

# FACTORS ASSOCIATED WITH THE UTILIZATION OF DENTAL HEALTH SERVICES BY THE ELDERLY PATIENTS IN HEALTH CENTER NO.54, BANGKOK, THAILAND

Saruta Saengtipbovorn<sup>1,2,\*</sup>, Surasak Taneepanichskul<sup>2</sup>, Sathirakorn Pongpanich<sup>2</sup>, Lawan Boonyamanond<sup>1</sup>

<sup>1</sup>Health Center no.54, Bangkok 10140, Thailand

<sup>2</sup>College of Public Health Sciences, Chulalongkorn University, Bangkok 10330, Thailand

**ABSTRACT:** A cross-sectional descriptive study was conducted among 335 elderly patients who had oral health problems in diabetes, hypertension, elderly and general clinic in Health Center no.54, Bangkok, Thailand. The objective of this study was to explore the factors associated with the utilization of dental health services in elderly patients. The data was collected by face-to-face interview using a structured questionnaire. Data was analyzed by using descriptive statistic, Chi-square and Fisher Exact test. About 48.9 percent of the elderly patients had visited a dentist in the past year. 48.1 percent were received dental health services at Health Center no.54. 48.8 percent were received extraction last time. Most of the elderly patients (88.5%) went to the dentist for emergency. And only 9.0 percent check up regular. No need was the main reason for not using dental health services in the past. Monthly income, systemic disease, presence of supporting person to bring to Health Center no.54, cost of care, treatment received last time, using health insurance for dental health services, place of receiving dental health services, check up regular, attitude toward dental treatment and dental status were the factors associated with the utilization of dental health services in elderly patients. This indicates a compelling need for specific strategies for oral health promotion and disease prevention activities. It is essential to increase the involvement of other health professionals for elderly patients to overcome the barriers in dental health service utilization, and improve self-care capacity in oral health.

**Keywords:** Utilization, Dental health services, Elderly patients, Health Center no.54

## INTRODUCTION

The proportion of elderly in Thai population trend continues to increase from 6.8% in 1994 to 10.7% in 2007 [1]. Many of elderly people have a variety of systemic disease that will have an impact on their oral health care [2]. The elderly are at greater risk for oral disease, since gains in longevity result in more medically compromising conditions or systemic disease with oral manifestations. Several oral conditions are commonly found in elderly people such as tooth loss, oral cancer, dental caries, periodontal disease, and xerostomia [3]. Poor oral health may effect on general health, and several oral diseases are related to chronic disease such as diabetes mellitus [4]. Chronic diseases was also continues to increase in Thai population [5]. Prevention and early intervention strategies must be formulated to reduce the risk of oral disease.

Risk factors for oral diseases in the elderly can be reduced by personal home-care regimens,

professionally provided preventive, diagnostic and therapeutic care, change in high-risk behavior, and a supportive environment [3].

Oral health care is not only an effective strategy for the prevention, early diagnosis and treatment of orofacial disease and disorders, but also an essential component of general health promotion program [6]. Khananurak studied health equity in Thai aging from 2003 to 2006 by using secondary data from the Health and Welfare Survey, the National Statistical Office found more than 90% of Thai people got health insurance though universal health coverage. The universal health coverage can increase more access and utilization of health service among the poor elderly [7]. Despite of high coverage of national health insurance scheme, 32.8% of elderly did not use their health insurance for dental health care services [8]. From the 6th Thai National Oral Health Survey 2006-2007, most of Thai elderly people had dental caries (96.2%) and periodontal disease (84.2%) however only 32.3% used dental services in the last year [9]. Many studies was undertaken to assess the level and

\*Correspondence to: Saruta Saengtipbovorn  
E-mail: saruta79@gmail.com

the pattern of dental health services utilization in elderly people found that elderly people experience significant barriers to obtaining the necessary dental care [6, 10-13]. As evidence elsewhere suggests that oral health is associated with general health, there is scanty information on the factors associated with the use of dental health services in elderly patients who have dental health problems in Thai urban area.

Health center No. 54 located at Thung Kru District, Bangkok, Thailand responsible for the population in Bang-mod sub-district. Health situation in Bang-mod sub-district reported increasing prevalence of chronic disease, increasing proportion of elderly population, high prevalence of dental caries and periodontal disease. The objective of this study was to explore the factors associated with the utilization of dental health services in elderly patients who have oral health problems in Health Center no.54, Bangkok, Thailand.

## MATERIALS AND METHODS

This study using PRECEDE Framework [14] for the independent variable that might influence the utilization of dental health services (dependent variable) was divided into 3 sections: predisposing factors, enabling factors and reinforcing factors. Predisposing factors consist of age, gender, educational attainment, marital status, living arrangements, occupation, presence of systemic disease, dental status, oral health behaviors, self-perceived oral health, attitude toward dental treatment and dental symptoms. Enabling factors consist of monthly income, presence of supporting person to bring to Health Center no.54, cost of care, convenience to transportation and availability of dental services. Reinforcing factors consist of health insurance.

The cross-sectional descriptive study was conducted in Health Center no.54 from 4<sup>th</sup> January to 10<sup>th</sup> February 2012. The inclusion criteria of study population was elderly patients age over 60 years, both male and female, have oral health problems and have at least 1 natural tooth. The exclusion criteria was the elderly who have a communicable disorder and do not agree to participate.

The sample size was calculated using the formula below:

$$n = \frac{Z_{\alpha/2}^2 P(1-P)}{\Delta^2}$$

This formula developed by Cochran, 1963 [15] When P = 0.32 (the utilization of dental health services from the 6<sup>th</sup> Thai National Oral Health

Survey 2006-2007),  $\alpha = 0.05$ ,  $Z_{\alpha/2} = 1.96$  and  $\Delta = 0.05$

Three hundred and thirty five elderly patients were selected by using systematic sampling technique. Using lottery method for random sampling of the number between one to ten; the required number was selected for samples. Then use selected number for select sample in the diabetes, hypertension, elderly and general clinic. The measurement tools consist of structure questionnaire and oral health examination form which adapted from WHO Oral Health Assessment [16]. Structure questionnaire consist of 5 parts 35 questions: 1) general information 2) oral health behavior 3) utilization of dental health services 4) attitude toward dental treatment 5) self-perceived oral health and dental symptoms. The data collection process consisted of preparation stage and operation stage. Preparation stage consisted of 5 steps as follows: 1) Requested the director of Health center No.54 for permission to collect data. 2) Validated questionnaires by three experts in public health. The three experts consisted of expert in elderly, research methodology and dental. The Item-Objective Congruence Index (IOC) was 0.75. 3) The pilot study was carried out to test the reliability of questionnaire. Another 30 elderly patients who receiving service in Health center No.39, 42 and 59 were interviewed. The Conbrach's alpha coefficient was 0.81. 4) Standardize interviewer by trained the interviewer the way for data collection 5) Standardize dentist: only one dentist (researcher) diagnosed elderly patient's oral cavity. The internal reliability of diagnosis dental caries and periodontal disease by recheck elderly patient's oral cavity 10% of sample size. Analyze internal reliability with statistic Kappa. Result, Kappa was 0.99. Operation stage consisted of 3 steps as follows: 1) Research team introduce themselves. The research assistants were explained the purpose and procedures of this study to the participants who were included in the study. If they were willing to participate in the study, the participants were sign inform consent before collect data. 2) Clinical examination by one examiner (researcher). Procedures and diagnostic criteria were recommended by the World Health Organization [16] 3) Face-to-face interviewed, the participants who had dental health problems were face-to-face interviewed by trained interviewers using a structure questionnaire.

Data was analyzed by SPSS statistical package version 17.0. The statistics used were descriptive statistic for frequency distribution, mean and standard deviation, Chi-square and Fisher Exact test to analyze the association between influence

factors. The confident level for this study was 95%. Ethics approval was sought from the Ethics Review Committee for Research Involving Human Research Subjects, Health Science Group, Chulalongkorn University.

## RESULTS

### General characteristics

Among 335 elderly patients, most of them were female (76.1%). The average age (SD) was 66.53 (5.87) years old. The average monthly income (SD) was 3,947.16 (5.33) baht. 41.55% had income less than 1,500 baht per month. Most of them received financial aids for elderly (93.4%). 66.3% finished primary school. 66.9% were living in the area of Health Center no.54. 76.1% were married and 95.8% lived with family member. 75.8% did not have occupation. 66.3% had hypertension and 50.7% had cholesterol. More than half of them (65.7%) had universal coverage of Health Center no.54. 71.6% went to Health Center no.54 by themselves. 97.3% felt convenient of transportation. 47.2% thought the price of dental services was inexpensive (Table 1).

### Oral health behavior

Majority of elderly patients, 99.7% cleaned their oral cavity by tooth brushing, 50.4% used toothpicks. 11.9% used dental floss. 82.9% were brushing teeth two times/day. 8.7% were ever smoker. 89.7% smoked more than 10 years and 51.3% smoked less than 10 rolls/ day.

### Receiving dental service

Only 48.9% had visited a dentist in the past year. Among 322 elderly patients who had ever received dental services, 48.8% were received extraction last time. Most of them (88.5%) went to the dentist for emergency. Half of them did not use health insurance for dental health services (50.3%) and received dental health services at Health Center no.54 (48.1%). 91.0% did not check up regular.

### Reason for not using dental health services

The study found that no need was the reason that most of them strongly agree (68.4%) and had the highest score (4.39).

### Attitude toward dental treatment

The study found that attitude effects utilization of dental health services. Half of them (50.1%) were afraid about visiting a dentist for treatment. 77.3% were afraid in pain, 55.6% were afraid in injections and 55.0% were afraid drilling. Most of them thought the important of dental services and regular visits were important only when they had symptoms (40.9%, 31.9%, respectively). The average score of

**Table 1** Distribution of general characteristics (n=335)

Characteristics	Number	Percentage
<b>Gender</b>		
Male	80	23.9
Female	255	76.1
<b>Age (years): Mean (S.D.) = 66.53 (5.87)</b>		
<b>Monthly income (n=335)</b>		
< 1,500 baht	139	41.5
1,501-3,000 baht	82	24.5
3,001-5,000 baht	44	13.1
5,001-10,000 baht	49	14.6
≥ 10,001 baht	21	6.3
<b>Educational level</b>		
Illiteracy	33	9.9
Primary school	222	66.3
Secondary school	49	14.6
Vocational school	12	3.6
Bachelor degree	16	4.8
Master degree	3	0.9
<b>Marital status</b>		
Single	25	7.5
Married	255	76.1
Divorce/separate	20	6.0
Windowed	35	10.4
<b>Systemic disease</b>		
<b>Diabetes</b>		
Yes	139	41.5
No	196	58.5
<b>Hypertension</b>		
Yes	222	66.3
No	113	33.7
<b>Cardiovascular disease</b>		
Yes	39	11.6
No	296	88.4
<b>Cholesterol</b>		
Yes	170	50.7
No	165	49.4
<b>Health insurance (n=335)</b>		
Universal coverage (Health Center no.54)	220	65.7
Universal coverage (other)	71	21.2
Social insurance	5	1.5
Government/state enterprise officer	36	10.7
Disable/do not have	3	0.9
<b>Go to Health Center no.54 with (n=335)</b>		
By themselves	240	71.6
With family or cousin and friend	95	28.4
<b>Price of dental services (n=335)</b>		
Inexpensive	158	47.2
Reasonable	112	33.4
Expensive	65	19.4

**Table 2** Distribution of mean Decay, Missing and Filled Teeth (DMFT) (n=335)

Oral status	Mean (S.D.)
Mean DMFT	19.56 (7.80)
Decay teeth (DT)	2.87 (3.21)
Missing teeth (MT)	14.01 (8.05)
Filled teeth (FT)	2.68 (4.21)

**Table 3** Factors associated with utilization of dental health services (P<0.05)

Variable	Dental service utilization		$\chi^2$	P-value
	Use (%)	Not use (%)		
Monthly income (n=335)				
< 1,500 baht	50 (36.0)	89 (64.0)	16.321	0.003
1,501-3,000 baht	46 (56.1)	36 (43.9)		
3,001-5,000 baht	26 (59.1)	18 (40.9)		
5,001-10,000 baht	29 (59.2)	20 (40.8)		
≥ 10,001 baht	13 (61.9)	8 (38.1)		

overall feeling about visiting a dentist for treatment, important for receiving dental services and regular visits (SD) were 1.96 (1.21), 3.18 (1.24) and 2.73 (1.29), respectively.

#### Self-perceived oral health and dental symptoms

About 32.5%, 31.3% and 29.3% were stated their oral health poor, fair and good, respectively. More than half of them (64.5%) satisfy their oral health. The first three orders of dental symptoms within last 6 months were bad breath (57.6 %), dental calculus (56.4%) and dental caries (40.0%).

#### Oral health status

The prevalence of dental caries and periodontal disease of the samples were 74.3% and 86.9%, respectively. The mean DMFT (SD) was 19.56 (7.80) teeth per person. Mean DT (SD) was 2.87 (3.21) teeth per person. Mean MT (SD) was 14.01 (8.05) teeth per person. Mean FT (SD) was 2.68 (4.21) teeth per person (Table 2).

#### Factors associated with utilization of dental health services

Monthly income, systemic disease, presence of supporting person to bring to Health Center no.54, cost of care, treatment received last time, using health insurance for dental health services, place of receiving dental health services, check up regular, attitude toward dental treatment and dental status (prevalence of dental caries) were the factors associated with the utilization of dental health services in elderly patients who have oral health problems in Health Center no.54, Bangkok (Table 3).

#### DISCUSSION

48.9% of elderly patients had visited a dentist in the past year which more than the 6<sup>th</sup> Thai National Oral Health Survey 2006-2007 (32.3%) [9] but less than in Chiang Mai Province, Thailand, Mexico and Japan [10, 13, 17]. Monthly income was associated with utilization of dental health services. Most of them had monthly income less than 1,500 Baht. The previous study found higher socio-economic associated with the use of oral health care services [18, 19]. Systemic disease was associated with

utilization of dental health services. Ohi et al. [6] founded systemic disease was associated with regular dental service utilization [6]. Presence of supporting person was associated with utilization of dental health services. Elderly who had supporting person less use dental health services than who did not. Contributing factor could be that elderly patients are more reluctant to impose on supporting person for help [20]. Contrast with Chaiyasuk et al. who studied in Chiang Mai Province, Thailand, elderly who had supporting person associated with dental health service utilization [13]. Price of dental services was associated with utilization of dental health services. Elderly who thought the price was inexpensive more use dental health services. There was no difference among the samples by age and educational level. Contrast with the study in Japan found younger age and higher educational attainment were associated with the utilization of dental health services [6]. Living arrangements, occupation and convenience of transportation did not associated with utilization of dental health services. Contrast with the study in Chiang Mai Province, Thailand found these factors related to dental health service utilization. The controversy might be due to different in urban and rural area [13]. Oral health behavior and smoking behavior were not associated with utilization of dental health services. Contrast with the study in Japan founded smoking was associated with lack of dental utilization [6]. Treatment received last time was associated with utilization of dental health services. About half of samples received extraction last time which consistent with study in Chiang Mai and Nakhon Si Thammarat Province, Thailand [13, 21]. No need was the reason for not using dental health services that most of the samples answered which consistent with the study in Canada [22]. For attitude toward dental treatment, overall feeling about visiting a dentist for treatment and important of regular visits were associated with utilization of dental health services. The previous study found attitude factors related with dental health service utilization [13]. There were no difference among state of oral health and dental symptoms. In Brazil,

the majority of edentates perceived their oral health as good [23]. Varenne et al. [18] founded only 27.7% of the individuals who having experienced an oral health problem used oral health facilities [18]. Prevalence of dental caries was associated with utilization of dental health services. The study in Japan found oral health was a predictive factor for the utilization of dental services [6] whereas in Chiang Mai province, Thailand found oral health was not the factor for the utilization of dental services [13].

In 2011, National Health Security Office (NHSO) launch dental fund to increase dental health care accessibility in Thai population which cover prevention, promotion, treatment and rehabilitative services in elderly people [24]. Dental fund has benefit to overcome some barriers of utilization of dental health services in elderly people. However they are many barriers which still remain such as place of receiving dental health services, check up regular and attitude toward dental treatment so the future research should focus on determining the mechanisms through which these variables act. This might be best accomplished by qualitative methods that focus specifically on motivating factors and barriers responsible for elderly patients visiting or not visiting dentist. More specifically, a longitudinal study that tracks dental visits by elderly patients as they move from independent living to more depending lifestyles would provide valuable information about the factors that help ensure dental visits.

#### LIMITATION

The results did not representative the entire elderly patients due to the cross-sectional design and the study was done only in one health center which in urban area.

#### RECOMMENDATION

These finding suggest a high proportion of the elderly are not getting routine diagnostic and dental preventive services. It also indicates a compelling need for specific strategies for oral health promotion and disease prevention activities. Oral health programs might be design to make elderly patients realize the important of oral health and routine check-up. It is essential to increase the involvement of other health professionals and caregivers to overcome the barriers in dental health service utilization, and improve self-care capacity in oral health. The coordination between dental clinic and curative clinic is useful to improve the utilization of dental health services in elderly patients.

#### ACKNOWLEDGEMENT

The study has been completed successfully with excellent support from Prof. Surasak Taneepanichskul. Grateful thanks to Dr. Sathirakorn Pongpanich, Dr. Ratana Somrongthong and Dr. Lawan Boonyamanond for their great and valuable suggestions.

This publication with partial support provided by the funds made available under the Higher Education Research Promotion and National Research University Project of Thailand, Office of the Higher Education Commission (No.AS1148A).

#### REFERENCES

1. National Statistical Office. Report of the 2007 survey of the older person in Thailand. Bangkok: Bureau of Socio-Economic and Opinion 1, National Statistical Office, Thailand; 2007.
2. Scully C. The influence of systemic diseases on oral health care in older adults. *JADA*. 2007 Sep; 138: 7-14.
3. Gershin JA. Geriatric dentistry and prevention: research and public policy. *Adv Dent Res*. 1991; 5: 69-73.
4. Petersen PE, Bourgeois D, Ogawa H, Day SE, Ndiaye C. The global burden of oral diseases and risks to oral health. *Bull World Health Organ*. 2005; 83(9): 661-9.
5. Eakpalakorn W, Porapakkarm Y, Taneepanichskul S, Pakcharean H, Satearnnoppakao W, Thaikar K. Thai national health examination survey 2008-2009. Bangkok: The graphic system company; 2010. p. 127-48.
6. Ohi T, Sai M, Kikuchi M, Hattori M, Tsuboli A, Hozawa A et al. Determinants of the utilization of dental services in a community-dwelling elderly Japanese population. *Tohoku J Exp Med* 2009; 218(3): 241-9.
7. Khananurak B, Prasartkul P, Soonthornhdada K, Vapattanawong P, Tangcharoensathien V. Differential trends in equity of health service utilization of inpatient at secondary and tertiary health care levels among Thai elderly. *J Health Res*. 2011; 25(2): 45-8.
8. Wongkongkatap S. Equity to dental health care accessibility of Thai people in 2007. *JHSR*. 2007; 2(4): 566-78.
9. Bureau of Dental Health, Ministry of Public Health. The sixth Thai national oral health survey 2007-2008 report. Bangkok: The War Veterans Organization of Thailand; 2008. p. 44-5.
10. Sugihara N, Tsuchiya K, Hosaka M, Osawa H, Yamane G, Matsukubo T. Dental-care utilization patterns and factors associated with regular dental check-up in elderly. *Bull Tokyo Dent Coll*. 2010; 51(1): 15-21.
11. Rubinstein HG. Access to oral health care for elderly: mere words or action? *JDE*. 2005; 69(9): 1051-7.
12. Evashwick C, Conrad D, Lee F. Factors related to utilization of dental services by the elderly. *AJPH*. 1982; 72(10): 1129-35.
13. Chaiyasuk K, Keikarnka B, Ramasoota P. Dental health service utilization among the elderly people in Chiang Dao district, Chiang Mai province, Thailand. *Journal of Public Health and Development*. 2008; 6(3): 63-73.
14. Green LW, Kreuter MW, Deed SG, Partridge KB. *Health education planning: a diagnostic approach*. Palo Alto, CA: Mayfield; 1980.

15. Determining sample size. [cited 2011 Oct 9]. Available from: <http://edis.ifas.ufl.edu/pd006>
16. Parkash H, Duggal R, Mathur VP, Petersen PE. Manual for multi-centric oral health survey. Geneva: World Health Organization; 2004.
17. García SS, Hernández JF, Cedillo TJ, Mendoza JM, Morales HR, Santos FS et al. Oral health service utilization by elderly beneficiaries of the Mexican Institute of Social Security in Mexico city. *BMC Health Services Research*. 2007 Dec; 7: 211.
18. Varenne B, Petersen PE, Fournet F, Msellati P, Gary J, Ouattara S, et al. Illness-related behaviour and utilization of oral health services among adult city-dwellers in Burkina Faso: evidence from a household survey. *BMC health services research*. 2006; 6: 164.
19. Wamala S, Merlo J, Bostrom G. Inequity in access to dental care services explains current socioeconomic disparities in oral health: the Swedish national surveys of public health 2004-2005. *J Epidemiol Community Health*. 2006; 60: 1027-33.
20. Brothwell DJ, Jay M, Schonwetter DJ. Dental service utilization by independently dwelling older adults in Manitoba, Canada. *JCDA*. 2008 Mar; 74(2): 161a-e.
21. Rojanaworarit C, Panza A, Thearmontree A, Muengsan A. Self-initiated reasons for dental service use and received dental care interventions of adult and elderly patients attending a district hospital in southern Thailand. *J Health Res*. 2010; 24(suppl. 2): 173-8.
22. Arpin S, Brodeur JM, Corbeil P. Dental caries, problems perceived and use of services among institutionalized elderly in 3 regions of Quebec, Canada. *JCDA*. 2008 Nov; 74(9): 807a-d.
23. Martins BL, Barreto SM, Rosa AS, Pereira RD. Self-perceived oral health among Brazilian elderly individuals. *Rev Saúde Pública*. 2010; 44(5): 12-22.
24. Dental fund. [cited 2011 Oct 9]. Available from: [http://www.nhso.go.th/FrontEnd/page-fund\\_dentistry.aspx](http://www.nhso.go.th/FrontEnd/page-fund_dentistry.aspx)