ประสิทธิภาพของแนวทางการปฏิบัติในการดูแลสุขภาพช่องปากต่อสภาวะสุขภาพช่องปากของผู้สูงอายุไทยที่อาศัยอยู่ในศูนย์บริการทางสังคม

นางสาวภัทรพร รัตนเกษตรสิน



วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาวิทยาศาสตรมหาบัณฑิต
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ปีการศึกษา 2557

# EFFECTIVENESS OF ORAL HYGIENE PRACTICE GUIDELINES ON ORAL HEALTH STATUS AMONG THAI ELDERLY RESIDING IN SOCIAL CARE FACILITIES

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A Thesis Submitted in Partial Fulfillment of the Requirements
for the Degree of Master of Science Program in Prosthodontics
Department of Prosthodontics
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| Thesis Title | EFFECTIVENESS OF ORAL HYGIENE PRACTICE GUIDELINES ON ORAL HEALTH STATUS AMONG THAI ELDERLY RESIDING IN SOCIAL CARE FACILITIES |
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ภัทรพร รัตนเกษตรสิน : ประสิทธิภาพของแนวทางการปฏิบัติในการดูแลสุขภาพช่องปากต่อสภาวะสุขภาพช่องปากของผู้สูงอายุไทยที่อาศัยอยู่ในศูนย์บริการทางสังคม (EFFECTIVENESS OF ORAL HYGIENE PRACTICE GUIDELINES ON ORAL HEALTH STATUS AMONG THAI ELDERLY RESIDING IN SOCIAL CARE FACILITIES) อ.ที่ปรึกษาวิทยานิพนธ์หลัก: ผศ. ทญ. ดร.อรพินท์ แก้วปลั่ง, อ.ที่ปรึกษาวิทยานิพนธ์ร่วม: ผศ. ทพ. ดร.เทวฤทธิ์ สมโคตร, 54 หน้า.

การศึกษานี้มีวัตถุประสงค์เพื่อประเมินประสิทธิภาพของแนวทางปฏิบัติในการดูแลสุขภาพช่องปากของผู้สูงอายุไทยที่อาศัยอยู่ในศูนย์บริการทางสังคม ตั้งแต่เดือนธันวาคม ปี พ.ศ. 2556 ถึงเดือนมิถุนายน ปี พ.ศ. 2557 ในศูนย์บริการทางสังคมของผู้สูงอายุ 2 แห่ง มีผู้เข้าร่วม จำนวน 33 คน และ 38 คน ตามลำดับ รวบรวมข้อมูลลักษณะทางสังคมประชากรและพฤติกรรมสุขภาพช่องปากโดยการสัมภาษณ์ และข้อมูลสภาวะสุขภาพช่องปากและสภาวะอนามัยช่องปากโดยการตรวจสภาวะช่องปาก จากนั้น 1 สัปดาห์ ให้แนวทางปฏิบัติในการดูแลสุขภาพช่องปาก ประกอบด้วย การให้คำปรึกษารายบุคคลเกี่ยวกับการดูแลอนามัยช่องปากและการรับประทานอาหาร สาธิตวิธีการดูแลอนามัยช่องปาก และฝึกปฏิบัติด้วยตนเอง ทำการประเมินผล ก่อนให้แนวทางปฏิบัติ ($T_0$), หลังให้แนวทางปฏิบัติ 2 เดือน ($T_1$) และหลังให้แนวทางปฏิบัติ 6 เดือน ($T_2$) ผลการศึกษาพบว่า หลังให้แนวทางปฏิบัติ 2 เดือน และ 6 เดือน ผู้สูงอายุในศูนย์บริการทางสังคมที่ 1 และ 2 มีพฤติกรรมสุขภาพช่องปากดีขึ้นและพบความแตกต่างอย่างมีนัยสำคัญทางสถิติของการทำความสะอาดฟันเทียมและความถี่ในการบริโภคน้ำตาลเมื่อเทียบกับก่อนให้แนวทางปฏิบัติ นอกจากนี้ ด้านสภาวะอนามัยช่องปาก ศูนย์บริการทางสังคมที่ 1 และ 2 มีค่าเฉลี่ยของดัชนีคราบจุลินทรีย์อย่างง่ายและร้อยละของความสามารถในการผลิตกรดของคราบจุลินทรีย์ลดลงอย่างมีนัยสำคัญทางสถิติเมื่อเทียบกับก่อนให้แนวทางปฏิบัติ ดังนั้นแนวทางปฏิบัติในการดูแลสุขภาพช่องปากจึงมีประสิทธิภาพในการปรับเปลี่ยนพฤติกรรมสุขภาพช่องปากและสภาวะอนามัยช่องปากของผู้สูงอายุไทยที่อาศัยอยู่ในศูนย์บริการทางสังคม

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PATARAPORN RATANAKASETSIN: EFFECTIVENESS OF ORAL HYGIENE PRACTICE GUIDELINES ON ORAL HEALTH STATUS AMONG THAI ELDERLY RESIDING IN SOCIAL CARE FACILITIES. ADVISOR: ASST. PROF. ORAPIN KAEWPLUNG, Ph.D., CO-ADVISOR: ASST. PROF. TEWARIT SOMKOTRA, Ph.D., 54 pp.

This study aimed to evaluate effectiveness of the oral hygiene practice guidelines among Thai elderly residing in social care facilities. This experimental study was conducted in two elderly social care facilities from December 2013 to June 2014. The 33 and 38 participants were recruited from social care 1 and social care 2, respectively. Socio-demographic characteristics and oral health behavior were obtained via questionnaire. Oral health status and oral hygiene status were obtained via oral examination. After one week, the oral hygiene practice guidelines including an individual oral self-care and diet counseling, oral hygiene instruction, oral self-care demonstration and self-practice session were applied. The outcomes were measured at baseline ($T_0$), 2 months ($T_1$) and 6 months follow up ($T_2$). At 2 months and 6 months follow up, oral health behavior in both social care 1 and social care 2 showed the overall scores improvement with significant differences in dental prostheses cleaning and sugar consumption frequency compared to baseline. Furthermore, oral hygiene status in both social care 1 and social care 2 showed the average debris index simplified (DI-S) score and the percentage of dental plaque acid production score were significant decreasing compared to baseline. In conclusion, the oral hygiene practice guidelines had effectiveness to improve oral health behavior and oral hygiene status among Thai elderly residing in social care facilities.



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# CHAPTER I
# INTRODUCTION

## Background and Rationale

According to demographic transition toward an aging society, Thailand is facing with a rapid increase in proportion of the elderly population similar to other developing countries. In 2025, the percentage of the elderly will be 19.0% of total Thai population.[1] Non-communicable diseases are becoming primitive cause of disability and mortality in these coming decades.[2] Health and social policy-makers are facing tremendous challenges with the increase burden of chronic diseases. Poor oral health status among the elderly particularly evident in high level of tooth loss, dental caries, periodontal disease, xerostomia and oral pre-cancer/cancer.[3] Many previous studies demonstrated negative impact of poor oral health status on general health status and quality of life in the elderly.[4] Extensive tooth loss compromise eating and chewing abilities as well as restrict choice of food and nutritional intake leading to malnutrition.[5, 6] Moreover, pain experiences, dental abscess endurances and esthetic problems adversely effect on quality of life in the elderly.[7] Furthermore, chronic diseases and adverse side effects from medications also increase risks in oral diseases, xerostomia and alter sense of taste and smell.[7] The World Health Organization recommends national public health programs should incorporate oral health promotion and disease prevention based on common risk factors approach.[4] The oral health care prevention should be applied appropriate to each individual to improve oral health status and quality of life in the elderly. Especially in developing countries which provision of primary oral health care are particularly high because of a shortage dental manpower.[4] Previous study showed prevalence of chronic diseases and high levels of disability in the elderly could be reduced through health promotion and non-communicable disease prevention strategies designed to improve quality of life in the elderly.[8] However, many studies reported utilization of oral health care services among the elderly quite low

particular in socio-economic disadvantages.[4] Additionally, modifications of comprehensive oral health care systems through elimination of financial barriers and establishment of outreach oral health services showed improvement of oral health status and quality of life among the elderly.[9] Consequently, oral health promotion and disease prevention become an important public health issue. Clinical and community-based intervention projects should focus on strategies and approaches to improve oral health care among the elderly.[10] However, the studies on oral health promotion activities among the elderly seem to be rare particularly in developing countries.[11] Leading to the objective of this study aimed to evaluate effectiveness of the oral hygiene practice guidelines among Thai elderly residing in social care facilities. The conceptual of this study was shown in Figure 1.

**Research Question**

Do the oral hygiene practice guidelines have effectiveness among Thai elderly residing in different social care facilities?

**Research Objective**

To evaluate effectiveness of the oral hygiene practice guidelines among Thai elderly residing in different social care facilities.



**Research Hypothesis**

**Null Hypothesis ($H_0$):**

There is no statistically significance difference in effectiveness of the oral hygiene practice guidelines among Thai elderly residing in different social care facilities.

**Alternative hypothesis ($H_1$):**

There is statistically significance difference in effectiveness of the oral hygiene practice guidelines among Thai elderly residing in different social care facilities.

## Conceptual framework

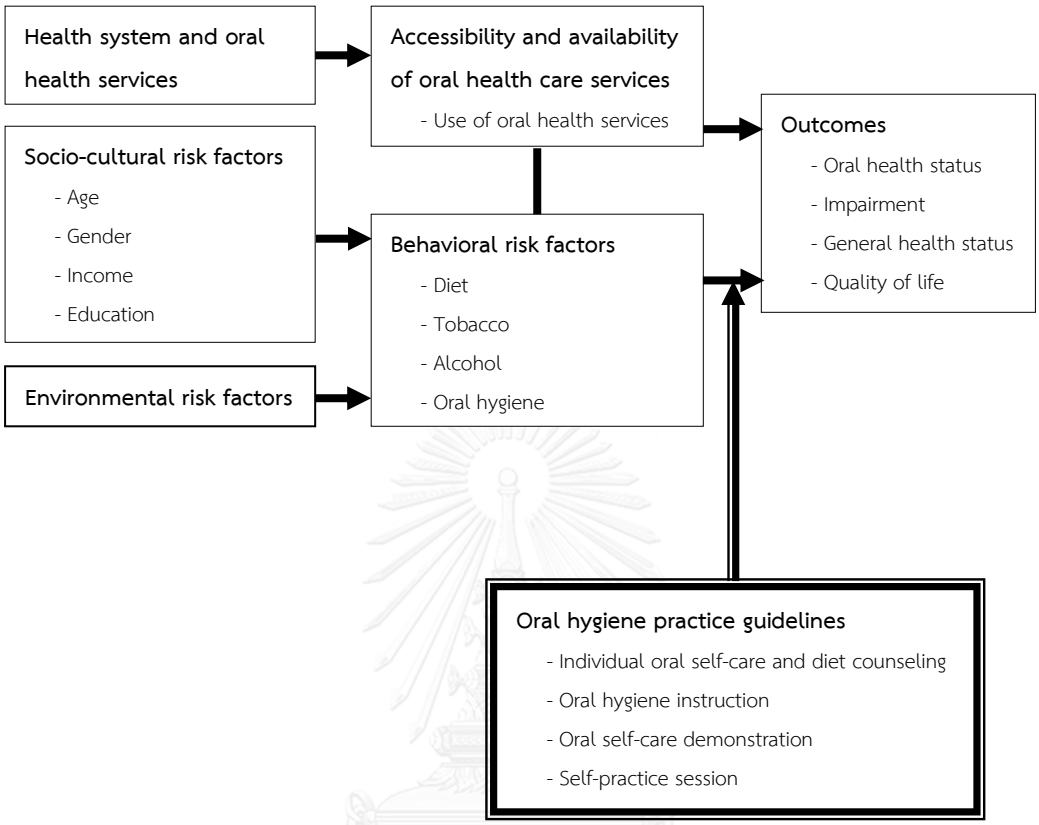



**Figure 1:** The conceptual framework of this study

**Key words**

Thai elderly

Oral health behavior

Oral hygiene status

Oral hygiene practice guidelines

**Operational Definitions**

**Thai elderly:** Thai person aged ≥ 60 years old

**Oral health behavior:** a personal oral hygiene habits including tooth brushing, use of fluoride toothpaste, interproximal cleaning, sugar consumption frequency and habitual dental attendance.

**Oral hygiene status:** a condition or practice intent to prevent dental plaque related oral diseases leading to maintain a healthy oral cavity.

**Oral hygiene practice guidelines:** an individual oral self-care and diet counseling, oral hygiene instruction, oral self-care demonstration and self-practice session.



**Research Design**

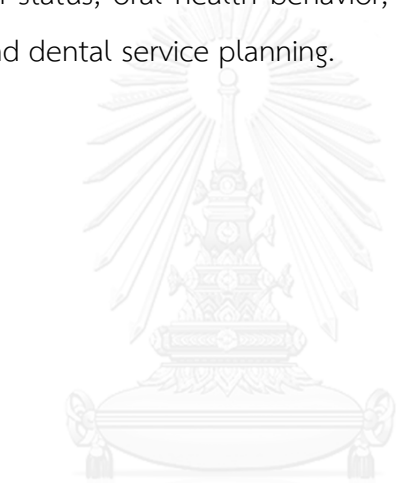
Human experimental study

**Expected Benefits and Application**

1. The results of this study determined supportive information to integrate the oral health educational program in order to improve oral health behavior and oral hygiene status among the elderly.

2. These interactive preventive oral hygiene practice guidelines with subsequent follow up provided as a reference for further developmental studies in oral health promotion among the elderly.

3. The results of this study could be used as evidence-based oral health policy i.e. oral health status, oral health behavior, oral hygiene status, oral hygiene practice guidelines and dental service planning.



# CHAPTER II
# LITERATURE REVIEW

## Oral health status in the elderly

Poor oral health status among the elderly has particularly seen in a high level of tooth loss, dental caries experience, periodontal disease, xerostomia and oral pre-cancer/cancer.[3] The negative impact of poor oral conditions on quality of life in the elderly is an important public health issue. According to the Thailand National Oral Health Survey, trend of oral health status of Thai elderly has continued to improve over two decades.[12, 13] From the 7th Thailand National Oral Health Survey 2012, the percentage of the Bangkokian elderly aged 60-74 years who had at least 20 functional remaining teeth was only 58.3% and the average remaining teeth was 17.8 teeth per person. Moreover, the average Decayed / Missing / Filled tooth (DMFT) was 17.4 including decayed teeth 1.4, Missing teeth 14.2 and filled teeth 1.8 teeth per person. Furthermore, the average total edentulous was 10.8%.[14] Poor oral health compromises chewing and eating abilities as well as restricts choice of nutritional intake leading to malnutrition and also increases risks of general health problems.[5, 6] Moreover, pain experiences, dental abscess endurances and esthetic problems adversely effect on quality of life in the elderly.[7] Furthermore, impaired mobility, financial hardship and negative attitudes also adversely effect on oral health care among the elderly.[2, 15]

### Presence of teeth

The presence of teeth is a basic measurement of oral health among adults and the elderly.[16] The average number of the functional remaining teeth and having at least 20 functional remaining teeth are most common indicators in each individual dentition.[11] World Health organization (WHO) and World Dental Federation (FDI) set oral health goal that 50% of the elderly aged 65 years or over ought to have at least 20 functional remaining teeth in the year 2000.[17] Moreover, the number of functional remaining teeth also indicates prosthetic treatment needs. Having at least

20 remaining teeth determine functional dentition without prosthodontics treatment needs.[18]

**Tooth loss**

Many studies report that major reasons of tooth extraction among the elderly are severe dental caries and periodontal problems.[19, 20] Tooth loss is highly associated with socio-economic status. Epidemiological studies show that people with low personal income and education are more likely to be edentulous than people with high personal income and education.[3, 21] Few studies on tooth loss among the elderly have been conducted in developing countries where the utilization of oral health care services are limited. However, those studies reported that natural teeth were usually extracted because of pain experiences and insufficient materials for dental treatment.[22] Moreover, the more people get older the more severe of tooth loss. This determines that tooth loss severity among the elderly should be concern particularly in countries where the elderly trend to live longer.

**Dental caries**

Dental caries is a multifactorial disease results from important risk factors including increased dental plaque accumulation, increased fermentable carbohydrates, decreased dexterity, decreased saliva secretion and poor oral hygiene.[22] High prevalence rates of coronal dental caries and root surface caries are usually found among the elderly. Dental caries is a major reason in tooth loss among the elderly. Previous study show that more than 60% of extracted teeth reason from dental caries.[23] Moreover, dental caries is associated with socio-economic status and oral health behavior.[23] Consequently, dental caries is major public health problem among the elderly particularly in developing countries.[4] Modifications of oral health behavior through appropriate tooth brushing technique with fluoride toothpaste allow convert active caries become inactive caries.[24] Additionally, increased tooth brushing frequency and decreased sugar consumption frequency potentially decrease caries activities.[25, 26]

**Periodontal disease**

Periodontal disease is a pathological inflammatory condition of periodontal tissues surrounding the teeth.[11] Poor oral hygiene status and dental plaque accumulation are common risk factors of periodontal disease.[27] Dental calculus and gingival recession are predisposing factors of dental plaque accumulation.[28, 29] The progression of periodontal disease are associated with dental plaque accumulation and individual immune inflammatory response.[27] Previous studies report that age, gender, diabetes mellitus, alcohol consumption, smoking habit are positively associated with periodontal disease.[30] Meanwhile, personal income and education are inversely associated with periodontal disease.[4] Moreover, periodontal disease among the elderly has higher rate of dental plaque accumulation and faster rate of progression leading to more severe inflammation compare to young adult.[31]

**Xerostomia**

Xerostomia is a common side effect of medication as a major contributing factor for oral health and quality of life among the elderly including dental caries, oral candidiasis, oral ulceration and malnutrition.[32] Xerostomia is usually associated with medications, systemic diseases, head and neck cancer radiation therapy, head and neck nerve damage and tobaco use.[33] Medications induced xerostomia are tricyclic antidepressant, antipsychotics, anticholinergics, beta blockers and antihistamine (Table 1).[34, 35] Systemic disease induced xerostomia are diabetes mellitus, Sjôgren's syndrome, HIV/AIDS and Alzheimer's disease.[33] Sign and symptoms of xerostomia are sore throat, burning sensation, speaking and swallowing difficulties, halitosis and altered taste.[36] Clinical management of xerostomia is diagnostic correction and appropriate oral health education to minimize dental caries risks factors including oral hygiene instruction, fluoride application, diet counseling and regular dental visits.[37]

**Table 1:** Medications induced xerostomia

| Classification | Generic Name | Brand Name | Classification | Generic Name | Brand Name |
|---|---|---|---|---|---|
| **Anorexiant** | Phentemine | Adipex-P<br>Fastin<br>Ionamin<br>Zantryl | **Antinauseant** | Dyphenhydramine<br><br>Meclizine | Dramamine<br><br>Antivert |
| | Phendimetrazine | Anorex SR<br>Adipost<br>Bontril PCM | | | |
| | Mazindol | Mazanor<br>Sanonex | | | |
| **Antianxiety** | Hydroxyzine<br><br>Lorazepam<br>Prazepam<br>Halazepam<br>Oxazepam<br>Diazepam | Atarax<br>Vistaril<br>Ativan<br>Certrax<br>Paxipam<br>Serax<br>Valium | **Antiparkinsonian** | Beperiden<br>Trihexhyphenidyl<br>Benztorpine<br>mesylate | Akineton<br>Artane<br>Cogentin |
| **Anticholinergic/ Antispasmodic** | Atropine<br><br>Hyoscyamine<br>Oxybutynin | Atropisol<br>Sal-Tropine<br>Anaspaz<br>Diropan | **Anti-Psychotic** | Clozapine<br>Lithium<br>Haloperidal<br>Chlorpromazine<br>Pericyazine<br>Phenothiazine<br>Haloperidol<br>Fluphenazine<br>Trifluoperazine<br>Lithium carbonate<br>Rispiridone<br>Olanzapine | Clozaril<br>Dskalith<br>Haldol<br>Thorazine<br>Neuleptil<br>Thioridazine<br>Haloperidol<br>Fluphenazine<br>Apo-Trifluoperazine<br>Carbolith,Kithane,Lithium<br>Rispeerdal<br>Zyprexa |
| **Anticonvulsant** | Felbamate<br>Lamotrigine<br>Carbamazepine | Felbatol<br>Lamidal<br>Tegretol | **Bronchodilator** | Ipratropium<br>Albuterol | Atrovent<br>Ventolin |
| **Antidepressant** | Clomipramine<br>Antipeyline<br>Fluxetine<br>Doxepin | Anafranil<br>Elavil<br>Prozac<br>Sinequan | **Decongestant Diuretic** | Pseudoephedrine<br>Chlorothiazide<br>Furosemide | Sudafed<br>Diuril<br>Lasix |
| **Antidiarrheal** | Loperamide<br>Diphenoxylate with atropine | Immodium AD<br>Lomotil | **Muscle relaxant** | Cyclobenzaprine<br>Orphenadrine | Flexeril<br>Norflex<br>Dispal |
| **Antihistamine** | Diphenhydramine<br>Loratadine<br>Terfenadine | Benadryl<br>Claritin<br>Seklane | **Nacrotic Analgesic** | Merperidine<br>Morphine | Demerol<br>MS Contin |
| **Antihypertensive** | Aptopril<br>Prazosin<br>Reserpine | Capoten<br>Minipress<br>Serpasil | **Sedative** | Flurazepam<br>Triazolam<br>Temazepam | Dalmane<br>Halcion<br>Restoril |
| **Antiinflammatory Analgesic** | Ibuprofen<br>Naproxen<br>Piroxicam | Motrin<br>Naprosym<br>Feldene | **Other common oral adverse side effect of medications :** Dental caries, Alterations in taste, Oral ulceration, Atropic mucosa, Hair, tongue, Burning mouth/tongue, Gingival enlargement, etc. | | |

### Precancerous lesion and oral cancer

Oral cancer usually occurs in middle-aged and older individuals frequently in male more than female.[38] Oral cancer can be divided into three categories including carcinoma of the oral cavity proper, carcinoma of the lip vermilion, and carcinoma arising in the oropharynx.[39] The oral cancer risk factors are tobacco use, alcohol abuse, immunosuppression and systemic diseases such as human papillomavirus (HPV) and HIV/AIDS.[38] Precancerous lesion includes leukoplakia and erythroplakia. The most common oral cancer in oral region is squamous cell carcinoma.[38] Precancerous lesion and early oral cancer are usually subtle and asymptomatic. Therefore, clinicians should focus especially in cases of the risk factors are present. However, the early detection of oral cancer is particular difficult because almost patients scarcely receive definitive diagnosis and treatment until they are in stage III or stage IV.[40] Consequently, oral health educational program should encourage the elderly to avoid behavioral risk factors and promote oral health care professionals to provide regular oral cancer examinations.[41]

## Oral health behavior in the elderly

Oral health behavior mentions about the personal oral hygiene habits including tooth brushing, use of fluoride toothpaste, interproximal cleaning, sugar consumption frequency and habitual dental attendance.[11] Oral health behavior is associated with age, gender, income, education, smoking habits, alcohol consumption and dietary habits.[9, 42] Tooth brushing is a common basic oral self-care method which has effectiveness to control dental plaque leading to prevent dental caries and maintain healthy periodontal conditions.[43] American Dental Association recommends twice daily tooth brushing frequency.[44] Toothpaste is the most common resource of daily fluoride application.[11] Interproximal cleaning with dental floss and interproximal brush is daily recommendation.[45] Moreover, sugar consumption frequency and quantity are highly associated with dental caries.[46] World Health Organization recommend sugar consumption frequency and quantity

maximized four times daily or less than 40 grams daily.[47] Time interval of the recent dental visit is a common indicator to describe dental attendance.[48] Regular check up with dentists every 6 months is an acceptable indicator for appropriate dental service utilization.[49]

**Oral health-related knowledge**

Traditional oral health-related knowledge such as tooth brushing seems to be a common basic oral health behavior among the elderly.[11] However, modern oral health-related knowledge in the aspect of oral health prevention such as fluoride application, interproximal cleaning, sugar consumption frequency and regular check-up seems to be less evident among the elderly.[11] Moreover, population-based knowledge and scientific evidences report that the elderly possibly have an inappropriate oral health behavior and oral hygiene practice guidelines.[50, 51] Consequently, dental professionals should provide an appropriate oral health educational program leading to improve oral health behavior among the elderly.[52] Consistent with previous study that better oral health-related knowledge is related to improve oral health behavior among the elderly in general.[53]



**Caries risk assessment**

Caries risk assessment currently involve a combination factors including individual host, bacterial microflora, fluoride application and dietary habit that interplay with a variety of social, cultural and behavioral factors.[54] Caries risk assessment could determine the incidence and transference of dental caries during a certain time period leading to predict caries activity in the immediate future.[55] These contribute dental professionals possibly detect dental caries in the earliest stages, estimate caries risk level, identify the primary etiological factors and provide a guidance to select the appropriate dental caries prevention specialize to the individual's needs.(56) The dental caries diagnostic criteria are shown in Table 2.[57]

**Table 2:** The dental caries diagnostic criteria

| Score | Category | Criteria |
|---|---|---|
| 0 | **Sound** | Normal enamel translucency and texture (slight staining allowed in otherwise sound fissure). |
| 1 | **Active caries (intact surface)** | Surface of enamel is whitish/yellowish opaque with loss of luster; feels rough when the tip of the probe is moved gently across the surface; generally covered with plaque. No clinically detectable loss of substance. Smooth surface: Caries lesion typically located close to gingival margin. Fissure/pit: Intact fissure morphology; lesion extending along the walls of the fissure. |
| 2 | **Active caries (surface discontinuity)** | Same criteria as score 1. Localized surface defect (microcavity) in enamel only. No undermined enamel or softened floor detectable with the explorer. |
| 3 | **Active caries (cavity)** | Enamel/dentin cavity easily visible with the naked eye; surface of cavity feels soft or leathery on gentle probing. There may or may not be pulpal involvement. |
| 4 | **Inactive caries (intact surface)** | Surface of enamel is whitish, brownish or black. Enamel may be shiny and feels hard and smooth when the tip of the probe is moved gently across the surface.<br>No clinically detectable loss of substance.<br>Smooth surface: Caries lesion typically located at some distance from gingival margin.<br>Fissure/pit: Intact fissure morphology; lesion extending along the walls of the fissure. |
| 5 | **Inactive caries (Surface discontinuity)** | Same criteria as score 4. Localized surface defect (microcavity) in enamel only. No undermined enamel of softened floor detectable with the explorer. |
| 6 | **Inactive caries (cavity)** | Enamel/dentin cavity easily visible with the naked eye; surface of cavity may be shiny and feels hard on probing with gentle pressure. No pulpal involvement. |
| 7 | **Filling (sound surface)** | |
| 8 | **Filling+active caries** | Caries lesion may be cavitated or non-cavitated. |
| 9 | **Filling+inactive caries** | Caries lesion may be cavitated or non-cavitated. |

**Oral hygiene assessment**

Oral hygiene is a condition or practice intent to prevent dental plaque related oral diseases leading to maintain a healthy oral cavity including tooth brushing, use of fluoride toothpaste, interproximal cleaning, dental prostheses cleaning and regular check-up with dentists.[58] Dental plaque is an important factor contribute to dental caries and poor oral hygiene subscribe to increased risk of dental caries.[59] Poor oral hygiene is highly associated with periodontal disease progression.[60] Consequently, good oral hygiene is an essential component to achieve optimal oral health status. World Health Organization (WHO) recommend the simplified oral hygiene index (OHI-S) (Greene and Vermillion, 1964) to assess the presence of dental plaque and the ultimate outcome of oral hygiene.[61, 62] The simplified oral hygiene index (OHI-S) is an effective sensitive method, high reproducibility, simple practice and spend less time on clinical examination which appropriate to the elderly.[62]

**Simplified Oral Hygiene Index**

Simplified oral hygiene index (OHI-S) has two components including debris index simplified (DI-S) and calculus index simplified (CI-S).[62] However, DI-S is contributed to assess oral hygiene status in general.[63] DI-S is calculated from at least two of six designated teeth surfaces in each individual. The six designated teeth surfaces comprise of four posterior teeth surfaces and two anterior teeth surfaces including (a) Buccal surface of maxillary right first molar, (b) Buccal surface of maxillary left first molar, (c) Lingual surface of mandibular right first molar, (d) Lingual surface of mandibular left first molar, (e) Buccal surface of maxillary right central incisor and (f) Buccal surface of mandibular left central incisor (Figure 2).[62] Only fully erupted permanent designated teeth are scored. Permanent teeth with full crown coverage or large restoration or surface reduction in height due to dental caries or trauma are not scored.[62] Each designated tooth surface is divided into three horizontal portions including occlusal, middle and cervical one third (Figure 3).[62] DI-S score criteria are shown in Table 3.[62] DI-S is calculated from summation of the overall designated teeth surfaces DI-S score divide by the overall designated teeth surfaces in each individual.[62] Oral hygiene status classification is shown in Table 4.[62]

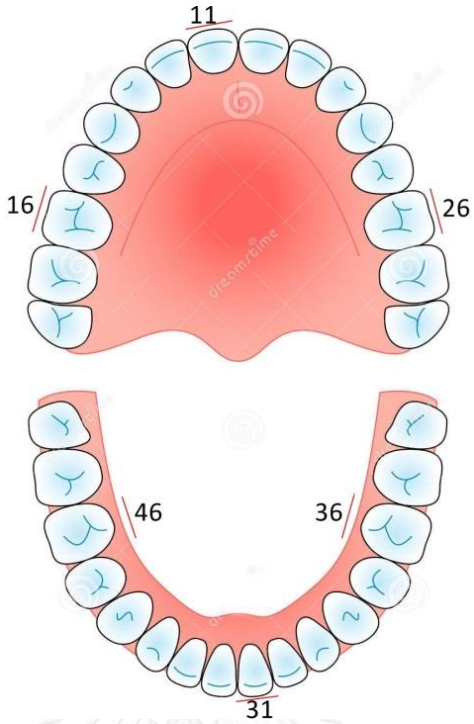



**Figure 2:** The six designated teeth surfaces

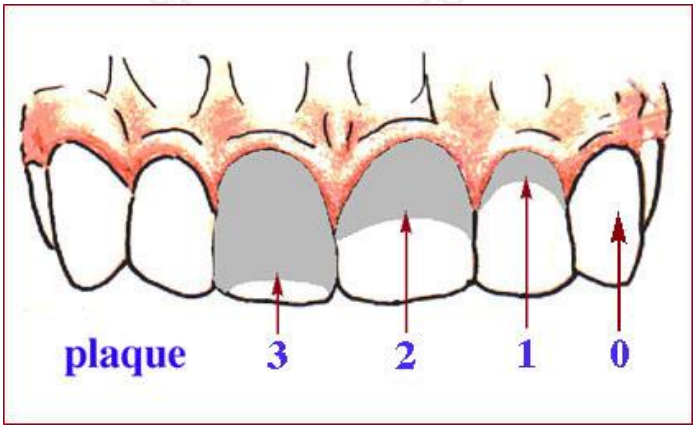



**Figure 3:** The designated tooth surface division

**Table 3:** The debris index simplified score criteria

| Score | Criteria |
|---|---|
| 0 | Absence of debris or stain |
| 1 | Soft debris covering less than one third of tooth surface, or presence of extrinsic stains |
| 2 | Soft debris covering more than one third but less than two thirds of tooth surface |
| 3 | Soft debris covering more than two thirds of tooth surface |

**Table 4:** The oral hygiene status classification

| Debris index simplified (DI-S) | Oral hygiene status |
|---|---|
| 0.3-0.6 | Good |
| 0.7-1.8 | Fair |
| 1.9-3.0 | Poor |

**Dental plaque acid production**

Dental plaque acid production is an important indicator to assess cariogenic condition in caries risk assessment.[64] Numerous clinical studies establish that the proportions of microorganisms designated as capable of acid production at low pH conditions are significantly increased in dental plaque from patients with high caries risk.[65, 66] These microorganisms especially mutans streptococci and lactobacilli particular tolerate with a low pH environment and thrive rapidly in a high cariogenic dietary substrate such as sucrose.[64] GC Tri Plaque ID Gel is a specific tri-tone plaque disclosing agent help to determine new, mature and acid producing biofilms. [67] Thin immature dental plaque is stained pink or red. Thick mature dental plaque (48 hours or more) is stained blue or purple. Acid producing dental plaque is stained light blue which provide a high risk of dental caries. Moreover, tri-tone plaque disclosing agent also empowers the dental professional and motivates the elderly to improve their oral hygiene status. [67]

**Oral health care service accessibility and availability in the elderly**

Oral health care service accessibility and availability are an essential component to achieve optimal oral health status among the elderly.[68] However, many studies reported utilization of oral health care services among the elderly quite low particular in socio-economic disadvantages.[4] Transportation difficulty seems to be a significant barrier particular the elderly reside in rural areas. Most of the elderly are unable to drive themselves and have to use public transportation to access oral health service.[68] Moreover, impaired mobility is also a considerable barrier especially dependent elderly need a physical assistance to support them to the dentist.[68] Furthermore, Some of the elderly experience a financial hardship following retirement together with negative attitudes and dental attendance possibly restrict them to access oral health service.[4] Consequently, modifications of comprehensive oral health care systems through elimination of financial barriers and establishment of outreach oral health services become an important public health issue. Dental professionals should visit the elderly particular in social care facilities and take them to the dental hospital if further treatments are needed. Home visits are also a good option in the elderly with more severe impaired mobility.[69]

# CHAPTER III
# MATERIAL AND METHODS

## Population and Sample size

### Target population

Thai elderly residing in social care facilities

### Sample size

Thai elderly residing in the Sawangkhanivas rehabilitation center (social care 1) and the Ban Bang Khae social welfare development center for older persons (social care 2) during December 2013 to June 2014 who followed inclusion and exclusion criteria were invited to participate in this study.

### Inclusion criteria

1. The elderly aged 60 years and over on the day they participated in this study.
2. The elderly with or without dental prostheses who had at least two of six designated teeth in each individual following in this order.
    a) Buccal surface of maxillary right first molar
    b) Buccal surface of maxillary left first molar
    c) Lingual surface of mandibular right first molar
    d) Lingual surface of mandibular left first molar
    e) Buccal surface of maxillary right central incisor
    f) Buccal surface of mandibular left central incisor
3. The elderly were independent and good in general health.
4. The elderly accepted to inform consent and could follow the study methods completely.

**Exclusion criteria**

1. The elderly aged less than 60 years on the day they participated in this study.
2. The elderly with or without dental prostheses who did not have at least two of six designated teeth in each individual.
3. The elderly were dependent with physical, emotional and perceptual disabilities.
4. The elderly did not accept to inform consent and could not follow the study methods completely.

**Study population**

The experimental study was derived from 68 participants (33 participants from social care 1 and 38 participants from social care 2) at baseline before receiving the oral hygiene practice guidelines ($T_0$). Unfortunately, two and one participants lost to follow up at 2 months after receiving the practice guidelines ($T_1$) and 6 months after receiving the practice guidelines ($T_2$), respectively. Finally, 68 participants (31 participants from social care 1 and 37 participants from social care 2) were participated in this study.



**Data collection**

**Primary outcomes**

Oral health behavior (tooth brushing frequency, used of fluoride toothpaste, interproximal cleaning, dental prostheses cleaning and sugar consumption frequency) (subjective outcomes) and oral hygiene status (debris index simplified (DI-S) score and dental plaque acid production score) (objective outcomes) were used to assess effectiveness of the oral hygiene practice guidelines at three different periods of assessments including at baseline before receiving the oral hygiene practice guidelines ($T_0$), 2 months after receiving the practice guidelines ($T_1$) and 6 months after receiving the practice guidelines ($T_2$).

**Other covariates**

- **Socio-demographic characteristics**

  Age, gender, personal income, educational attainment and health status

- **Oral health status**

  Decayed / Missing / Filled teeth (DMFT), number of remaining teeth and type of dental prostheses obtaining

Data collection was performed mediate through face to face interview and oral examination by the only one trained dentist. The questionnaire inquired about socio-demographic characteristics and oral health behavior. The oral examination inquired about oral health status and oral hygiene status. The socio-demographic characteristics and oral health status were performed only at baseline ($T_0$) to compare the background between social care 1 and social care 2. The oral health behavior and oral hygiene status were performed at three different periods of assessments ($T_0$, $T_1$ and $T_2$) to evaluate the improvement of the elderly in both social care 1 and social care 2 leading to assess effectiveness of the oral hygiene practice guidelines. The oral examination was performed in semi-supine position mediate through a halogen lamp, mouth mirror and periodontal probe. All teeth were not cleaned before the oral examination.



The debris index simplified (DI-S) score was obtained only on the six designated surfaces of the six designated teeth in this order; (a) Buccal surface of maxillary right first molar, (b) Buccal surface of maxillary left first molar, (c) Lingual surface of mandibular right first molar, (d) Lingual surface of mandibular left first molar, (e) Buccal surface of maxillary right central incisor and (f) Buccal surface of mandibular left central incisor. Only fully erupted permanent designated teeth were scored. Permanent teeth with full crown coverage or large restoration or surface reduction in height due to dental caries or trauma were not scored. In each dental arch, if the designated first molar was missing or not following the criteria, second molar or third molar was substituted respectively. If all three molars were missing or not following the criteria the oral examination chart was recorded with “M”.

Similarly, if the designated central incisor was missing or not following the criteria, the adjacent central incisor or lateral incisor or canine was substituted respectively. If all of them were missing or not following the criteria the oral examination chart was recorded with “M”.

The dental plaque acid production score was obtained from all remaining teeth in each individual. Plaque disclosing solution (GC Tri Plaque ID Gel) was applied to all remaining teeth using cotton-bud. Excess dye was removed by rinsing water. Only the highest score of dental plaque acid production was recorded in each individual. Thin immature dental plaque was recorded with “pink/red”. Thick mature dental plaque (48 hours or more) was recorded with “blue/purple”. Acid producing dental plaque was recorded with “light blue” in the oral examination chart.

After one week, the oral hygiene practice guidelines followed a common risk approach[70] and Ottawa Charter-based geriatric oral health promotion matrix[71] aimed to improve oral health behavior which was one of the concerning factors in oral disease prevention were applied to the elderly. These practice guidelines provided a common behavioral risk factor approach mediated through oral health educational program with subsequent follow up leading to improve oral hygiene status among Thai elderly residing in social care facilities. These practice guidelines comprised an individual oral self-care and diet counseling using motivational interviewing, oral hygiene instruction, oral self-care demonstration and self-practice session including an appropriate tooth brushing technique, how to used dental floss and interproximal brush and dental prostheses cleaning technique. This oral self-care was applied consistent with the individual need as well as only the participant who had removable partial denture was acknowledged about removable dental prostheses cleaning technique. All the process of these practice guidelines were accomplished by the trained dental professionals. The outcomes were measured at three different periods of assessments including at baseline before receiving the oral hygiene practice guidelines ($T_0$), 2 months after receiving the practice guidelines ($T_1$) and 6 months after receiving the practice guidelines ($T_2$). The schematic study was shown in Figure 4.

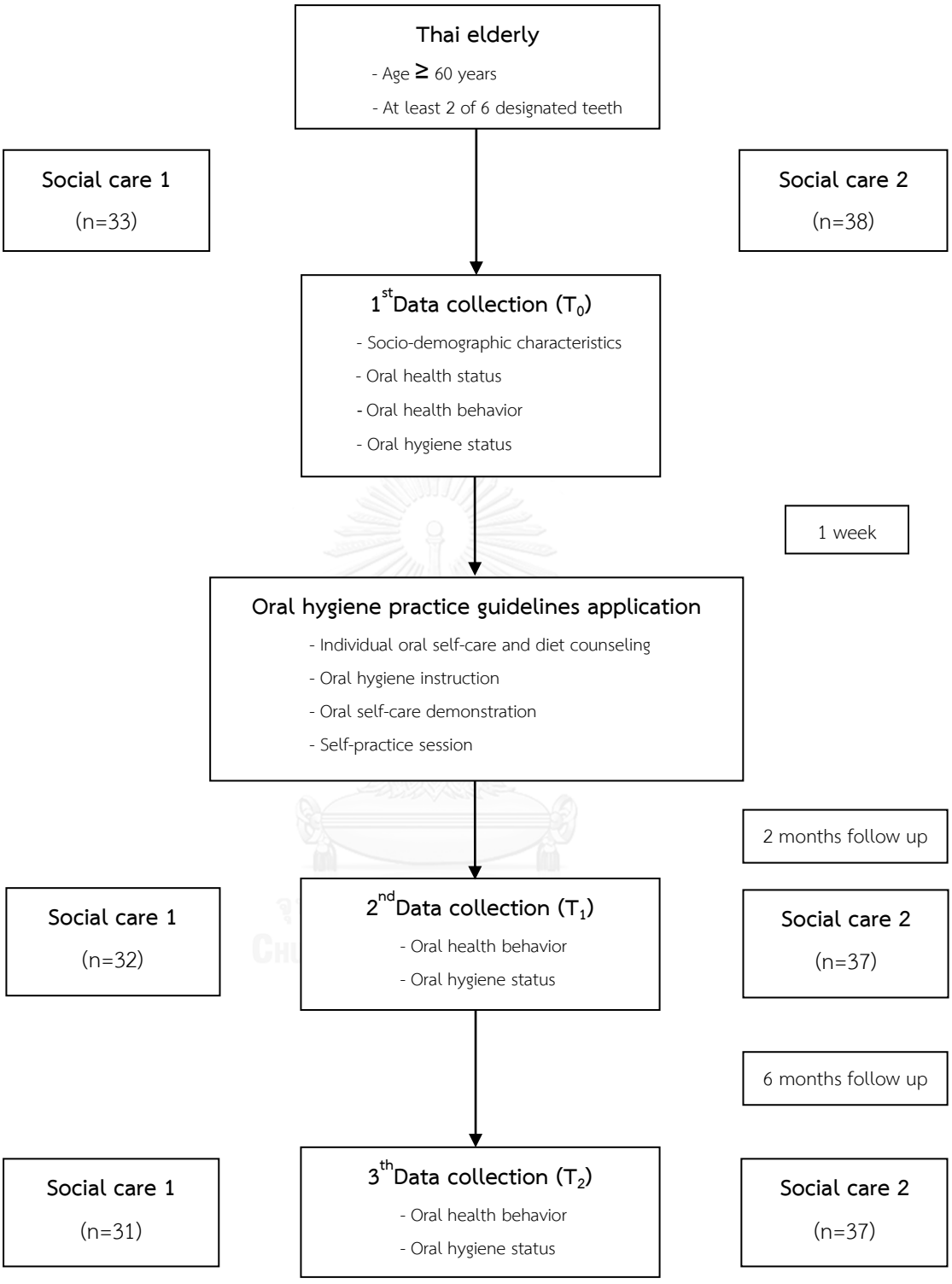



**Figure 4:** The schematic of this study

**Data analysis**

The overall data were analyzed using the Statistics Package for the Social Sciences (SPSS) for Windows version 17.0 (SPSS Inc., Chicago, IL, USA.). Socio-demographic characteristics and oral health status at $T_0$ were analyzed using Independent t-test or Chi-square test. Oral health behavior among periods of assessments within group was analyzed using Friedman test or Cochran's Q test and between groups were analyzed using Fisher's Exact Test or Mann Whitney U Test. A pair of two different periods of assessments within group was analyzed using McNemar Test. Oral hygiene status among periods of assessments within group was analyzed using Two-way Repeated Measures ANOVA, Friedman test or Cochran's Q test and between groups were analyzed using Two-way Repeated Measures ANOVA or Mann Whitney U Test. A pair of two different periods of assessments within group was analyzed using Two-way Repeated Measures ANOVA or Wilcoxon Signed Ranks Test. The association between socio-economic status (x) and oral health behavior (y) was analyzed using Binary logistic regression. The association between oral health behaviors (x) and oral hygiene status (y) was analyzed using Binary logistic regression and Simple linear regression with standardized beta coefficient. Data analysis used an alpha level of .05 for all statistical tests. All processes were performed by the only one investigator. Any information missing even one records were excluded from this study.



**Ethical consideration**

The study protocol was approved by the Ethics committees of Faculty of Dentistry, Chulalongkorn University on April 20, 2013 (No. 019/2013). (Study Code: HREC-DCU 2011031)

# CHAPTER IV
# RESEARCH RESULTS

## Socio-demographic characteristics at baseline

The experimental study comprised 68 participants (31 participants from social care 1 and 37 participants from social care 2) from two different social care facilities in Bangkok. The distribution of socio-demographic characteristics and health status among Thai elderly residing in social care facilities at baseline ($T_0$) was summarized in Table 5. There was no significant difference in the average age between the participants in social care 1 (*M* = 74.39, *SD* = 7.44 years) and social care 2 (*M* = 76.14, *SD* = 7.16 years). Less than half of the participants in both social care 1 (19.40%) and social care 2 (24.30%) were male. There was no significant difference in gender between the participants in social care 1 and social care 2.

Most of the participants in social care 1 (67.70%) had personal income per month more than 15,000 Baht. Meanwhile, less than half of those in social care 2 (16.20%) had personal income per month more than 15,000 Baht. The participants in social care 1 had significant higher personal income per month than those in social care 2. Moreover, most of the participants in social care 1 (61.30%) had the highest level of the educational attainment higher than secondary level. Meanwhile, less than half of those in social care 2 (29.70%) had the highest level of the educational attainment higher than secondary level. The participants in social care 1 had significant higher level of the educational attainment than those in social care 2.

The percentage of the participants who had at least one chronic illness in social care 1 (71.00%) was significant less than those in social care 2 (91.90%). The most common chronic illness of those in both social care 1 and social care 2 was hypertension. Moreover, the percentage of the participants who had at least one medication induced xerostomia in social care 1 (35.50%) was significant less than those in social care 2 (64.90%). The most common medications induced xerostomia of those in both social care 1 and social care 2 was antihypertensive drug.

**Oral health status at baseline**

The distribution of oral health status among Thai elderly residing in social care facilities at baseline ($T_0$) was summarized in Table 5. The average active caries, inactive caries and missing teeth of the participants in social care 2 were higher than those in social care 1. However, it was interesting that the average filling teeth of the participants in social care 2 was lower than those in social care 1. There was significant difference in the average filling teeth between the participants in social care 1 and social care 2. Moreover, the average DMFT of the participants in social care 1 was lower than those in social care 2. However, there was no significant difference in the average DMFT between the participants in social care 1 and social care 2.

The percentage of the participants who had number of remaining teeth more than 20 teeth with or without dental prostheses in social care 1 (71.00%) was higher than those in social care 2 (54.1%). Meanwhile, the percentage of those who had number of remaining teeth less than 20 teeth with dental prostheses in social care 1 (29.00%) was higher than those in social care 2 (21.60%). However, there was no significant difference in number of remaining teeth between the participants in social care 1 and social care 2.

Type of dental prostheses obtaining was categorize into fixed partial denture, removable partial denture and both fixed and removable partial denture. Most of the participants in social care 1 (57.10%) had fixed partial denture whereas most of those in social care 2 (66.70%) had removable partial denture. There was significant difference in type of dental prostheses obtaining between the participants in social care 1 and social care 2.

**Table 5:** Socio-demographic characteristics, health status and oral health status among Thai elderly residing in social care facilities at baseline

| General characteristics at baseline | Social care 1 (N=31) | Social care 2 (N=37) | Test of group differences |
|---|---|---|---|
| **Socio-demographic characteristics** | | | |
| - Age (Mean±SD) | 74.39±7.44 | 76.14±7.16 | t=0.985, p=0.328 |
| - Male (n,%) | 6 (19.40) | 9 (24.30) | $\chi^2$=0.242, p=0.623 |
| - Personal income more than 15,000 Baht/month (n,%) | 21 (67.70) | 6 (16.20) | $\chi^2$=18.706, p<0.001[i] |
| - Educational attainment higher than secondary level (n,%) | 19 (61.30) | 11 (29.70) | $\chi^2$=6.815, p=0.009[i] |
| **Health status** | | | |
| - Having chronic illness (at least one disease) (n,%)[A] | 22 (71.00) | 34 (91.90) | $\chi^2$=5.082, p=0.024[i] |
| - On medication induced xerostomia (n,%)[B] | 11 (35.50) | 24 (64.90) | $\chi^2$=5.829, p=0.016[i] |
| **Oral health status (teeth/person)** (Mean±SD) | | | |
| - Active caries | 0.81±1.49 | 2.24±3.92 | t=1.923, p=0.059 |
| - Inactive caries | 0.81±1.08 | 0.95±1.25 | t=0.489, p=0.627 |
| - Filling | 7.42±4.76 | 5.03±4.56 | t=2.113, p=0.038[i] |
| - Missing | 9.81±7.27 | 12.41±7.17 | t=1.479, p=0.144 |
| - DMFT | 18.84±7.39 | 20.62±6.44 | t=1.063, p=0.292 |
| **Number of remaining teeth** (n,%) | | | |
| - ≥ 20 teeth with/without prostheses | 22 (71.00) | 20 (54.10) | $\chi^2$=2.043, p=0.153 |
| - < 20 teeth with dental prostheses | 9 (29.00) | 8 (21.60) | $\chi^2$=0.494, p=0.482 |
| **Type of dental prostheses obtained** (n,%)[C] | | | |
| - Fixed partial denture | 16 (57.10) | 2 (9.50) | $\chi^2$=14.787, p=0.001[i] |
| - Removable partial denture | 5 (17.90) | 14 (66.70) | |
| - Both fixed and removable partial denture | 7 (25.00) | 5 (23.80) | |

[i] Statistical significance differences (P<.05) between social care facilities; Independent t-test or Chi-Square test

Note: [A] Chronic illness; Diabetes mellitus, Hypertension and Cardiovascular disease

[B] Patient on medications induced xerostomia (at least one type); Antihypertensive drug, Antiallergic drug and Anticholinergic drug

[C] Conditional analyses only those have dental prostheses

**Oral health behavior among three time periods of assessment**

The distribution of oral health behavior among Thai elderly according by social care facilities at baseline ($T_0$), 2 months follow up ($T_1$) and 6 months follow up ($T_2$) was summarized in Table 6. The percentage of the participants who reported tooth brushing twice daily with fluoride toothpaste in social care 1 at $T_0$ to $T_1$ was increasing whereas at $T_1$ to $T_2$ was not changing. Meanwhile, the percentage of those in social care 2 at $T_0$ to $T_1$ was increasing whereas at $T_1$ to $T_2$ was decreasing. However, there was no significant difference in tooth brushing twice daily with fluoride toothpaste among three time periods of assessment in both social care 1 and social care 2.

The percentage of the participants who reported interproximal cleaning in social care 1 at $T_0$ to $T_1$ was decreasing whereas at $T_1$ to $T_2$ was increasing. Meanwhile, the percentage of those in social care 2 at $T_0$ to $T_1$ was increasing whereas at $T_1$ to $T_2$ was not changing. However, there was no significant difference in interproximal cleaning among three time periods of assessment in both social care 1 and social care 2.

The percentage of the participants who reported dental prostheses cleaning regularly in social care 1 at $T_0$ to $T_2$ was increasing. Meanwhile, the percentage of those in social care 2 at $T_0$ to $T_1$ was increasing whereas at $T_1$ to $T_2$ was not changing. However, there was significant difference in dental prostheses cleaning regularly in both social care 1 and social care 2 at $T_0$ to $T_1$ and $T_0$ to $T_2$ within group and only in social care 1 among three time periods of assessment within group.

The percentage of the participants who reported sugar consumption in meal only in social care 1 at $T_0$ to $T_1$ was increasing whereas at $T_1$ to $T_2$ was not changing. Meanwhile, the percentage of those in social care 2 at $T_0$ to $T_2$ was increasing. However, there was significant difference in sugar consumption in meal only in both social care 1 and social care 2 at $T_0$ to $T_1$, $T_0$ to $T_2$ within group and among three time periods of assessment within group.

**Oral hygiene status among three time periods of assessment**

The distribution of oral hygiene status including debris index simplified (DI-S) score and dental plaque acid production score among Thai elderly according by social care facilities at baseline ($T_0$), 2 months ($T_1$) and 6 months follow up ($T_2$) was summarized in Table 6.

**Debris index simplified score**

The overall average DI-S score of the participants in both social care 1 and social care 2 at $T_0$ to $T_1$ was decreasing whereas at $T_1$ to $T_2$ was increasing. However, there was significant difference in the overall average DI-S score of the participants in both social care 1 and social care 2 at $T_0$ to $T_1$, $T_0$ to $T_2$ within group and among three time periods of assessment within group and between groups and only in social care 1 at $T_1$ to $T_2$ within group.

**Dental plaque acid production score**

The highest score of dental plaque acid production including red/pink, purple and light blue, the percentage of the participants in red/pink group in both social care 1 and social care 2 at $T_0$ to $T_1$ was increasing whereas at $T_1$ to $T_2$ was decreasing. On the contrary, the percentage of those in purple group in both social care 1 and social care 2 at $T_0$ to $T_1$ was decreasing whereas at $T_1$ to $T_2$ was increasing. Meanwhile, the percentage of those in light blue group in both social care 1 and social care 2 at $T_0$ to $T_2$ was decreasing. However, there was significant difference in red/pink group of those in both social care 1 and social care 2 at $T_0$ to $T_1$ within group and only in social care 1 among three time periods of assessment within group. Moreover, there was significant difference in light blue group of those in social care 2 at $T_0$ to $T_1$ within group.

**Table 6:** Oral health behavior and oral hygiene status among Thai elderly residing in social care facilities at baseline, 2 months and 6 months follow up

| Outcome measured | Social care 1 (N=31) (%) | | | Social care 2 (N=37) (%) | | |
|---|---|---|---|---|---|---|
| | $T_0$ | $T_1$ | $T_2$ | $T_0$ | $T_1$ | $T_2$ |
| **Oral health behavior** | | | | | | |
| (=1 if Yes, = 0 if otherwise) | | | | | | |
| - Brushing twice daily with fluoride toothpaste | 25 (80.60) | 27 (87.10) | 27 (87.10) | 33 (89.20) | 34 (91.90) | 32 (86.50) |
| - Use interproximal cleaning | 22 (71.10) | 20 (64.50) | 21 (67.70) | 19 (51.40) | 21 (56.80) | 21 (56.80) |
| - Dental prostheses cleaning regularly | 19 (61.30)[i,A,C] | 22 (71.00)[i,A] | 23 (74.20)[i,C] | 19 (51.40)[A,C] | 22 (59.50)[A] | 22 (59.50)[C] |
| - Sugar consumption in meal only | 22 (71.00)[i,A,C] | 31 (100.00)[i,A] | 31 (100.00)[i,C] | 19 (51.40)[i,A,C] | 33 (89.20)[i,A] | 35 (94.60)[i,C] |
| **Oral hygiene status** | | | | | | |
| - Debris index simplified score (Mean±SD) | 1.23±0.52[i,ii,A,C] | 0.58±0.46[i,ii,A,B] | 0.76±0.46[i,ii,B,C] | 1.37±0.48[i,ii,A,C] | 0.98±0.40[i,ii,A] | 1.03±0.46[i,ii,C] |
| - Dental plaque acid production score* | | | | | | |
| - Red/pink (0) | 5 (16.10)[i,A] | 13 (41.90)[i,A] | 10 (32.30)[i] | 5 (13.50)[A] | 14 (37.80)[A] | 8 (21.60) |
| - Purple (1) | 22 (71.00) | 16 (51.60) | 19 (61.30) | 25 (67.60) | 20 (54.10) | 26 (70.30) |
| - Light blue (2) | 4 (12.90) | 2 (6.50) | 2 (6.50) | 7 (18.90)[A] | 3 (8.10)[A] | 3 (8.10) |
| *The highest score indicated | | | | | | |

[i] Statistical significance differences (P<.05) among periods of assessments within group; Friedman test or Cochran's Q test or Repeated Measures ANOVA

[ii] Statistical significance differences (P<.05) among periods of assessments between groups; Fisher's Exact Test or Mann Whitney U Test or Repeated Measures ANOVA

[A, B, C] A pair of statistically significant difference (P<0.05) among periods of assessments within group; Wilcoxon Signed Ranks Test or McNemar Test or Repeated Measures ANOVA

The Association between socio-economic status and oral health behavior among Thai elderly residing in social care facilities at baseline ($T_0$) and 6 months follow up ($T_2$) was summarized in Table 7. The binary logistic regression revealed that the educational attainment at higher than secondary level was significant related to use interproximal cleaning in social care 1 at baseline ($T_0$). Moreover, the educational attainment at higher than secondary level was significant related to dental prostheses cleaning regularly and practice all mentioned above in social care 2 at 6 months follow up ($T_2$).

The Association between oral health behaviors and oral hygiene status among Thai elderly residing in social care facilities at baseline ($T_0$) and 6 months follow up ($T_2$) was summarized in Table 8. The simple linear regression revealed that tooth brushing twice daily with fluoride toothpaste at baseline ($T_0$) and tooth brushing twice daily with fluoride toothpaste and use Interproximal cleaning at 6 months follow up ($T_2$) in social care 1 was significant related to debris index simplified score. Moreover, tooth brushing twice daily with fluoride toothpaste and dental prostheses cleaning regularly at baseline ($T_0$) and tooth brushing twice daily with fluoride toothpaste, use Interproximal cleaning and dental prostheses cleaning regularly at 6 months follow up ($T_2$) in social care 2 was significant related to debris index simplified score. Furthermore, the binary logistic regression revealed that sugar consumption in meal only was significant related to dental plaque acid production score present only red/pink in social care 1 at 6 months follow up ($T_2$).

**Table 7:** Association between socio-economic status and oral health behavior among Thai elderly residing in social care facilities at baseline and 6 months follow up

| **Oral health behaviors** (=1 if Yes, = 0 if otherwise) | **Socioeconomic status** OR (95% CI) | |
|---|---|---|
| | Personal income >15,000 Baht/month* | Educational attainment Higher than secondary level** |
| **Social care 1 (N=31)** | | |
| **Baseline** ($T_0$) | | |
| - Brushing twice daily with fluoride toothpaste | 6.33 (0.92-43.62) | 1.78 (0.30-10.72) |
| - Use interproximal cleaning | 1.07 (0.21-5.58) | 1.40 (0.29-6.77) |
| - Dental prostheses cleaning regularly | 0.57 (1.12-2.85) | 0.37 (0.08-1.81) |
| - Sugar consumption in meal only | 1.07 (0.21-5.58) | 0.13 (0.01-1.18) |
| - Practice all mentioned above | 2.46 (0.41-14.63) | 0.50 (0.11-2.32) |
| **6 months ($T_2$)** | | |
| - Brushing twice daily with fluoride toothpaste | 8.57 (0.76-96.52) | 1.70 (0.21-14.02) |
| - Use interproximal cleaning | 1.67 (0.34-8.09) | 7.47 (1.39-40.25)[i] |
| - Dental prostheses cleaning regularly | 0.22 (0.23-2.12) | 0.43 (0.07-2.62) |
| - Sugar consumption in meal only | 0.00 (0.00- 0.00) | 0.00 (0.00- 0.00) |
| - Practice all mentioned above | 1.33 (0.29-6.04) | 2.40 (0.55-10.53) |
| **Social care 2 (N=37)** | | |
| **Baseline** ($T_0$) | | |
| - Brushing twice daily with fluoride toothpaste | 0.00 (0.00- 0.00) | 1.30 (0.12-14.12) |
| - Use interproximal cleaning | 2.13 (0.34-13.40) | 3.64 (0.78-16.93) |
| - Dental prostheses cleaning regularly | 0.54 (0.05-6.24) | 0.12 (0.01-1.18) |
| - Sugar consumption in meal only | 0.94 (0.16-5.39) | 1.20 (0.29-4.94) |
| - Practice all mentioned above | 1.04 (0.10-10.91) | 1.22 (0.19-7.90) |
| **6 months ($T_2$)** | | |
| - Brushing twice daily with fluoride toothpaste | 0.00 (0.00- 0.00) | 1.82 (0.18-18.41) |
| - Use interproximal cleaning | 0.00 (0.00- 0.00) | 5.25 (0.95-29.18) |
| - Dental prostheses cleaning regularly | 0.00 (0.00- 0.00) | 11.67 (1.30-104.82)[i] |
| - Sugar consumption in meal only | 0.00 (0.00- 0.00) | 0.00 (0.00- 0.00) |
| - Practice all mentioned above | 0.00 (0.00- 0.00) | 10.13 (1.77-57.91)[i] |

Note: *,** Personal income ≤15,000 baht/month, educational attainment up to secondary level (as reference group),
OR (95%CI) = odds ratio (95% confidence interval)
[i] Statistical significance differences (P<.05)

**Table 8:** Association between oral health behaviors and oral hygiene status among Thai elderly residing in social care facilities at baseline and 6 months follow up

| Oral health behavior (=1 if Yes, = 0 if otherwise) | Oral hygiene status | |
|---|---|---|
| | Debris index simplified score* *Beta-coefficient* | Dental plaque acid production score present only red/pink** OR (95% CI) |
| **Social care 1 (N=31)** | | |
| **Baseline ($T_0$)** | | |
| - Brushing twice daily with fluoride toothpaste | -0.453[!] | 0.00 (0.00- 0.00) |
| - Use interproximal cleaning | -0.300 | 0.55 (0.76-4.04) |
| - Dental prostheses cleaning regularly | 0.221 | 2.93 (0.29-30.01) |
| - Sugar consumption in meal only | 0.018 | 0.55 (0.08-4.04) |
| - Practice all mentioned above | -0.156 | 1.50 (0.21-10.79) |
| **6 months ($T_2$)** | | |
| - Brushing twice daily with fluoride toothpaste | -0.482[!] | 0.00 (0.00- 0.00) |
| - Use Interproximal cleaning | -0.389[!] | 2.46 (0.41-14.63) |
| - Dental prostheses cleaning regularly | 0.133 | 1.60 (0.26-9.83) |
| - Sugar consumption in meal only | 0.000 | 0.47 (0.00- 0.00)[!] |
| - Practice all mentioned above | -0.323 | 5.33 (0.91-31.44) |
| **Social care 2 (N=37)** | | |
| **Baseline ($T_0$)** | | |
| - Brushing twice daily with fluoride toothpaste | -0.411[!] | 0.00 (0.00- 0.00) |
| - Use Interproximal cleaning | -0.269 | 0.59 (0.-094.01) |
| - Dental prostheses cleaning regularly | 0.330[!] | 0.00 (0.00- 0.00) |
| - Sugar consumption in meal only | 0.031 | 1.50 (0.22-10.22) |
| - Practice all mentioned above | -0.144 | 1.35 (0.12-14.73) |
| **6 months ($T_2$)** | | |
| - Brushing twice daily with fluoride toothpaste | -0.364[!] | 1.12 (0.11-11.70) |
| - Use Interproximal cleaning | -0.519[!] | 2.80 (0.48-16.25) |
| - Dental prostheses cleaning regularly | -0.367[!] | 1.18 (0.24-5.89) |
| - Sugar consumption in meal only | 0.281 | 0.00 (0.00- 0.00) |
| - Practice all mentioned above | -0.406[!] | 2.36 (0.47-11.82) |

Note: *Linear regression, **Logistic regression with dental plaque acid production score present purple or light blue (as reference group), OR (95%CI) = odds ratio (95% confidence interval)

# CHAPTER V
# DISCUSISON

This study was an experimental study aim to evaluate effectiveness of the oral hygiene practice guidelines to improve oral health behavior and oral hygiene status among Thai elderly residing in social care 1 and social care 2 in Bangkok, Thailand.

## Socio-demographic characteristics at baseline

At baseline ($T_0$), the average age of the participants in social care 1 was quite similarly to those in social care 2. Less than half of the participants in both social care 1 and social care 2 were male. The participants in social care 1 had significant higher personal income per month and educational attainment than those in social care 2. When considered the socio-economic status based on income, education and occupation it could be noticed that the participants in social care 1 had higher lever of the socio-economic status than those in social care 2.



## Oral health status at baseline

The average active caries, inactive caries and missing teeth of the participants in social care 2 were higher than those in social care 1. However, it was interesting that the average filling teeth of the participants in social care 2 was lower than those in social care 1. Moreover, the average DMFT of the participants in social care 1 was lower than those in social care 2. The presence of active caries and missing teeth revealed the dental treatment needs. It could be noticed that the participants in social care 1 were more likely pay attention in their oral health status and dental treatment more than those in social care 2.

The percentage of the participants who had number of remaining teeth less than 20 teeth and the average of missing teeth in social care 1 were lower than those in social care 2. However, the participants in social care 1 had dental prostheses more than those in social care 2. These results reflect the fact that the dental treatment costs are quite expensive and the participants in social care 1 are more eligible subsidized the prosthodontics treatments than those in social care 2. Consistent with the participants in social care 1 had higher lever of the socio-economic status than those in social care 2.

Moreover, most of the participants in social care 1 had fixed partial denture whereas most of those in social care 2 had removable partial denture. These results consistent with removable partial dentures are probably the cheapest prosthodontics solution when cost-related factors are decisive regarding what dental treatments are provided.[72] However, removable partial dentures were increased the risk of dental caries and periodontal disease due to plaque accumulation at tooth surface bordering the appliance.[73] Theses link to the average active caries of the participants in social care 2 was higher of those in social care 1. Moreover, these also affected the oral hygiene status that the average debris index simplified (DI-S) score and dental plaque acid production score of the participants in social care 2 were higher than those in social care 1.



**Oral hygiene practice guidelines**

The oral hygiene practice guidelines followed a common risk approach[70] and Ottawa Charter-based geriatric oral health promotion matrix[71] aimed to improve oral health behavior which was one of the concerning factors in oral disease prevention. These practice guidelines provided a common behavioral risk factor approach mediated through oral health educational program with subsequent follow up leading to improve oral hygiene status among Thai elderly residing in social care facilities. These practice guidelines comprised an individual oral self-care and diet counseling using motivational interviewing, oral hygiene instruction, oral self-care

demonstration and self-practice session including an appropriate tooth brushing technique, how to used dental floss and interproximal brush and dental prostheses cleaning technique. All the process of these practice guidelines were accomplished by the trained dental professionals. Moreover, the message in the media was not properly targeted for the elderly[11] therefore this study used the individual oral self-care and diet counseling mediate through motivational interviewing which provided the elderly achieved their exactly entire problems and absolutely found the appropriate solutions together with the dental professionals as well as these maximized learning capacity and contributed the empowerment to the elderly. Furthermore, the oral self-care demonstration and self-practice session were superior to a one-time only group oral health education because these provided the elderly had enough time to understand and memory the oral hygiene instruction and tried to practice themselves leading to had more self-confidence and known how to do directly. Consistent with the oral health education was a cost-effective component in oral health prevention especially in developing countries which had limited oral health resource and low level of oral hygiene status.[74]

**Effectiveness of oral hygiene practice guidelines on oral health behavior**

Although after received the oral hygiene practice guidelines, the percentages of the participants who reported tooth brushing twice daily with fluoride toothpaste in social care 1 at $T_0$ to $T_1$ was increasing whereas at $T_1$ to $T_2$ was not changing. Meanwhile, the percentage of those in social care 2 at $T_0$ to $T_1$ was increasing whereas at $T_1$ to $T_2$ was decreasing. However, there was no significant difference in tooth brushing twice daily with fluoride toothpaste among three time periods of assessment in both social care 1 and social care 2. These results showed the oral hygiene practice guidelines improved the tooth brushing frequency among Thai elderly residing in social care facilities. These results indicated that some participants did not recognize the importance of the oral hygiene instructions addressed to them. These calls for integrating a clear oral hygiene instructions and self-practice demonstrations and emphasizing value of the proper oral self-care practice to serve

as a motivation tool for the participants to follow the recommended oral hygiene practice guidelines to improve their oral health behavior. Consistent with, the recommended oral hygiene practice guidelines should be emphasized and repeatedly updated among the elderly.[75]

There was no significant difference in the used of fluoride toothpaste among three time periods of assessment in both social care 1 and social care 2. Almost of the participants reported always used the fluoride toothpaste daily with tooth brushing technique to clean their teeth. These results showed the oral hygiene practice guidelines did not improve the used of fluoride toothpaste among Thai elderly residing in social care facilities. Consistent with the fact that fluoride toothpaste is the most common vehicle and easily available for daily fluoride application in dental caries prevention.[11]

There was no significant difference in interproximal cleaning among three time periods of assessment in both social care 1 and social care 2. However, the percentage of the participants who reported interproximal cleaning was increasing compared to baseline in both social care 1 and social care 2. Moreover, dental prostheses cleaning regularly and sugar consumption in meal only were significant differences among three time periods of assessment in both social care 1 and social care 2. These results showed the oral hygiene practice guidelines improved the interproximal cleaning, dental prostheses cleaning regularly and sugar consumption in meal only among Thai elderly residing in social care facilities. Consistent with results from systematic reviews[76] and educational interventions[77] concluded that oral health education was effective in increasing knowledge among adults, elderly and even in disable subjects. Moreover, these results consistent with reports on oral health education had effectiveness to improve plaque removal technique [78] and tooth brushing skills.[79] However, previous studies reported that interdental cleaning seems to be a challenge with increasing age in general although it is still an under-used measure among the present elderly.[80]

**Effectiveness of oral hygiene practice guidelines on oral hygiene status**

Although, the overall average DI-S score and dental plaque acid production score of the participants in both social care 1 and social care 2 were decreasing from $T_0$ to $T_1$ whereas were increasing from $T_1$ to $T_2$. However, there were significant differences in the overall average DI-S score and dental plaque acid production score among three time periods of assessment in both social care 1 and social care 2. These results showed the oral hygiene practice guidelines improved the overall average DI-S score and dental plaque acid production score among Thai elderly residing in social care facilities. Consistent with evidence from systematic reviews[81] reported that advocate dental plaque and calculus professional mechanical control along with oral health education could support a patient to facilitate effective oral hygiene.[29] Moreover, these results also consistent with previous studies reported that dental professional should provide a tri-tone plaque disclosing agent (GC Tri Plaque ID Gel) serve as a motivational implement leading to empowers the dental professional and motivates the elderly to improve their oral hygiene status.[67] However, these results also indicated that some participants did not recognize the importance of the oral hygiene instructions addressed to them especially the elderly who had low socio-economic status. Consistent with previous studies reported that effectiveness of oral hygiene is an important public health issue and call for improvement over decades.[82] These calls for integrating a clear oral hygiene instructions and self-practice demonstrations and emphasizing value of the proper oral self-practice to serve as a motivation tool for the participants to follow the recommended oral hygiene practice guidelines to improve their oral hygiene status. Consistent with, the recommended oral hygiene practice guidelines should be emphasized and repeatedly updated among the elderly.[75]

# CHAPTER VI
# CONCLUSION

The oral hygiene practice guidelines had effectiveness to improve the oral health behavior and oral hygiene status among Thai elderly residing in social care facilities. These interactive preventive practice guidelines used the common behavioral risk factors approach mediated through oral health education program with subsequent follow up provided as a reference for further developmental studies in oral health promotion among the elderly.

## Recommendation

The oral hygiene practice guidelines had effectiveness to improve the oral health behavior and oral hygiene status among Thai elderly residing in social care facilities. Further studies need to incorporate a longer time follow up period to evaluate the effectiveness of these practice guidelines and sustainability over the time period of assessment. Moreover, further studies need to develop the practice guidelines which more increase motivation to the elderly to improve their oral health behavior leading to appropriate oral hygiene status. Furthermore, further studied need to apply oral hygiene instructions, oral self-care demonstration and self-practice session booster to sustain the effectiveness of the oral hygiene practice guidelines among Thai elderly residing in social care facilities.

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# APPENDIX

**Questionnaire and oral examination form**

**แบบบันทึกการตรวจสุขภาพช่องปากผู้สูงอายุ**

**ชื่อ-สกุล ..... เลขที่ .....**

**<u>ส่วนที่ 1</u> ข้อมูลทั่วไป** ทำเครื่องหมาย / หน้าคำตอบที่ท่านเลือก

1. อายุ ..... ปี 2. เพศ ☐ 1) ชาย ☐ 2) หญิง

3. รายได้เฉลี่ยต่อเดือน

☐ 1) ไม่มีรายได้ ☐ 2) 1-5,000 บาท ☐ 3) 5,001-15,000 บาท

☐ 4) 15,001-30,000 บาท ☐ 5) 30,001-50,000 บาท ☐ 6) 50,000 บาท ขึ้นไป

4. การศึกษา (ระบุการศึกษาขั้นสูงสุด)

☐ 1) ไม่เคยเรียน ☐ 2) ประถมศึกษา ☐ 3) มัธยมศึกษา

☐ 4) อาชีวศึกษา / อนุปริญญา ☐ 5) ปริญญาตรี ☐ 6) สูงกว่าปริญญาตรี

5. โรคประจำตัวหรือโรคทางระบบที่แพทย์ระบุ

☐ 1) ไม่มี ☐ 2) มีโรค

กรณีที่ตอบ “ มีโรค ” โรคที่พบ ได้แก่ (ตอบได้มากกว่า 1 ข้อ)

☐ 1) โรคเบาหวาน ☐ 2) โรคความดันโลหิตสูง ☐ 3) โรคหัวใจและหลอดเลือด

☐ 4) เคยได้รับการฉายรังสีเพื่อรักษามะเร็งบริเวณศีรษะและลำคอ ☐ 5) อื่นๆ ระบุ.....

6. สภาวะหรือได้รับยาที่มีผลต่อความบกพร่องของส่วนประกอบ/ปริมาณ/การหลั่งของน้ำลาย

☐ 1) ไม่มี ☐ 2) มี

กรณีที่ตอบ “ มี ” ได้แก่ (ตอบได้มากกว่า 1 ข้อ)

☐ 1) ยาลดความดันโลหิต ☐ 2) ยาแก้แพ้ ☐ 3) ยาระงับประสาท

☐ 4) อื่นๆ ระบุ.....

7. ความถี่ในการบริโภคอาหารประเภทแป้งและน้ำตาล (เมื่อวานนี้)

☐ 1) เฉพาะในมื้ออาหาร ☐ 2) ระหว่างมื้อ 1-3 ครั้ง/วัน ☐ 3) ระหว่างมื้อมากกว่า 3 ครั้ง/วัน

**<u>ส่วนที่ 2</u> พฤติกรรมการทำความสะอาดช่องปาก** ทำเครื่องหมาย / หน้าคำตอบที่ท่านเลือก

8. การแปรงฟัน

☐ 1) ไม่ได้แปรงฟัน / ไม่ได้ใช้แปรงสีฟัน ☐ 2) วันละ 1 ครั้ง

☐ 3) วันละ 2 ครั้ง ☐ 4) มากกว่าวันละ 2 ครั้ง

9. การใช้ยาสีฟันที่มีส่วนผสมของฟลูออไรด์ทุกวัน

☐ 1) ไม่ใช้ ☐ 2) ใช้

10. การทำความสะอาดซอกฟัน

☐ 1) ไม่ได้ทำ ☐ 2) ทำ

กรณีที่ตอบ “ ทำ ” โดยใช้ (ตอบได้มากกว่า 1 ข้อ)

☐ 1) ไหมขัดฟัน ☐ 2) แปรงซอกฟัน

11. การทำความสะอาดฟันปลอม (กรณีใส่ฟันปลอม)

11.1 ฟันปลอมชนิดถอดได้ (กรณีใส่ฟันปลอมชนิดถอดได้)

☐ 1) ไม่ได้ทำ ☐ 2) แปรงสีฟัน

☐ 3) ล้างด้วยน้ำเปล่า / ผลิตภัณฑ์ทำความสะอาดฟันปลอม ☐ 4) อื่นๆ โปรดระบุ.....

11.2 ฟันปลอมชนิดติดแน่น (กรณีใส่ฟันปลอมชนิดติดแน่น)

☐ 1) ไม่ได้ทำ ☐ 2) แปรงซอกฟัน

☐ 3) ไหมขัดฟัน / ซุปเปอร์ฟลอส ☐ 4) อื่นๆ โปรดระบุ.....

**<u>ส่วนที่ 3</u> การตรวจสภาวะช่องปาก**

**สภาวะโรคฟันผุ**

| 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 |

**รหัสตรวจฟัน**

0 Sound

1 Active caries (intact surface)

2 Active caries (surface discontinuity)

3 Active caries (cavity)

4 Inactive caries (intact surface)

5 Inactive caries (surface discontinuity)

6 Inactive caries (cavity)

7 Filling (sound surface)

8 Filling + Active caries

9 Filling + Inactive caries

**ปริมาณแผ่นคราบจุลินทรีย์**

| 16 | 11 | 26 |
|---|---|---|
| | | |
| | | |
| 46 | 31 | 36 |

รหัสตรวจคราบจุลินทรีย์

0 ไม่พบ

1 พบน้อยกว่า 1/3

2 พบ 1/3-2/3

3 พบมากกว่า 2/3

**สภาวะการมีฟันปลอม**

| บน |
|---|
| |
| |
| ล่าง |

รหัสตรวจฟันปลอม

0 ไม่มีฟันปลอม

1 ฟันปลอมชนิดติดแน่น

2 ฟันปลอมชนิดถอดได้

**ความสามารถในการผลิตกรดของแผ่นคราบจุลินทรีย์**

| |
|---|

รหัสตรวจความสามารถในการผลิตกรด

0 สีชมพูหรือสีแดง

1 สีฟ้าหรือสีม่วง

2 สีฟ้าอ่อน

**สภาวะการมีคราบหินปูน**

| |
|---|

รหัสตรวจคราบหินปูน

0 ไม่มีคราบหินปูน

1 มีคราบหินปูน

## การประเมินความเสี่ยง

**ความเสี่ยงต่อโรคฟันผุ**

☐ ต่ำ รหัสตรวจฟัน 0, 4, 5, 6, 7,9

รหัสตรวจความสามารถในการผลิตกรด 0

☐ สูง รหัสตรวจฟัน 1,2, 3, 8

รหัสตรวจความสามารถในการผลิตกรด 1

**ความเสี่ยงต่อโรคปริทันต์**

☐ ต่ำ รหัสตรวจคราบจุลินทรีย์ 0, 1

รหัสตรวจคราบหินปูน 0

☐ สูง รหัสตรวจคราบจุลินทรีย์ 2, 3

รหัสตรวจคราบหินปูน 1

**แนวทางการปฏิบัติ**

☐ 1.ทักษะการดูแลสุขภาพช่องปาก

☐ 2.วิธีทำความสะอาดฟันปลอมชนิดถอดได้

☐ 3.วิธีทำความสะอาดฟันปลอมชนิดติดแน่น

☐ 4.ปรับพฤติกรรมการบริโภคน้ำตาล

☐ 5.ให้ฟลูออไรด์เฉพาะที่โดยทันตบุคลากร

☐ 6.พบทันตแพทย์เพื่อบูรณะฟัน

☐ 7.พบทันตแพทย์เพื่อขูดหินปูนและขัดฟัน

☐ 8.พบทันตแพทย์ทุก 6 เดือน

**Risk assessment evaluation and oral hygiene practice guidelines**

**แบบประเมินความเสี่ยงและแนวทางการปฏิบัติในการดูแลสุขภาพช่องปาก**

| | ความเสี่ยง | เงื่อนไข | แนวทางการปฏิบัติ |
|---|---|---|---|
| **<u>ปัจจัยเสี่ยงทั่วไป</u>** | | | |
| 3. รายได้เฉลี่ยต่อเดือน | ต่ำ | กรณีตอบข้อ 3) ถึง ข้อ 6) | 1.ให้คำแนะนำและฝึกทักษะในการดูแลสุขภาพช่องปาก<br>2.ไปพบทันตแพทย์ทุก 6 เดือน |
| | สูง | กรณีตอบข้อ 1) ถึง ข้อ 2) | 1.ให้คำแนะนำและฝึกทักษะในการดูแลสุขภาพช่องปาก<br>2.ไปพบทันตแพทย์ทุก 6 เดือน |
| 4. การศึกษา<br>(ระบุการศึกษาขั้นสูงสุด) | ต่ำ | กรณีตอบข้อ 3) ถึง ข้อ 6) | 1.ให้คำแนะนำและฝึกทักษะในการดูแลสุขภาพช่องปาก<br>2.ไปพบทันตแพทย์ทุก 6 เดือน |
| | สูง | กรณีตอบข้อ 1) ถึง ข้อ 2) | 1.ให้คำแนะนำและฝึกทักษะในการดูแลสุขภาพช่องปาก<br>2.ไปพบทันตแพทย์ทุก 6 เดือน |
| 5. โรคประจำตัวหรือโรคทางระบบที่แพทย์ระบุ | ต่ำ | กรณีตอบข้อ 1) | 1.ให้คำแนะนำและฝึกทักษะในการดูแลสุขภาพช่องปาก<br>2.ไปพบทันตแพทย์ทุก 6 เดือน |
| | สูง | กรณีตอบข้อ 2) | **โรคเบาหวาน**<br>1.ให้คำแนะนำและฝึกทักษะในการดูแลสุขภาพช่องปาก<br>2.ปรับพฤติกรรมการบริโภคน้ำตาล<br>3.ไปพบทันตแพทย์ทุก 6 เดือน |
| | | | **โรคความดันโลหิตสูง**<br>1.ให้คำแนะนำและฝึกทักษะในการดูแลสุขภาพช่องปาก<br>2.กรณีมีอาการปากแห้งร่วมด้วยอาจพิจารณาให้ฟลูออไรด์ความเข้มข้นสูงเฉพาะที่โดยทันตบุคลากร<br>3.ไปพบทันตแพทย์ทุก 6 เดือน |

| | ความเสี่ยง | เงื่อนไข | แนวทางการปฏิบัติ |
|---|---|---|---|
| | | | **โรคหัวใจและหลอดเลือด**<br>1.ให้คำแนะนำและฝึกทักษะในการดูแลสุขภาพช่องปาก<br>2.ไปพบทันตแพทย์ทุก 6 เดือน |
| | | | **ฉายรังสีบริเวณศีรษะและลำคอ**<br>1.ให้คำแนะนำและฝึกทักษะในการดูแลสุขภาพช่องปาก<br>2.ให้ฟลูออไรด์ความเข้มข้นสูงเฉพาะที่โดยทันตบุคลากร<br>3.ไปพบทันตแพทย์ทุก 6 เดือน |
| 6. สภาวะหรือได้รับยาที่มีผลต่อความบกพร่องของส่วนประกอบ/ปริมาณ/การหลั่งของน้ำลาย | ต่ำ | กรณีตอบข้อ 1) | 1.ให้คำแนะนำและฝึกทักษะในการดูแลสุขภาพช่องปาก<br>2.ไปพบทันตแพทย์ทุก 6 เดือน |
| | สูง | กรณีตอบข้อ 2) | 1.ให้คำแนะนำและฝึกทักษะในการดูแลสุขภาพช่องปาก<br>2.ให้ฟลูออไรด์ความเข้มข้นสูงเฉพาะที่โดยทันตบุคลากร<br>3.ไปพบทันตแพทย์ทุก 6 เดือน |
| 7. ความถี่ในการบริโภคอาหารประเภทแป้งและน้ำตาล (เมื่อวานนี้) | ต่ำ | กรณีตอบข้อ 1) | 1.ให้คำแนะนำและฝึกทักษะในการดูแลสุขภาพช่องปาก<br>2.ไปพบทันตแพทย์ทุก 6 เดือน |
| | สูง | กรณีตอบข้อ 2) หรือ ข้อ 3) | 1.ให้คำแนะนำและฝึกทักษะในการดูแลสุขภาพช่องปาก<br>2.ปรับพฤติกรรมการบริโภคน้ำตาล<br>3.ไปพบทันตแพทย์ทุก 6 เดือน |
| **<u>ปัจจัยเสี่ยงด้านพฤติกรรม</u>** | | | |
| 8. การแปรงฟัน | ต่ำ | กรณีตอบข้อ 3) หรือ 4) | 1.ทบทวนวิธีการแปรงฟันที่ถูกต้อง<br>2.ไปพบทันตแพทย์ทุก 6 เดือน |
| | สูง | กรณีตอบข้อ 1) หรือ 2) | 1.แนะนำการแปรงฟันอย่างน้อยวันละ 2 ครั้ง เช้าและก่อนนอน<br>2.สอนวิธีการแปรงฟันที่ถูกต้อง<br>3.ไปพบทันตแพทย์ทุก 6 เดือน |

| | ความเสี่ยง | เงื่อนไข | แนวทางการปฏิบัติ |
|---|---|---|---|
| 9. การใช้ยาสีฟันที่มีส่วนผสมของฟลูออไรด์ทุกวัน | ต่ำ | กรณีตอบข้อ 2) | 1.ทบทวนวิธีการแปรงฟันที่ถูกต้อง<br>2.ไปพบทันตแพทย์ทุก 6 เดือน |
| | สูง | กรณีตอบข้อ 1) | 1.แนะนำให้ใช้ยาสีฟันที่มีส่วนผสมของฟลูออไรด์ร่วมกับการแปรงฟันทุกครั้ง<br>2.สอนวิธีการแปรงฟันที่ถูกต้อง<br>3.ไปพบทันตแพทย์ทุก 6 เดือน |
| 10. การทำความสะอาดบริเวณซอกฟัน | ต่ำ | กรณีตอบข้อ 2) | 1.ทบทวนวิธีการใช้อุปกรณ์ในการทำความสะอาดซอกฟันที่ถูกต้อง<br>2.ไปพบทันตแพทย์ทุก 6 เดือน |
| | สูง | กรณีตอบข้อ 1) | 1.แนะนำให้ทำความสะอาดซอกฟันทุกครั้ง<br>2.สอนวิธีการใช้อุปกรณ์ในการทำความสะอาดซอกฟันที่ถูกต้อง<br>3.ไปพบทันตแพทย์ทุก 6 เดือน |
| 11. การทำความสะอาดฟันปลอม (กรณีใส่ฟันปลอม)<br>11.1 ฟันปลอมชนิดถอดได้ (กรณีใส่ฟันปลอมชนิดถอดได้) | ต่ำ | กรณีตอบข้อ 2) หรือ ข้อ 3) กรณีมีฟันปลอมชนิดถอดได้ในช่องปาก | 1.ทบทวนวิธีการทำความสะอาดฟันปลอมชนิดถอดได้ที่ถูกต้อง<br>2.ไปพบทันตแพทย์ทุก 6 เดือน |
| | สูง | กรณี รหัสตรวจฟัน 1, 2, 3, 8<br>กรณีวัดความสามารถในการผลิตกรดของคราบจุลินทรีย์พบสีม่วงหรือสีฟ้าอ่อน | 1.ให้คำแนะนำและฝึกทักษะในการดูแลสุขภาพช่องปาก<br>2.ปรับพฤติกรรมการบริโภคน้ำตาล<br>3.ให้ฟลูออไรด์ความเข้มข้นสูงเฉพาะที่โดยทันตบุคลากร<br>4.ไปพบทันตแพทย์เพื่อทำการบูรณะฟัน<br>5.ไปพบทันตแพทย์ทุก 6 เดือน |
| **<u>ปัจจัยเสี่ยงต่อโรคในช่องปาก</u>** | | | |
| **ปัจจัยเสี่ยงต่อโรคฟันผุ** | ต่ำ | กรณี รหัสตรวจฟัน 0, 4, 5, 6, 7,9<br>กรณีวัดความสามารถในการผลิตกรดของคราบจุลินทรีย์พบสีชมพูหรือสีแดง | 1.ให้คำแนะนำและฝึกทักษะในการดูแลสุขภาพช่องปาก<br>2.ไปพบทันตแพทย์ทุก 6 เดือน |

| | ความเสี่ยง | เงื่อนไข | แนวทางการปฏิบัติ |
|---|---|---|---|
| | สูง | กรณี รหัสตรวจฟัน 1, 2, 3, 8<br>กรณีวัดความสามารถในการผลิตกรดของคราบจุลินทรีย์พบสีม่วงหรือสีฟ้าอ่อน | 1.ให้คำแนะนำและฝึกทักษะในการดูแลสุขภาพช่องปาก<br>2.ปรับพฤติกรรมการบริโภคน้ำตาล<br>3.ให้ฟลูออไรด์ความเข้มข้นสูงเฉพาะที่โดยทันตบุคลากร<br>4.ไปพบทันตแพทย์เพื่อทำการบูรณะฟัน<br>5.ไปพบทันตแพทย์ทุก 6 เดือน |
| **ปัจจัยเสี่ยงต่อโรคปริทันต์** | ต่ำ | กรณี รหัสคราบจุลินทร์ 0, 1<br>กรณี รหัสคราบหินปูน 0 | 1.ให้คำแนะนำและฝึกทักษะในการดูแลสุขภาพช่องปาก<br>2.ไปพบทันตแพทย์ทุก 6 เดือน |
| | สูง | กรณี รหัสคราบจุลินทร์ 2, 3<br>กรณี รหัสคราบหินปูน 1 | 1.ให้คำแนะนำและฝึกทักษะในการดูแลสุขภาพช่องปาก<br>2.ไปพบทันตแพทย์เพื่อทำการขูดหินปูนและขัดฟัน<br>3.ไปพบทันตแพทย์ทุก 6 เดือน |

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PERSONAL DETAILS

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