were positive for *C. albicans* (Table 4-8). Four levels of *C. albicans* were demonstrated as a level 1 ($<10^2$ CFU/ml), level 2 ($\geq 10^2$-$<10^3$ CFU/ml), level 3 ($\geq 10^3$-$<10^4$ CFU/ml), level 4 ($\geq 10^4$ CFU/ml). Level 1 &2 was considered moderate and level 3 & 4 were considered high. The results showed only 6 (2.0%) had high level of *C. Candida*. All of these six wore removable prostheses.

Table 4-8: Level of Candida albicans (n = 117)

Level of Candida albicans	Elderly (n,%)	
	Wore dentures	Not wore dentures
Level 0	3 (2.6%)	26 (22.2%)
Level 1	6 (5.1%)	60 (51.3%)
Level 2	1 (0.9%)	15 (12.8%)
Level 3	0 (0.0%)	3 (2.6%)
Level 4	0 (0.0%)	3(2.6%)

4.3 Factors related to oral health status

4.3.1 Related medical conditions

The results of the study showed that out of 300 elderly people, 128 reported that they had medical problems. However, most (229 persons, 76.3%) have never had medical check-ups before and only 71 (23.7%) had medical check-ups within the past year. From these 71 elderly, 1 reported that he had no medical problem, 6 (8.5%) had cardio-vascular disease, 20 (28.2%) had hypertension, 4 (5.6%) had diabetes mellitus, cardio-vascular disease, and hypertension, 10 (14.1%) had diabetes mellitus, and 1 (1.4%) had history of radiation treatment (Figure 4-2). About 30 (42.3%) had other diseases that are not related to oral health.

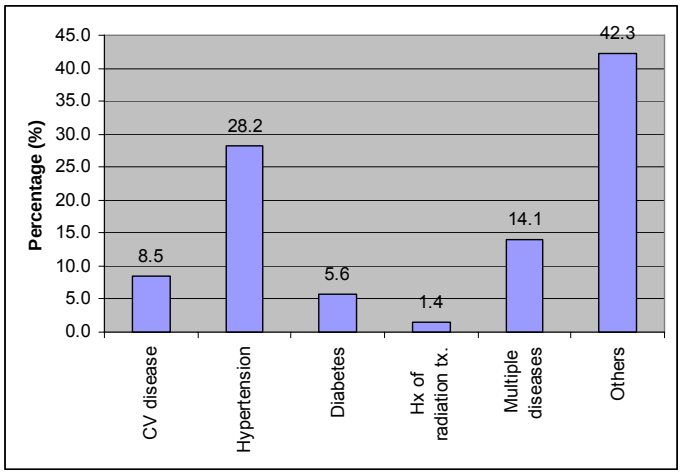

Figure 4-2: History of related medical conditions (n=300)

4.3.2 Medication

When asking about history of regular medication, 92 (30.7%) of the elderly had taken medication regularly. When asking the amount of medication taken, 37 (12.3%) have regularly taken only 1 type of medicine, 34 (11.3%) taken 2 types of medicine, and 21 (7.0%) taken more than two types of medicine (Figure 4-3).

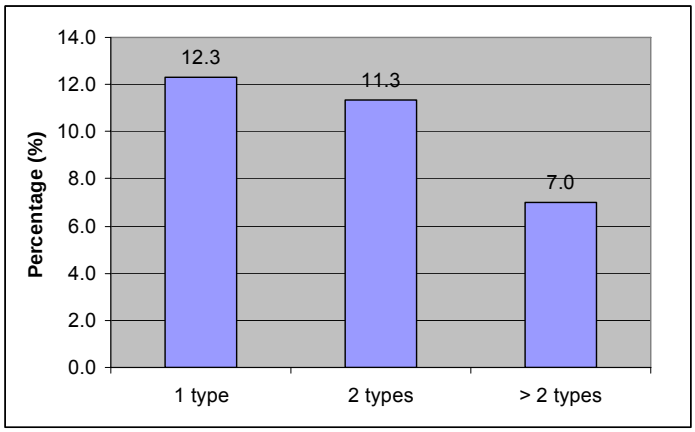

Figure 4-3: History of taking medication regularly (n=300)

4.3.3 Social factors

Concerning the behaviors related to dental health, the study population was asked about smoking, alcohol consumption, chewing areca nut and placing snuff in the mouth. Of the 300 subjects the majority, 197 (65.7%) of the respondents had never smoked a cigarette, 68 (22.7%) currently smoke and 35 (11.7%) used to smoke (Figure 4-4).

In addition, it was found that 5.7% smoked once in a while, and 28.7% smoked every day. From those 86 persons who smoked every day, 22 (25.6 %) smoked less than 5 cigarettes per day, and 3 (3.4 %) smoked more than 20 cigarettes per day.

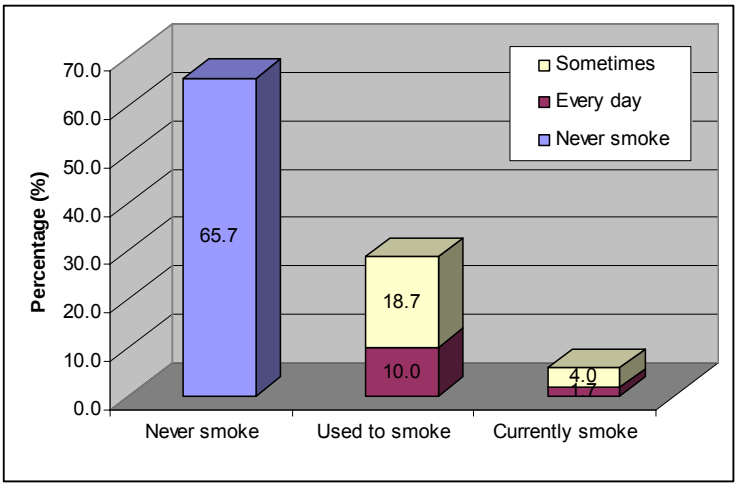

Figure 4-4: History of smoking cigarettes (n=300)

Concerning alcohol consumption, about half of the respondents (56.0%) reported that they never drank alcohol, 37.0% currently drink alcohol, and 7.0% used to drink alcohol. Most of the current drinkers and used to drink (32.7%) said that they drank once in a while and 11.3% drank every day (Figure 4-5).

For the respondents who drank every day, 13 (61.9%) said that they drank less than 3 glasses per day, 7 (33.3%) drank 3-5 glasses, and only 1 (4.7%) drank more than 5 glasses. The size of glass was around 15 ml.

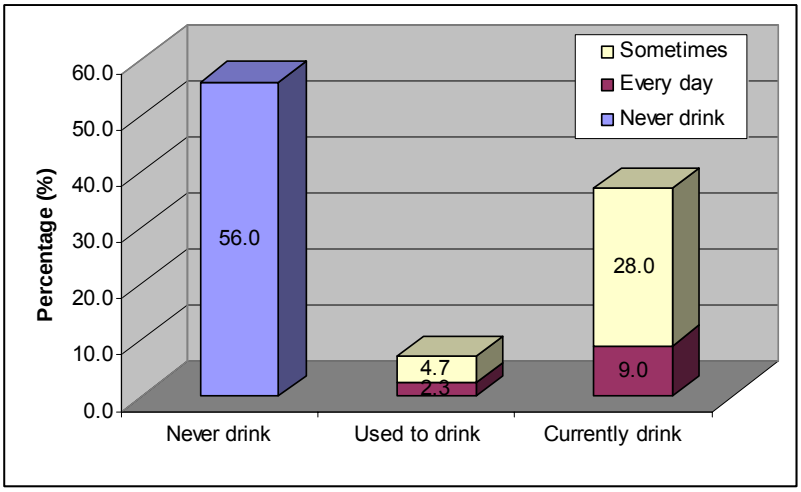

Figure 4-5: History of drinking alcohol (n =300)

Regarding areca nut chewing and snuff in the mouth, most of them, 207 (69.0%) said that they had never used it, 73 (24.3%) currently chew, and 20 (6.7%) used to chew. Concerning snuff placed in the mouth, the majority 250 (83.7%) never used it, 35 (11.7%) currently place snuff in mouth, and 14 (4.7%) used to place snuff in mouth (Figure 4-6).

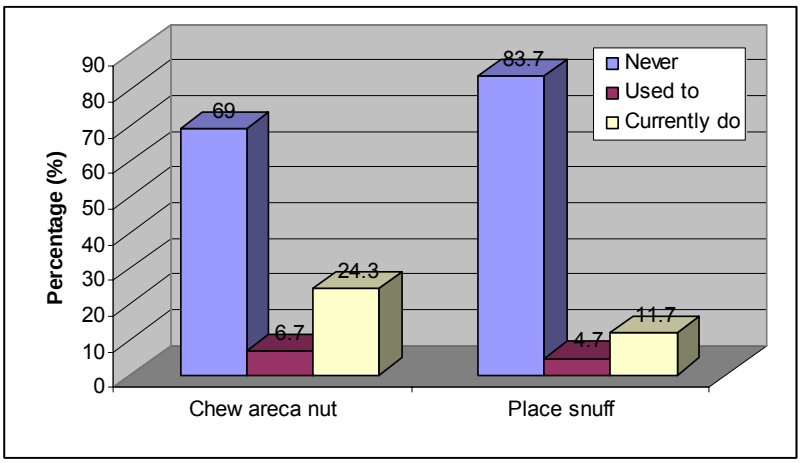

Figure 4-6: History of chewing areca nut and snuffing

4.3.4 Oral hygiene practice

Oral health care practice is considered a factor related to oral health status. Hence, the elderly were asked about their cleaning practice. The results showed that all of the edentulous elderly cleaned their oral cavity by rinsing their mouth with water.

Among the 29 respondents who wore removable prosthetics, 15 wore them when they slept, 10 did not, and 4 gave an unreliable answer. Among those 10 who did not wear their removable prosthetics when they slept, 9 immersed them in water, and the other person wrapped them up dry.

For removable prosthesis cleaning method, 15 persons used lemon to clean their prosthesis, 2 rinsed with water, 2 brushed, and 6 used multiple methods, and 4 persons did not give a reliable answer (Figure 4-7).

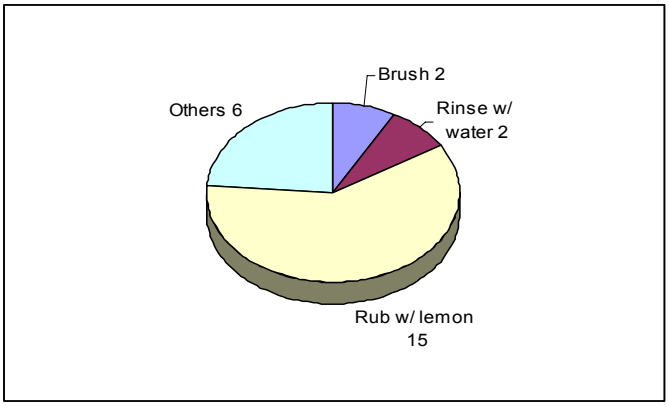

Figure 4-7: Denture cleaning methods (n=25)
Note: Unable to obtained answer from 4 persons

Four out of the 286 respondents who had natural teeth did not clean their oral cavity everyday (Figure 4-8). Most (64.3%) reported that they brushed, 19.9% brushed and rinsed with salt water. Only small number do not brush but clean their oral cavity by rubbing with fingers (1.4%), rinsing with water or salt water (6.6%), rubbing with fingers and rinsing with salt water (3.5%). When asked about dental floss use, only 4 (1.4%) flossed regularly.

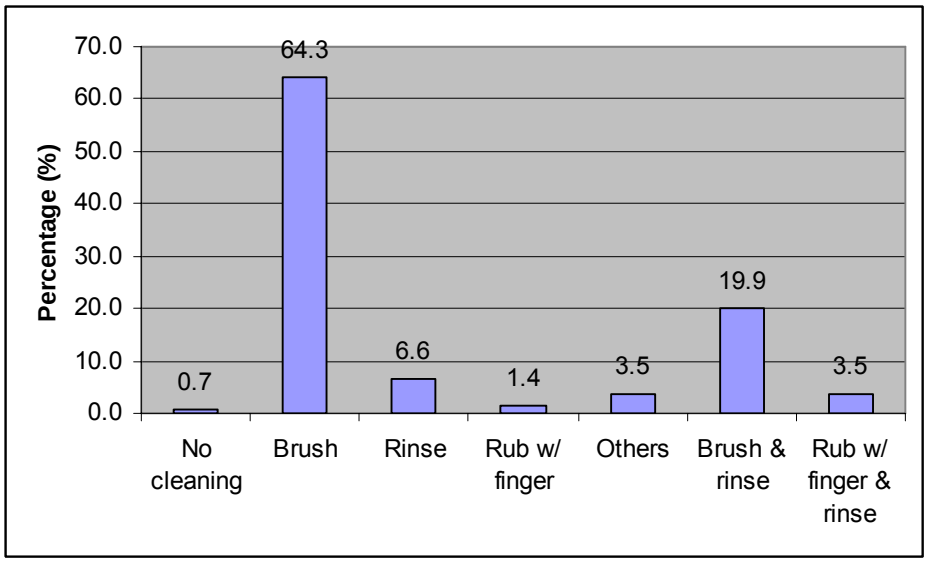

Figure 4-8: Oral hygiene practice of elderly with natural teeth (n=286)

Among those who brushed, 76 (31.5%) brushed their teeth once a day, 151 (62.7%) brushed their teeth two times per day, and 14 (5.8%) of them brushed their teeth three times or more per day. All of them used fluoride toothpaste. When asked about the type of the toothbrush used, 226 (93.8%) used a soft bristled brush, only 14 (5.8%) used hard bristled brush, and 1 (0.4%) used either.

4.4 Needs for prosthetics

There were 29 people who wore removable prosthesis. Among these, 9 (3.0%) wore upper removable partial dentures, 5 (1.7%) wore lower removable partial denture, 5 (1.7%) wore complete upper and lower dentures, 4 (1.3%) wore both upper and lower removable partial dentures, 1 (0.3%) upper complete denture with lower removable partial denture, and 5 (1.7%) wore lower complete dentures and upper removable partial dentures (Table 4-9).

The needs for prosthesis were determined by examining oral health status and existing prosthetics (normative needs) and by interviewing whether the elderly want prosthetics or not (perceived needs).

Table 4-9: Proportion of elderly wearing removable prosthesis (n = 300)

Removable prosthesis wore	n	%
Lower CD	1	0.3
Upper RPD	9	3.0
Lower RPD	5	1.7
Both upper & lower removable prosthesis	14	4.7
Upper & lower CD	5	1.7
Upper & lower RPD	3	1.0
Upper CD & lower RPD	1	0.3
Lower CD & upper RPD	5	1.7
Not wearing any removable prosthesis	271	90.3

4.4.1 Normative needs

The examination revealed that 273 (91.0%) persons needed to wear removable prosthesis. Among these, 19 (6.3%) needed upper and lower complete dentures, 185 (61.7%) needed upper and lower removable partial dentures, 8 (2.7%) needed upper complete denture and lower removable partial dentures, 14 (4.7%) needed lower complete denture and upper removable partial denture, 21 (7.0%) needed upper removable partial denture alone, and 26 (8.6%) needed lower removable partial denture alone (Table 4-10). There was no need for fixed prosthesis when taken periodontal conditions and financial status into consideration.

Table 4-10: The needs for removable prosthesis assessed by dentist (n=300)

Removable prosthesis needed	n	%
Upper RPD	21	7.0
Lower RPD	26	8.6
Both Upper & Lower prosthesis	226	75.4
Upper & Lower CD	19	6.3
Upper & Lower RPD	185	61.7
Upper CD & Lower RPD	8	2.7
Lower CD & Upper RPD	14	4.7
Need no removable prosthesis	27	9.0

4.4.2 Perceived needs

The perceived needs were determined by asking whether they want to have new dentures or not. The results revealed that only 50 (16.7%) elderly would like to wear removable prosthesis. Among these, 37 (12.3%) needed upper and lower dentures and 13 (4.3%) needed upper dentures alone (Table 4-11). In addition, 35 persons expressed need for fixed prosthesis.

Table 4-11: The needs for removable prosthesis expressed by elderly (n=300)

Removable prosthesis needed	n	%
Upper prosthesis	13	4.3
Upper & lower prosthesis	37	12.3
Want no removable prosthesis	250	83.3

When asked about ability to chew hard or tough food such as meat or skin, 27.6% of those edentulous elderly who do not want to have new dentures reported poor ability and 9.2% reported good ability to chew hard food (Figure 4-9). In comparison, 38.5% of those who wanted new dentures reported poor ability to chew hard food or tough food and 7.7% have good ability.

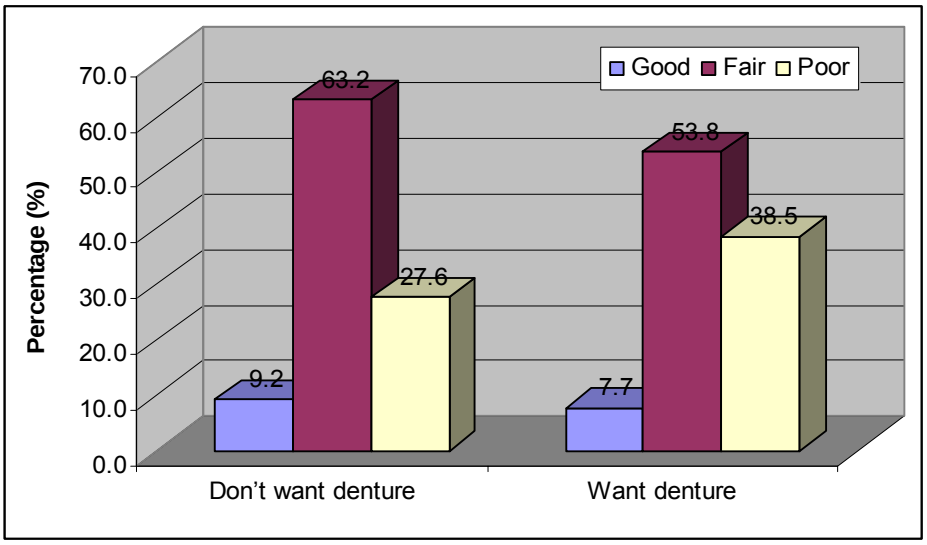

Figure 4-9: Ability to chew hard or tough food (n=300)

CHAPTER V
DISCUSSION

The population of Lao PDR has reached 5,722,000 including 3.9% of 65 years and over (40). The elderly population aged 60 years and over living in Vientiane Capital composed of more females than males (62.7%, 37.3% respectively). This is about 3:2 ratio. The age composition shows that most of these elderly are 70 years old or over. For Laos, the Healthy Life Expectancy (HALE) at birth for both male and female is only 47 years old [(41)]. Therefore, most of the elderly will live many unhealthy years. The results from the survey confirm this claim. It was found that 70 out of 71 of the subjects who had medical check-ups within the past years reported that they had medical problems. Furthermore, about 58% of them had diseases related to oral health status. The most common one, i.e. hypertension, was reported to be 28.2% and 14.1% had multiple diseases. This posed a great challenge to dental programs to improve quality of life.

The age and sex distributions of both municipality and non-municipality areas population are similar to the distribution of the total population. This shows that the population in the Vientiane capital is homogeneous in regard to sex and age.

5.1 Oral health problems and risk factors

The problems of tooth loss and edentulous condition among the Vientiane elderly are not substantial in relation to elderly in the countries in the same region. The mean toot loss is 9.2 teeth/person and only 2.3% are edentulous. Comparatively, Thai[1] elderly (age 60 – 74 years old) had slightly lower number of teeth left in their mouth which is 19.6 teeth/person. In addition, the edentulous proportion of the Vientiane elderly is lower than in Thai elderly which is 8.2% [(38)]. However, a survey conducted in Nigeria (age 65 or older) reported a lower percentage of edentulous case 1.3% [(9)].

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[1] Oral health survey in Thailand is used as the main comparison throughout the discussion since the country shares the border areas with Vientiane and the age is the same.

Tooth loss and edentulous among the elderly in Vientiane are the result of both high caries experience and periodontal diseases. This survey found 58.3% of elderly had missing teeth as a result of teeth extracted from caries, and 34% had extracted teeth due to periodontal problem. This is also supported by the finding that prevalence of caries and periodontal diseases are high. About 84% have had dental caries and only 0.7% had normal periodontal status.

When looking at number of teeth loss per person, dental caries and periodontal problem probably cause tooth loss to the same degree. While the mean toot loss is 9.2 teeth/person, the mean tooth loss due to cries is 4.5 teeth/person. It reveals that about half of the teeth were loss by caries, leaving the other half loss by periodontal problems.

However, the dental caries problem is not extreme when considered the age and compared to Thailand. The mean DMFT is 7.7 in Vientiane elderly, while it is 14.4 in the Thais [38]. This study was confirmed by the survey in Vientiane Municipality, Lao P.D.R in 2006 in a similar age group 65-74 years old. That survey found DMFT = 10.8 [42]. The validity of the caries prevalence and severity could not be ensured since the duplication of examination was not possible.

In this study, the data revealed 2 subjects (0.7 %) had root surface caries. The prevalence is very low compared to other studies such as 19.9% in Thailand [38] and 53.3% in Osaka [16]. This figure may be an under estimation because most teeth had calculus causing the assessment of root caries not possible.

CPI was used as indicator of periodontal status. The prevalence of periodontal diseases (CPI > 0) in elderly living in Vientiane is high. Only 0.7% had normal periodontal status compared to 1.2% in Thai elderly [38]. However, the study showed that severity is low (only 9.8% had pocket ≥ 4 mm.). Majority of them (89.5%) had CPI = 2 indicating teeth with calculus. Since the CPI index is initially constructed to assess treatment need, it may not reflex the complete picture of periodontal health. For instance, some of those elderly who had calculus also had bleeding upon gentle probing. Since the highest score is recorded, a portion of those who had gingival problem as well as calculus would not be evident in the CPI = 1. Furthermore, some also had very extended calculus with attachment loss and extensive bone loss, but no

periodontal pocket. These elderly were recorded as having CPI = 2; hence, the portion of elderly with severe periodontitis were concealed.

Compared to other studies, the percentage (9.8%) of the Vientiane elderly with CPI ≥ 3. is low. A survey Suvannakhet Laos PDR in 1997 reported prevalence of CPI to be 19.8% in the 55 – 64 years old elderly [43]. The Thai Oral Health Survey in 2001 showed a much higher percentage (61.6%) in this same age group [38]. These figures showed that periodontal problems in the Laos elderly were less severe than in the Thais. There are two possible explanations for the difference between the two surveys in Laos. One is that there is some improvement in the oral health of Laos in the past 10 years. The other reason is the examiner in this survey could not pass CPI probe through the heavy calculus deposit. Thus, the percentage of elderly having CPI more than 2 were an under estimated figure. In this case, scaling should have been done prior to probing.

The oral hygiene status was not good as suggested by high prevalence of CPI = 2 (89.5%). However, majority of them reported that they had good oral hygiene practice. Only 15 elderly wore removable prosthesis at night and almost all of elderly had cleaned their mouth and prosthesis everyday. It was found that 84.3% reported brushing their teeth everyday and 57.7% brush two times or more per day. The other 19.9% clean their mouth with other methods such as rinsing rubbing or combination, leaving only 0.7% did not clean their mouth at all. It could be assumed that although majority of the elderly brushed their teeth everyday, they could not remove plaque adequately, causing gingival inflammation and heavy calculus deposition. In addition, one third of them chewed areca nut, the habit that favored calculus formation.

Similarly to the demographic, the results (Table 4-2 to Table 4-4) showed that difference in tooth loss, dental caries, and periodontal status between municipality and non-municipality elderly were very small. This is quite different than what found in Thailand where there are differences between rural and urban areas [38]. Despite the difference in socio-economic status between the two groups, the population is homogeneous for age and sex and the oral health status is about the same. This may suggest that behavior risk factors for oral health are not so largely different between the two groups that they can cause significant difference in oral health status.

On the contrary, the prevalence of oral mucosal lesions is high. About half (49.7%) had at least one lesion. Compared to other studies in similar age group, the prevalence was intermediate. For example, in a U.S. elderly population surveyed in 1983, aged 65 years old, the prevalence of mucosal lesions was 23.1% [44]. Prevalence of oral mucosal lesions in Israel elderly aged 64 and older and in the UK elderly aged 60 years was as high as 60% and 68 % [45 - 46]. However, it is difficult to compare with other studies due to different categorization method.

The high prevalence lesions found in Vientiane elderly are melanin pigmentation (12.0%), red conditions of the tongue (10.0%), white lesions (7.3%), pseudo-membranous necrotic white lesion that could be scraped off (6.3%), and tumor (5.0%). The other lesions had less than 5% prevalence. Other studies show denture stomatitis to be among the most common lesions in elderly [21 – 22]. This is not the case in the Vientiane.

For the low percentage of elderly with denture stomatitis, it is probably because only 9.7% of elderly wore removable prosthesis with only 5.0% wore them to sleep. In addition, all of them cleaned their removable prosthesis regularly. In the survey in Israel and the UK, much higher percentage of elderly wore removable prosthesis, thus oral lesions related to denture wearing contributed to the higher prevalence of oral mucosal lesions [45– 46].

It can be seen that the most common lesions in the Vientiane elderly are those related to habits such as smoking, alcohol drinking, areca nut chewing, and placing snuff in the oral cavity. The results from questionnaire support this finding. It was found that 31.0% had history of chewing areca nut, 16.4% placing snuff in the mouth, 34.3% had smoking history, and 44.0% had alcohol drinking history. One fourth of the smokers and drinkers smoked and drank everyday.

For the prevalence of *C. albicans*, four levels were demonstrated by modified dip slide test method. This survey showed a high prevalence (75.2%). The presence of *C. albicans* was shown to be associated with denture wearing in other studies. In this study, the prevalence of *C. albicans* among denture wearing elderly was found to be 70.0%, and all of them had moderate level of *C. albicans* (level 1&2). The prevalence was higher than those reported by several studied which demonstrated that 41 – 66% of patients with denture had *C. albicans* [47 – 50].

When examining the elderly who did not wear denture, the prevalence of *C. albicans* was a little higher (75.7%) and 6.8% had high level of *C. albicans* (level 3&4). Since both groups had comparable high prevalence of *C. albicans*, wearing denture alone might not be the reason that high prevalence was found in the Vientiane elderly.

Other factors might be saliva reduction and poor oral hygiene. The survey found that majority (71.7%) had some sign & symptom of hyposalivation. In addition, out of these elderly, 70.6% were *C. albicans* positive. As discussed earlier, the majority of the Vientiane elderly had poor oral hygiene. The high carbohydrates diet among the elderly in Vientiane might contribute to the presence of *C. albicans*, as suggested by the finding from a study in primate [51].

Xerostomia was determined by assessing subjective complaints of oral dryness with the confirmation of clinical signs of hyposalivation. This study found 34.3% of the Vientiane elderly had both oral dryness complaint and hyposalivation. The percentage of elderly with dryness complaint without hyposalivation is lower than the percentage of hyposalivation without complaint (9.0% and 43.7% respectively). These figures reflected that some elderly already had some sign of reduced salivary flow but might not feel the dryness yet. Therefore, xerostomia could become a little higher in a course of time.

In comparison to other studies in similar age group, the prevalence of oral dryness complaints in the Vientiane elderly was about the same. It was found that 36.0% of Vientiane elderly had the complaint of dry mouth sensation, while 46% of 74 – 87 years old Finnish and 39% of elderly aged 65 years and older living in Florida reported that their mouth sometime felt dry [31 – 32].

History of medication taking is the major causes of the hyposalivation and oral dryness conditions. It was found that, in the Vientiane elderly, taking medication might contribute to oral dryness complaint but not hyposalivation. The survey found only 35.0% who took medication had oral dryness complaints but only 15.2% had not. But, 27.7% of those who took medication had hyposalivation signs, close to 32.9% in those who had no hyposalivation.

5.2 Treatment needs

This survey found that the needs for prevention, curative, and restoration of functions for the elderly living in Vientiane Capital were high.

The caries assessment showed that the mean DMFT was high but filled teeth were not found at all among all elderly examined. This reflected the needs for both dental caries prevention to have lower mean DMFT and restoration to have decayed teeth filled. Since most elderly brush their teeth with fluoride toothpaste at least twice a day, they probably had knowledge about caries prevention. Therefore, caries prevention measures have to include other risk factors such as effective brushing, and dietary habits, and other preventive services such as sealants and topical fluoride at young age.

The high prevalence of elderly with CPI = 2 indicated the needs for oral hygiene instruction as well as scaling. However, the calculus deposition in many elderly was very extensive with loss of attachment and extensive bone loss, scaling alone might not improve periodontal health. A more complex periodontal treatment combined with the assessment for the functional teeth is required. This is not possible under the current limited number of the dental personnel and budget. Therefore, preventive measures for periodontal problems at younger age are strongly indicated.

The survey also showed that a good portion of elderly had risk behavior such as smoking, alcohol drinking, chewing areca nut, and placing snuff. Since these behaviors relate to many oral health problems, the need for oral health education to increase knowledge and improve behavior is strongly indicated as well.

Regarding the needs for prosthesis, normative needs and perceived needs were assessed. The study found a mismatch between tooth loss and tooth replacement. About 92.0% had loss some teeth, but only 9.7% currently wore removable prosthesis and none had any other type of prosthesis. Moreover, seven were edentulous but only five of them wore complete dentures. This was because the perceived need was low. This is demonstrated by the mismatch between the needs assessed by dentist (taken periodontal status and financial problem into consideration) and the needs expressed by the elderly themselves (Table 4-10 – Table 4-11). When the needs for prosthesis were assessed by the dentist, 91.0% needed to have removable prosthesis, with 75.4%

needed both upper and lower prosthesis. On the contrary, only 16.7% of the elderly expressed that they wanted removable prosthesis, with 12.3% wanted to have both upper and lower prosthesis. Since the number of dentists is limited, the priority of treatment should be on elderly who had both normative needs and perceived needs to ensure the most effective use of resources.

The function as assessed by reported ability to chew hard food might contribute very little to the expressed needs for prosthesis. As seen by the study, the difference between the percentage of poor ability to chew reported by those who did not want prosthesis and those who wanted prosthesis was small (27.6% and 38.5% respectively). Other conditions such as esthetics might contribute to the expressed needs for prosthesis. The results from this study suggested that further study should be on the determinants of perceived needs and how oral health status contributed to elderly quality of life.

CHAPTER VI
CONCLUSION

In oral health survey, data about oral health status of the elderly groups is used to monitor the overall oral health services provided for the population [11]. It can be seen from this study that the overall services provided to the population in the Vientiane Capital is still inadequate not only for prevention and promotion but also for restorative and prosthetics. All of the decayed teeth have not been restored and almost all missing teeth had not been replaced.

The data about oral health of the elderly groups is also important for the oral health care planning. This is because the population profile is changing toward larger elderly age group and oral health problems of the elderly are different from problems in younger age groups. Except for oral hygiene, the oral health problems of the Vientiane elderly were not substantially high compared to other studies. However, dental caries, periodontal diseases, hyposalivation, oral mucosa lesions, and *C. albicans* prevalence will increase in prevalence and severity as the number of elderly is rapidly growing and live longer with medical problems. Proper planning is required to cope with these problems to come.

When the dentist took all issues into consideration, it showed that the treatment needs to have good oral health is very high. A very high percentage of the elderly need to have periodontal treatment and almost all (91%) of the elderly will need to have removable prosthesis. Under the current situation, it is not plausible to provide these services to all in the near future.

With the limitation of the dental personnel and budget for oral health care, the oral health care planning needs to prioritize prevention and promotion programs, especially to increase self care ability. Particularly, improvement in the method and the effectiveness of the tooth brushing as well as reducing risk habits such as areca nut chewing, snuffing, smoking, and alcohol drinking are necessary. Changing attitudes so the elderly think that having teeth is important for eating is also required.

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APPENDIX

APPENDIX A

ORAL HEALTH EXAMINATION FORM

☐☐ ☐☐ ☐☐☐☐ ID Number ☐☐☐☐

Examination date

1. Dental status

18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28

48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38

2. CPI

3. Oral mucosa lesions

3.1 Red lesions

☐ Solitary red lesions

☐ Generalized red conditions and multiple ulcerations

☐ Red conditions of the tongue

3.2 White lesions

☐ White lesions (unable to scrape off)

☐ Pseudo-membranous necrotic white lesions (able to scrape off)

3.3 Mixed red and white lesions

☐ Red and white lesions (keratotic component)

☐ Red and white lesions (necrotic component)

3.4

☐ Tumor

3.5

☐ Pigmented lesions

4. Hyposalivation

☐ Dry, friable, and glazed mucosa

☐ No saliva in the floor of the mouth

☐ Thin line of frosty saliva

☐ Mucosa stick to mouth mirror

☐ Red tongue with de-papillation

5. Prosthetic condition

Existing prosthetics

	Upper	Lower
Complete denture	☐…….. Pieces	☐…… Pieces
Removable partial denture	☐…….. Pieces	☐ …….. Pieces
Fixed partial denture:		
Crown(s)	☐ …….. Units	☐ …….. Units
Bridge(s)	☐ …….. Units	☐ …….. Units
Implant(s)	☐ …….. Units	☐ …….. Units
Extra facial prosthesis	☐ …….. Pieces	☐ …….. Pieces

Others …….

Prosthetics needs

	Upper	Lower
Complete denture	☐	☐
Partial denture	☐ …….. Pieces	☐ …….. Pieces
	Note: …….	
Crown(s)	☐ …….. Units	☐ …….. Units
Bridge(s)	☐ …….. Units	☐ …….. Units
Implant(s)	☐ …….. Units	☐ …….. Units
Max-face prosthetics	☐ …….. Pieces	☐ …….. Pieces

Others ……..

APPENDIX B

QUESTIONNAIRE

☐☐ ☐☐ ☐☐☐☐ ID Number ☐☐☐☐

Interview date

I. Demographic

1. Name …… Surname ……
2. Date of birth ☐☐ ☐☐ ☐☐☐☐
3. Sex ☐ Male ☐ Female

II. General Health

1. Have you had medical check up or seen doctor within the past 1 year?
   - ☐ No
   - ☐ Yes and have no medical problem
   - ☐ Yes and have medical problem
     - ☐ Hypertension
     - ☐ Diabetes
     - ☐ HIV/AIDS
     - ☐ Radiation
     - ☐ Chemotherapy
     - ☐ Others: ……
       ……
       ……

2. Are you taking any medications? ☐ Yes ☐ No

   What's kind? ……..…..

   How many types? ...……..…

III Social history

1. Do you smoke?

- ☐ Yes
- ☐ Used to
- ☐ Never (skip to 9)

2. For those who smoke or used to smoke, how long have/had you been smoking?

- ☐ Less than 1 year
- ☐ 1 – 5 years
- ☐ 6 – 10 years
- ☐ More than 10 years

3. What kind of cigarette do you smoke?

- ☐ Cigarette
- ☐ Cigar
- ☐ Hand-made cigarette
- ☐ Cheroot
- ☐ Other (Specify) ……..

4. How often do you smoke?

- ☐ Once in while (Skip to 9)
- ☐ 1 to 3 days in a week
- ☐ 4 to 6 days in a week
- ☐ Everyday (7 days in a week)

5. If you smoke 1 – 7 days in a week, how many cigarettes do you smoke per day?

…… cigarettes

6. Do you drink alcohol?

- ☐ Yes
- ☐ Used to
- ☐ Never (Skip to 12)

7. How often do you drink?

- ☐ Once in while (Skip to 12)
- ☐ 1 to 3 days in a week
- ☐ 4 to 6 days in a week
- ☐ Everyday (7 days in a week)

8. If you drink 1 – 7 days in a week, how many glasses do you drink in a day?

…… glass

9. Do you chew areca nut?

- ☐ Yes
- ☐ Used to
- ☐ Never

10. Do you place snuff in your mouth?

- ☐ Yes
- ☐ Used to
- ☐ Never

IV Oral health care practice

For those who lost all teeth and wear no removable prosthetics

1. How do you clean your mouth?

- ☐ Do nothing
- ☐ Rinse with water
- ☐ Others (specify) ……..

For those who wear removable prosthetics

2. How do you clean your denture?

- ☐ Do nothing
- ☐ Rinse with water
- ☐ Rinse with denture cleaning solution
- ☐ Brush
- ☐ Others (specify) ……..

3. Do you wear denture to sleep?

- ☐ Yes
- ☐ No

4. If you do not wear denture to sleep, how do you keep it/them?

- ☐ Immerse in water
- ☐ Others (specify) ……..

The following questions are for those who have teeth

5. How do you clean your teeth (the main method)?

- ☐ Brush
- ☐ Rinse with water
- ☐ Rinse with salt water
- ☐ Rub with fingers
- ☐ Rub with stick
- ☐ Do nothing
- ☐ Others (specify) ……

(Skip to 9)

For those who brush their teeth

6. How many times do you usually brush your teeth in a day?

- ☐ 1 time
- ☐ 2 times
- ☐ 3 times
- ☐ More than 3 times
- ☐ Others (specify) ……..

7. What kind of toothbrush do you use?

- ☐ Soft bristle brush
- ☐ Hard bristle brush
- ☐ Others (specify) ……..

8. What kind of toothpaste do you use?

……

For everyone

9. Do you regularly use any of the followings to clean your teeth?

Dental floss	☐ Yes	☐ No
Mouthwash	☐ Yes	☐ No

V Self report oral health status

1. How do describe your ability to chew hard/tough food such as meat or skin?

- ☐ Good
- ☐ Fair
- ☐ Poor

2. Do you have the following problems?

Sore/painful gum	☐ Yes	☐ No
Sore/painful when chewing	☐ Yes	☐ No
Bad breathe	☐ Yes	☐ No
Dry mouth sensation	☐ Yes	☐ No
Need to sip water frequently	☐ Yes	☐ No
Difficulty wallowing dry foods	☐ Yes	☐ No
Burning sensation	☐ Yes	☐ No
Bitter or metallic taste	☐ Yes	☐ No
Loss of taste sensation	☐ Yes	☐ No
Difficulty speaking	☐ Yes	☐ No

VI Self-perceived needs for dental care

1. Do feel that you need dental treatment?

- ☐ Yes
- ☐ No (Skip to 3)

2. If yes, why do you need to see a dentist?

……

……

For those who are completely edentulous in one or both arches and don't have denture

3. Do you need denture(s)? ☐ Yes ☐ No

If yes, which one?

- ☐ Upper jaw
- ☐ Lower jaw

For those who wear removable dentures

4. What do you think about your denture(s)?

4.1 Upper denture

Fitting ☐ Good
☐ Fair
☐ Poor

Appearance ☐ Good
☐ Fair
☐ Poor

4.2 Lower denture

Fitting ☐ Good
☐ Fair
☐ Poor

Appearance ☐ Good
☐ Fair
☐ Poor

5. Do you normally wear your denture(s) when eating?

☐ Yes
☐ No Why not? ……..

6. Do you normally wear your denture(s) when talking?

☐ Yes
☐ No Why not? ……..

7. Do you need new denture(s)?

Upper jaw ☐ Yes ☐ No
If yes, why? ……..

Lower jaw ☐ Yes ☐ No
If yes, why? ……..

For those who are partially edentulous in one or both arches

8. Do you need fixed tooth replacement? ☐ Yes ☐ No

9. If yes, how many areas? Upper left ……. Upper right ……
Lower left…… Lower right ……

ພາກຜະໜວກ A

ແບບກວດສຸຂະພາບປາກແລະແຂ້ວ

□□ □□ □□□□ ເລກທີກວດ □□□□

ວັນ ເດືອນ ປີ

1. ພະຍາດແຂ້ວແມ

18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28

48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38

2. ໂລກປະລິທັນ

3. ຮອຍເຍື່ອເມືອກຕ່າງໆໃນຊ່ອງປາກ

3.1 ຮອຍແດງ

☐ ຮອຍແດງແຍກດ່ຽວ

☐ ຮອຍແດງທົ່ວໄປຈາກເຊື້ອເຫັດລາແລະແຜອັກເສບຕ່າງໆ

☐ ຮອຍແດງຕ່າງໆທີ່ພົບບໍລິເວນລີ້ນ

3.2 ຮອຍຂາວ

☐ ຮອຍຂາວຕ່າງໆ (ບໍ່ສາມາດຊູດອອກໄດ້)

☐ ເນື້ອເຍື່ອຮອຍຂາວຕ່າງໆ (ສາມາດຊູດອອກໄດ້)

3.3 ຮອຍແດງແລະຮອຍຂາວຮວມກັນ

☐ ຮອຍແດງແລະຮອຍຂາວ (ບໍ່ສາມາດຊູດອອກໄດ້)

☐ ຮອຍແດງແລະຮອຍຂາວ (ສາມາດຊູດອອກໄດ້)

3.4

☐ ເນື້ອງອກ

3.5

☐ ເມັດສີຕ່າງໆ

4. ພາວະລົດລົງການໄຫຼຂອງນ້ຳລາຍ

☐ ແຫ້ງ, ແຂງກະດ້າງ, ເຍື່ອເມືອກເຄືອບເປັນເປັນເງົາ

☐ ນ້ຳລາຍແຫ້ງບໍລິເວນພື້ນປາກ

☐ ນ້ຳລາຍຂາວຂຸ້ນເປັນເສັ້ນບາງໆ

☐ ເຍື່ອເມືອກຕິດເວລາໃຊ້ແວ່ນກວດ

☐ ຮອຍແດງເປັນກ້ຽບແລະມີຕິ່ງບໍລິເວນລີ້ນ

5. ພາກແຂ້ວທຽມ

ຜູ້ທີ່ໃສ່ແຂ້ວທຽມ

		ເທິງ		ລຸ່ມ	
5.1	ແຂ້ວທຽມຄົບຊຸດ	☐	ປ່ຽງ	☐	ປ່ຽງ
5.2	ແຂ້ວທຽມພາກສ່ວນ	☐	ປ່ຽງ	☐	ປ່ຽງ
5.3	ແຂ້ວທຽມຊະນິດຕິດແໜ້ນ:				
5.3.1	ໃສ່ແຂ້ວຄອບຕິດແໜ້ນ	☐	ເຫຼັ້ມ	☐	ເຫຼັ້ມ
5.3.2	ໃສ່ແຂ້ວຂົວຕິດແໜ້ນ	☐	ເຫຼັ້ມ	☐	ເຫຼັ້ມ
5.3.3	ຮາກທຽມ	☐	ເຫຼັ້ມ	☐	ເຫຼັ້ມ
5.3.4	ໃບໜ້າທຽມ	☐	ສິ້ນ	☐	ສິ້ນ
5.3.5	ອື່ນໆ.....				

ຜູ້ທີ່ຕ້ອງການໃສ່ແຂ້ວທຽມ

		ເທິງ		ລຸ່ມ	
5.4	ແຂ້ວທຽມຄົບຊຸດ	☐	ປ່ຽງ	☐	ປ່ຽງ
5.5	ແຂ້ວທຽມພາກສ່ວນ	☐	ປ່ຽງ	☐	ປ່ຽງ
5.6	ແຂ້ວທຽມຊະນິດຕິດແໜ້ນ:				
5.6.1	ໃສ່ແຂ້ວຄອບຕິດແໜ້ນ	☐	ເຫຼັ້ມ	☐	ເຫຼັ້ມ
5.6.2	ໃສ່ແຂ້ວຂົວຕິດແໜ້ນ	☐	ເຫຼັ້ມ	☐	ເຫຼັ້ມ
5.6.3	ຮາກທຽມ	☐	ເຫຼັ້ມ	☐	ເຫຼັ້ມ
5.6.4	ໃບໜ້າທຽມ	☐	ສິ້ນ	☐	ສິ້ນ

ໝາຍເຫດ.....

ພາກຜະໜວກ B

ແບບສອບຖາມ

☐☐ ☐☐ ☐☐☐☐ ເລກທີ່ກວດ ☐☐☐☐

ວັນ ເດືອນ ປີ

I. ຂໍ້ມູນທົ່ວໄປ

1. ຊື່ແລະນາມສະກຸນ .....

2. ວັນເດືອນປີເກີດ ☐☐ ☐☐ ☐☐☐☐

3. ເພດ ☐ ຊາຍ ☐ ຍິງ

II. ສຸຂະພາບທົ່ວໄປ

2.1 ຄັ້ງລ້າສຸດທີ່ທ່ານໄດ້ໄປກວດສຸຂະພາບຫຼືພົບທ່ານໝ1ປີຜ່ານມາ?

☐ ບໍ່ເຄີຍ

☐ ເຄີຍໄປແລະມີບັນຫາສຸຂະພາບ

☐ ເຄີຍໄປແຕ່ບມີບັນຫາ

☐ ຄວາມດັນເລືອດສູງ

☐ ເບົາຫວານ

☐ ໂລກເອດ/ພຸມຄຸ້ມກັນບົກຜອງ

☐ ຮັບການສາຍແສງ

☐ ບຳບັດເຄມີ

☐ ອື່ນໆ.....

2.5 ທ່ານເຄີຍກິນຢາປະເພດໃດມາກ່ອນ?

ຊະນິດໃດແດ່? .....

ມີຈັກຊະນິດ? .....

III <u>ພຶດຕິກຳສ່ວນຕົວ</u>

3.1 ທ່ານສູບຢາບໍ່?

☐ ສູບ

☐ ເຄີຍສູບແຕ່ເຊົາແລ້ວ

☐ ບໍ່ເຄີຍສູບ (ຂ້າມໄປ 9)

3.2 ສຳລັບຜູ້ທີ່ສູບຫຼືເຄີຍສູບຢາແຕ່ເຊົາແລ້ວດົນປານໃດແລ້ວທີ່ທ່ານໄດ້ສູບ?

☐ ຕ່ຳກ່ວາ 1 ປີ

☐ 1 - 5 ປີ

☐ 6- 10ປີ

3.3 ທ່ານເຄີຍສູບຢາຊະນິດໃດ? (ເລືອກໄດ້ຫລາຍຄຳຕອບ)

☐ ຢາສູບ

☐ ຊິກາ

☐ ຢາພັນ

☐ ຊິກາຕັດຫົວຕັດຫາງ

☐ ອື່ນໆ(ສະເພາະເຈາະຈົງ) .....

3.4 ທ່ານສູບຢາເລື້ອຍບໍ?

☐ ບ້າງຄັ້ງຄາວ

☐ 1-3 ມື້ຕໍ່ອາທິດ

☐ 4 -6 ມື້ ຕໍ່ອາທິດ

☐ ທຸກໆມື້

3.5 ທ່ານສູບຢາຈັກກ໋ອກ/ມື້ (ສຳລັບຜູ້ສູບຢາທຸກມື້) ?

.....

3.6 ທ່ານດື່ມເຫຼົ້າບໍ?

☐ ດື່ມ

☐ ເຄີຍດື່ມແຕ່ເຊົາແລ້ວ

☐ ບໍ່ເຄີຍ (ຂ້າມໄປຂໍ້ 12)

3.7 ທ່ານດື່ມເຫຼົ້າເລື້ອຍບໍ?

☐ ບາງຄັ້ງຄາວ

☐ 1-3 ມື້ຕໍ່ອາທິດ

☐ 4 ຫາ 6 ມື້ຕໍ່ອາທິດ

☐ ທຸກໆມື້

3.8 ທ່ານດື່ມເຫລົ້າສະເລ່ຍມື້ໜຶ່ງຈັກຈອກ?.....ຈອກ (ສຳລັບຜູ້ດື່ມເຫຼົ້າທຸກມື້)

3.9 ທ່ານຄ້ຽວໝາກບໍ?

☐ ຄ້ຽວໝາກ

☐ ເຄີຍຄ້ຽວໝາກ

☐ ບໍ່ເຄີຍ

3.10 ທ່ານໃຊ້ຢານັດບໍ່?

☐ ດຶ່ມ

☐ ເຄີຍດຶ່ມແຕ່ເຊົາແລ້ວ

☐ ບໍ່ເຄີຍ

IV ການຮັກສາສຸຂະພາບໃນຊອງປາກ

ສຳລັບຜູ້ທີ່ສູນເສຍແຂ້ວທັງໝົດແລະບໍ່ໄດ້ໃສ່ແຂ້ວທຽມ

4. 1 ແຕ່ລະວັນທ່ານທຳຄວາມສະອາດໃນຊອງປາກແນວໃດ?

☐ ບໍ່ໄດ້ທຳຄວາມສະອາດເລີຍ

☐ ບ້ວນດ້ວຍນ້ຳທຳມະດາ

☐ ອື່ນໆ (ສະເພາະເຈາະຈົງ).....

ສຳລັບຜູ້ທີ່ໃສ່ແຂ້ວທຽມ

4.2 ທ່ານທຳຄວາມສະອາດແຂ້ວທຽມຂອງທ່ານແນວໃດ?

☐ ບໍ່ໄດ້ທຳຄວາມສະອາດເລີຍ

☐ ລ້າງດ້ວຍນ້ຳທຳມະດາ

☐ ລ້າງດ້ວຍນ້ຳຢາບ້ວນປາກ

☐ ຖູແຂ້ວ

☐ ອື່ນໆ (ສະເພາະເຈາະຈົງ) .....

4. 3 ທ່ານໃສ່ແຂ້ວທຽມໃນເວລານອນບໍ່?

☐ ໃສ່

☐ ບໍ່ໄດ້ໃສ່

4. 4 ຖ້າບໍ່ໄດ້ໃສ່ແຂ້ວທ່ຽມໃນເວລາອນ, ທ່ານໄດ້ເກັບຮັກສາແນວໃດ?

☐ ແຊ່ໄວ້ໃນຈອກນ້ຳ

☐ ອື່ນໆ(ສະເພາະເຈາະຈົງ) .....

ຕິດຕາມດ້ວຍຄຳຖາມຜູ້ທີ່ຍັງມີແຂ້ວ

4.5 ວິທີຫຼັກຂອງທ່ານທີ່ທ່ານທຳຄວາມສະອາດແຂ້ວຂອງທ່ານດ້ວຍວິທີໃດ ?

☐ ຖູດ້ວຍແປງ

☐ ຖູດ້ວຍມື

☐ ຖູດ້ວຍໄມ້ (ຂ້າມໄປ 9)

☐ ລ້າງດ້ວຍນ້ຳທຳມະດາ

☐ ລ້າງດ້ວຍນ້ຳເກືອ

☐ ອື່ນໆ.....

ສຳລັບຜູ້ທີ່ຖູແຂ້ວ

4.6 ປົກະຕິທ່ານຖູແຂ້ວຂອງທ່ານຈັກເທື່ອຕໍ່ມື້?

☐ 1 ເທື່ອ

☐ 2 ເທື່ອ

☐ 3 ເທື່ອ

☐ ຫຼາຍກ່ວາ 3 ເທື່ອ

☐ ອື່ນໆ (ສະເພາະເຈາະຈົງ) .....

4. 7 ທ່ານໃຊ້ແປງສີຟັນຊະນິດໃດ?

☐ ແປງຊະນິດອ່ອນ

☐ ແປງຊະນິດແຂງ

☐ ອື່ນໆ (ສະເພາະເຈາະຈົງ) .....

4. 8 ທ່ານໃຊ້ຢາສີຟັນຊະນິດໃດ?.....

<u>ສຳລັບທຸກໆຄົນ</u>

4. 9 ປົກະຕິທ່ານທຳຄວາມສະອາດແຂ້ວຂອງທ່ານດ້ວຍວິທີອື່ນໆ?

☐ ໄໝຂັດແຂ້ວ

☐ ນ້ຳຢາບ້ວນປາກ

V <u>ລາຍງານສະຖານະພາບສຸຂະພາບໃນຊອງປາກ</u>

5.1 ທ່ານສາມາດພັນລະນາການຄ້ຽວອາຫານແຂງ/ອາຫານໜຽວເຊັ່ນວ່າຊີ້ນຫຼືໜັງ

☐ ດີ

☐ ພໍໃຊ້

☐ ບໍ່ດີ

5.2 ທ່ານມີບັນຫາດັ່ງທີ່ຕາມມານີ້ບໍ?

ອັກເສບ/ເຈັບເຫືອກ	☐	ເຈັບ	☐	ບໍ່ເຈັບ
ອັກເສບ/ເຈັບເວລາຫ້ຍາ	☐	ເຈັບ	☐	ບໍ່ເຈັບ
ກິ່ນປາກ	☐	ມີ	☐	ບໍ່ມີ
ຮູ້ສຶກວ່າປາກແຫ້ງ	☐	ມີ	☐	ບໍ່ມ
ຕ້ອງການຈິບນ້ຳເລື້ອຍໆ	☐	ຕອ້ງການ	☐	ບໍ່ຕອ້ງການ
ເວລາກືນອາຫານແຫ້ງຍາກ	☐	ຍາກ	☐	ບໍ່ຍາກ
ເຈັບ/ຮູ້ສຶກວ່າແສບໄໝ້ໃນປາກ	☐	ຮູ້ສຶກ	☐	ບໍ່ຮູ້ສຶກ
ມີລິດຂົມຫຼືລິດຊາດຄ້າຍໂລຫະ	☐	ມີ	☐	ບໍ່ມີ
ບໍ່ມີລິດຊາດ	☐	ມີ	☐	ບໍ່ມີ

ບໍ່ສາມາດເວົ້າໄດ້ດີ ☐ ແມ່ນ ☐ ບໍ່ແມ່ນ

VI ຄວາມຕ້ອງການຮັກສາສູຂະພາບໃນຊອງປາກ

6.1 ທ່ານຮູ້ສຶກວ່າຕອ້ງການປິ່ນປົວແຂ້ວບໍ່?

☐ ຕ້ອງການ

☐ ບໍ່ຕ້ອງການ (ຂ້າມໄປຂໍ້ 3)

6.2 ຖ້າຕ້ອງການ, ເປັນຫັຍງຕອ້ງການໄປພົບທັນຕະແພດ?

.....

.....

ສຳລັບຜູ້ທີ່ສູນເສຍແຂ້ວໝົດປາກໃນເບື້ອງໜຶ່ງຫຼືທັງສອງເບື້ອງແລະບໍ່ມີແຂ້ວທຽມ

6.3 ທ່ານຕ້ອງການແຂ້ວທ່ຽມບໍ່?

☐ ຕ້ອງການ

☐ ບໍ່ຕ້ອງການ

ຖ້າຕ້ອງການ, ຊະນິດໃດ?

☐ ເບື້ອງເທິງ (ຄາງກະໄຕເທິງ)

☐ ເບື້ອງລຸ່ມ (ຄາງກະໄຕລຸ່ມ)

ສຳລັບຜູ້ທີ່ໃສ່ແຂ້ວທຽມ

6.4 ທ່ານຄິດກ່ຽວກັບແຂ້ວທຽມແນວໃດ?

6.4.1 ແຂ້ວທຽມເບື້ອງເທິງ

ການຍຶດຕິດ ☐ ດີ

☐ ພໍໃຊ້ໄດ້

☐ ບໍ່ດີ

ລັກສະນະ ☐ ດີ

☐ ພໍໃຊ້ໄດ້

☐ ບໍ່ດີ

6.4.2 ແຂ້ວທຽມເບື້ອງລຸ່ມ

ການຍຶດຕິດ ☐ ດີ

☐ ພໍໃຊ້ໄດ້

☐ ບໍ່ດີ

ລັກສະນະ ☐ ດີ

☐ ພໍໃຊ້ໄດ້

☐ ບໍ່ດີ

6. 5 ຕາມປົກກະຕິທ່ານໃສ່ແຂ້ວທຽມກິນອາຫານບໍ່?

☐ ໃສ່

☐ ບໍ່ໃສ່ ເປັນຫັຍໆ? .....

6.6 ຕາມປົກກະຕິທ່ານໃສ່ແຂ້ວທຽມກເວລາສົນທະນາບໍ່?

☐ ໃສ່

☐ ບໍ່ໃສ່ ເປັນຫັຍໆ? .....

6.7 ທ່ານຕອ້ງການແຂ້ວທຽມໃໝ່ບໍ່?

ແຂ້ວທຽມເບື້ອງເທິງ ☐ ຕ້ອງການ ☐ ບໍ່ຕ້ອງການ

ຖ້າຕ້ອງການ, ເປັນຫັຍໆ?.....

ແຂ້ວທຽມເບື້ອງລຸ່ມ ☐ ຕ້ອງການ ☐ ບໍ່ຕ້ອງການ

ຖ້າຕ້ອງການ, ເປັນຫັຍໆ?.....

<u>ສຳລັບຜູ້ທີ່ເສຍແຂ້ວຂ້າງໜຶ່ງຫຼືທັ້ງສອງຂ້າງ</u>

6.8 ທ່ານຕ້ອງການແຂ້ວຕິດແໜ້ນບໍ່?

☐ ຕ້ອງການ ☐ ບໍ່ຕ້ອງການ

6. 9 ຖ້າຕ້ອງການ, ທ່ານຕ້ອງການບໍລິເວນໃດແດ່?

☐ ຊ້າຍເທິງ ☐ ຂວາເທິງ

☐ ຊ້າຍລຸ່ມ ☐ ຂວາລຸ່ມ

Lao's People Democratic Republic
Peace Independence Democracy Unity Prosperity
****

Ministry of Public health
University of Health Science
Ethical Committees

Tel: 85621 240854
Fax: 240854
No: ...001...../08

Ethical Clearance

According to the ethical committees' declaration of the University of Health Science, Number: 0174/UHS, Date 22/01/200.

According to letter of request for ethical clearance of Mr. Vatsana Chanthamalinh on for research entitled: " The oral health of elderly people in Vientiane, Laos"

The ethical committees of University of Health Sciences approved the research proposal of this study before it is initiated. This study is committed in compliance with local requirements, to confirm that it is without the physical and psychological harm of the participants as well as the ethical issues for health research. However, we believed that this study/project will contribute to a great importance of health promotion; it will also be a direct and indirect participants' beneficial and to be a crucial database in the further research of the University of Health Sciences and Health sectors in the country.

Hence, the ethical committees of University of Health Sciences sincerely agreed to approve in term of ethical clearance for this study/project.

1. President .....Dr. Sanyvourat Saramany
2. Vice President.....Dr. Thiphakesone Douangchack
3. Committee.....Dr. Alongkone Phengsavanh
4. Committee.....Lect. Khampaseuth Souvannarath

Vientiane, Date 28/02/ 2008

President of University of Health Sciences

Assoc. prof. Dr. Somsak CHANSADA

ສາທາລະນະລັດ ປະຊາທິປະໄຕ ປະຊາຊົນລາວ
ສັນຕິພາບ ເອກະລາດ ປະຊາທິປະໄຕ ເອກະພາບ ວັດທະນາຖາວອນ
****

ກະຊວງສາທາລະນະສຸກ
ມະຫາວິທະຍາໄລວິທະຍາສາດສຸຂະພາບ
ຄະນະກຳມະການຈັນຍາທຳແພດ

ແຟັກ : 85621 240854
ໂທ : 240854
ເລກທີ 007 /08

ໃບອະນຸມັດຈັນຍາທຳ

- ອີງຕາມ: ການຕົກລົງເຫັນດີ ຂອງຄະນະຈັນຍາທຳການຄົ້ນຄ້ວາຂອງ ຄະນະມະຫາວິທະຍາໄລ ວິທະຍາສາດສຸຂະພາບ, ສະບັບເລກທີ 0174/ມວສ, ລົງວັນທີ: 22/01/2001.

- ອີງຕາມ: ໃບສະເໜີ ຂໍອະນຸມັດຈັນຍາທຳ ການຄົ້ນຄວ້າ ຂອງ ທ້າວ. ວາດສະໜາ ຈັນທະມາລິນ ໃນຫົວຂໍ້ ການສຶກສາ ກ່ຽວກັບ: " The oral health of elderly people in Vientiane, Laos"

ຄະນະກຳມະການດ້ານຈັນຍາທຳແພດ ມະຫາວິທະຍາໄລວິທະຍາສາດສຸຂະພາບ, ໄດ້ທຳການພິຈາລະນາຫົວຂໍ້ການຄົ້ນຄ້ວາຫົວຂໍ້ດັ່ງກ່າວ ແລະ ເຫັນວ່າການຄົ້ນຄ້ວານີ້ຈະບໍ່ສົ່ງຜົນກະທົບທາງດ້ານຮ່າງກາຍ ແລະ ຈິດໃຈຂອງຜູ້ທີ່ເຂົ້າຮ່ວມໃນການສຶກສາ ແລະ ບໍ່ແຕະຕ້ອງເຖິງບັນຫາຈັນຍາທຳແພດການສຶກສານີ້ ຈະມີຜົນປະໂຫຍດໂດຍທາງອ້ອມແກ່ກຸ່ມຕົວຢ່າງ ທີ່ເຂົ້າຮ່ວມໃນການສຶກສາ ແລະ ເປັນຂໍ້ມູນພື້ນຖານທີ່ ສຳຄັນໃນການສຶກສາຄັ້ງຕໍ່ໄປໃນຄະນະອື່ນໆ ຂອງມະຫາວິທະຍາໄລວິທະຍາສາດສຸຂະພາບ ແລະ ວົງ ການແພດລາວໃນອານາຄົດ.

ດັ່ງນັ້ນ, ຄະນະກຳມະການ ດ້ານຈັນຍາທຳແພດມະຫາວິທະຍາໄລວິທະຍາສາດສຸຂະພາບ, ຈຶ່ງ ຕົກລົງເຫັນດີ ອະນຸມັດໃນແງ່ຈັນຍາທຳການແພດສຳລັບການຄົ້ນຄ້ວານີ້.

1. ດຣ. ສະນິວຸດ ສະລະມະນີ.....ປະທານ
2. ດຣ. ທິບພະເກສອນ ດວງຈັກ.....ຮອງປະທານ
3. ດຣ. ອາລົງກອນ ເພັງສະຫວັນ.....ກຳມະການ
4. ອ/ຈ ຄຳປະເສີດ ສຸວັນນະຣາຊ.....ກຳມະການ

ວຽງຈັນ ວັນທີ 28 / 02 / 2008
ຄະນະມະຫາວິທະຍາໄລວິທະຍາສາດສຸຂະພາບ

ສາທາລະນະລັດ ປະຊາທິປະໄຕ ປະຊາຊົນລາວ
ສັນຕິພາບ ເອກະລາດ ປະຊາທິປະໄຕ ເອກະພາບ ວັດທະນາຖາວອນ
****

ກະຊວງສາທາລະນະສຸກ
ມະຫາວິທະຍາໄລວິທະຍາສາດສຸຂະພາບ

ເລກທີ 125 /ມວສ 08
ນະຄອນຫຼວງວຽງຈັນ, ວັນທີ 3/3/2008

ພະແນກສາທາລະນະສຸກ ນະຄອນຫລວງວຽງຈັນ
ເລກທີ: 658
ລົງວັນທີ: 13/3/08

ໃບສະເໜີ

ຮຽນ: ທ່ານ ຫົວໜ້າພະແນກສາທາລະນະສຸກນະຄອນຫລວງວຽງຈັນ
ເລື້ອງ : ຂໍອະນຸຍາດລົງສຳພາດປະຊາຊົນທີ່ອາໃສຢູ່ເມືອງ ຈັນທະບູລີ, ໄຊເສດຖາ, ໄຊທານີ ແລະ ຫາດຊາຍຟອງ.

ຄະນະ ມະຫາວິທະຍາໄລວິທະຍາສາດການແພດ

ຂໍຖືເປັນກຽດຮຽນສະເໜີມາຍັງທ່ານດ້ວຍຈຸດປະສົງເພື່ອຂໍອະນຸຍາດໃຫ້ ດຣ. ວາດສະໜາ ຈັນທະມາລີນ ເຊິ່ງເປັນພະນັກງານຈາກ ມະຫາວິທະຍາໄລວິທະຍາສາດສຸຂະພາບ ລົງສຳພາດປະຊາຊົນ ທີ່ອາໃສຢູ່ເມືອງ ຈັນທະບູລີ, ໄຊເສດຖາ, ໄຊທານີ ແລະ ຫາດຊາຍຟອງ. ໃນຫົວຂໍ້ "ສຸຂະພາບຜົ້ງປາກຂອງກຸ່ມປະຊາກອນຜູ້ສູງອາຍຸໃນນະຄອນຫຼວງວຽງຈັນ, ສ ປ ປ ລາວ. 2008".
ຕັ້ງແຕ່ວັນທີ 24/3 - 24/4/08, ເພື່ອນຳເປັນຂໍ້ມູນເບື້ອງຕົ້ນໃຫ້ແກ່ບົດຄົ້ນຄ້ວາຂອງ ມະຫາວິທະຍາໄລວິທະຍາສາດສຸຂະພາບ.

ດັ່ງນັ້ນ, ຈຶ່ງຮຽນສະເໜີມາຍັງທ່ານເພື່ອພິຈາລະນາຕາມທາງຄວນດ້ວຍ.

ຮຽນມາດ້ວຍຄວາມເຄົາລົບ ແລະ ນັບຖື.

ຮ.ຄະນະ ມະຫາວິທະຍາໄລວິທະຍາສາດການແພດ

ດຣ.ລາລຸນຍະເດດ ສິດທິພັນ

ມະຫາວິທະຍາໄລວິທະຍາສາດສຸຂະພາບ ຖນົນສາມແສນໄທ ຂ້າງສະຖານທູດຝຣັ່ງ ນະຄອນຫຼວງວຽງຈັນ ໂທ 222883 ແຟັກ 214055

ພະແນກສາທາລະນະສຸກ ນະຄອນຫລວງວຽງຈັນ

ດຣ.ອິນລາວັນ ແກ້ວບຸນພັ
Dr. Inlavanh KEOBOUNPHAN

BIOGRAPHY

NAME	Mr. Vatsana Chanthamalinh
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