BARRIERS TO DENTAL CARE UTILIZATION IN A GROUP OF THE ELDERLY IN CHONBURI PROVINCE

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BARRIERS TO DENTAL CARE UTILIZATION IN A GROUP OF THE ELDERLY IN CHONBURI PROVINCE

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ABSTRACT

This study aimed to determine barriers to dental care utilization, oral health status, the type of dental services and dental attendance patterns and the association of dental care utilization with its effecting factors of the elderly in Chonburi province. There were 329 subjects under studied, 81.8 % female, with a mean age of 66.06 years (SD = 4.86 years). All subjects were interviewed with the questionnaires by trained project assistants and then all subjects had an oral examination by one dentist.

Regarding oral health status, 21 % of the subjects were total edentulism,76 % were partial dentate dentition and 3.0 % had complete dentition. Amongst the subjects, it was found that there was high need of dental treatment while half of them perceived their need. The elders reported dental caries to be their major oral health problems.

Mode of time since last dental visit were within 2-3 years. Nine percent of the subjects stated that they had not received dental care in the last 5 years. It was found that the time since last dental visit was in association with the number of the remaining teeth (p-value = 0.008) and the rating of the Simplified Oral Hygiene Index (OHI – S) (p-value = 0.024).

The subjects who had poor attitudes had made use of dental services in the year preceding the survey lower than those who had good attitudes and fair attitudes. The elders who had good and fair attitudes attended dental care regularly.

The main reasons for utilization of dental care services in the subjects who attended dental care in previous 12 months were reported as dental pain or dental caries, denture problems and periodontal problems respectively. No symptoms and expense problems were the most commonly reported as barriers by the subjects who never had received dental care and those who did not attend dental care in previous 12 months. While no symptoms was claimed as the main barriers by the subjects who did not attend dental care on a regular basis. The results showed that there was association of financial resources (p-value = 0.031), education attainment (p-value = 0.024) and perceived need of dental treatment (p-value = 0.04) with dental care utilization in previous 12 months.

It is suggested to provide knowledge of good oral health to population from childhood to the elderly especially in the poor attitude and in low educational group. The population, especially the male elderly, should be motivated and should pay more attention to their oral health status including relationship between oral health and general health.

KEY WORDS : BARRIERS / DENTAL CARE UTILIZATION / ELDERLY
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อุปสรรคในการเข้ารับบริการทันตกรรมของผู้สูงอายุกลุ่มหนึ่งในจังหวัดชลบุรี (BARRIERS TO DENTAL CARE UTILIZATION IN A GROUP OF THE ELDERLY IN CHONBURI PROVINCE)

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บทคัดย่อ

การศึกษานี้มีวัตถุประสงค์เพื่อศึกษาอุปสรรคการเข้ารับบริการทันตกรรม, สภาวะสุขภาพช่องปาก, ชนิดของการบริการและรูปแบบการใช้บริการทางทันตกรรม และ ความสัมพันธ์ระหว่างการใช้บริการทางทันตกรรมและปัจจัยที่เกี่ยวข้องของผู้สูงอายุกลุ่มหนึ่งในจังหวัดชลบุรี โดยมีจำนวนประชากรตัวอย่าง 329 คน, เป็นเพศหญิง 81.8 %, อายุเฉลี่ย 66.06 ปี (SD= 4.86 ปี) กลุ่มตัวอย่างจะได้รับการสัมภาษณ์โดยผู้ช่วยวิจัยและตรวจช่องปากโดยทันตแพทย์

จากการศึกษาพบว่ามี 21 % ของกลุ่มตัวอย่างมีสันเหงือกว่างทั้งปาก และ 76% มีสันเหงือกว่างบางส่วน และ 3% มีจำนวนฟันครบทุกซี่ กลุ่มตัวอย่างมีความต้องการการรักษาสูง แต่มีประมาณครึ่งหนึ่งของกลุ่มตัวอย่างที่ตระหนักในความต้องการการรักษา และ ฟันผุเป็นปัญหาหลักของสุขภาพช่องปาก

ระยะเวลาจากการพบทันตแพทย์ครั้งสุดท้ายโดยส่วนใหญ่ประมาณ 2-3 ปี และ 9% ของกลุ่มตัวอย่างไม่ได้พบทันตแพทย์มามากกว่า 5 ปี จากการศึกษาพบความสัมพันธ์อย่างมีนัยสำคัญระหว่างระยะเวลาจากการพบทันตแพทย์ครั้งสุดท้าย กับจำนวนฟันที่เหลืออยู่ (p-value = 0.008) และระดับดัชนีความสะอาดช่องปาก (OHI – S) (p-value = 0.024)

กลุ่มตัวอย่างที่มีทัศนคติระดับน้อยเข้ารับบริการทันตกรรมในช่วง 1 ปีที่ผ่านมาน้อยกว่ากลุ่มที่มีทัศนคติระดับปานกลางและระดับดี นอกจากนี้พบว่ากลุ่มตัวอย่างที่มีทัศนคติระดับปานกลางและระดับดีเข้ารับบริการอย่างสม่ำเสมอ

เหตุผลหลักในการเข้ารับบริการทันตกรรมในช่วง 1 ปีที่ผ่านมา คือ การปวดฟันและฟันผุ, ปัญหาฟันปลอมและปัญหาโรคเหงือกตามลำดับ การไม่มีอาการผิดปกติและมีปัญหาค่าใช้จ่ายเป็นอุปสรรคการเข้ารับบริการทันตกรรมในกลุ่มตัวอย่างที่ไม่เคยเข้ารับบริการและไม่เข้ารับบริการทางทันตกรรมในช่วง 1 ปีที่ผ่านมา ในขณะที่การไม่มีอาการผิดปกติเป็นอุปสรรคการเข้ารับบริการในกลุ่มที่ไม่ได้เข้ารับบริการทางทันตกรรมอย่างสม่ำเสมอ จากการศึกษาพบความสัมพันธ์อย่างมีนัยสำคัญระหว่างแหล่งที่มาทางการเงิน (p-value = 0.031), ระดับการศึกษา (p-value = 0.024) และตระหนักในความต้องการการรักษา (p-value = 0.04) กับการเข้ารับบริการทางทันตกรรมในช่วง 1 ปีที่ผ่านมา

จากการศึกษาพบว่าควรให้ความรู้ทางทันตสุขภาพแก่ประชากรตั้งแต่วัยเยาว์จนถึงผู้สูงอายุโดยเฉพาะในกลุ่มผู้สูงอายุที่มีระดับการศึกษาน้อย และ ควรกระตุ้นให้ตระหนักถึงสภาวะสุขภาพช่องปากรวมถึงความสัมพันธ์ระหว่างสภาวะสุขภาพช่องปากกับสุขภาพร่างกาย โดยเฉพาะผู้สูงอายุชาย

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CHAPTER I

INTRODUCTION

Historically, the population has steadily increased in numbers. However, in recent years the rate of growth of the population has been declined. This is because the birth rate continues to decrease as does their proportion in the population. The explanations for these demographic changes are complex. Some of the more important reasons include protection of water supplies from acute parasite disease, immunization against childhood infectious diseases, control of acute infections with antibiotics resulting in increasing life span, and birth control resulting in a decline in birth rate (1).

In the 21 st century, the elderly population of the Asian region especially South East Asian countries is expected to rise rapidly. In Thailand, the elderly have been defined as that cohort of people aged 60 years and older. Thailand 's aged population have been estimated to increase from 7 % in 1987 to 14 % in 2017. In 2001, at least 9.3 % of Thai population is over the age of 60 (2).

The consequences of these demographic changes have an impact not only on social policy, but also on the delivery of all health care, including oral health care. Since the pattern of population aging in Thailand is changing rapidly, the impacts of the delivery of all health care are much greater than other developing countries where the changes take place slowly.

The aged are uniformly portrayed as the most vulnerable group in the society. They are often in poor health, frequently suffering from multiple chronic diseases, resulting in dependency and disability. Therefore, older people are more likely than any other age groups to use medical services. This is in contrast to the use of dental services ; the oldest old (80 years and older) are least likely to seek dental care (3,4).

The elderly with multiple physical and mental conditions are often isolated from society and the need for dental care is less important.

Decreasing dental care utilization in the elderly can accumulate dental problems such as decreasing efficacy of mastication. A lack of masticatory ability leads to an impaired nutritional status (5) that may aggravate or increase risk of chronic systemic diseases. For edentulous or partial dentate elders who wear dentures continuously and do not keep dentures adequately clean this may cause denture stomatitis. It was found that 20 % of denture wearers in elderly population were affected by denture stomatitis. The ill-fitting dentures can cause tissue ulceration and hyperkeratosis which have the potential to undergo malignant transformation (1).

According to Kandelman and Lepage (6), older people who have accumulated considerable dental problems during their lives have a negative attitude towards their own health and a tendency to accept the deterioration of their teeth as an integral part of old age. But this attitude does not reflect that of all older people. The older people who have no physical or mental handicaps have a different attitude which is generally more positive towards dental care.

In the past, the elderly population composed of a relatively small proportion of the population. The majority of these people were edentulous and used dental care infrequently (7). The new elderly are now in better education and have retained some teeth. These people have a wider range of needs and expectations and demand a greater variety of services than the previous emphasis on complete dentures (8).

To seek dental services, individuals must believe that they have dental problems and that they need dental care. This requires them to know what good oral health means, to have expectation of good oral health and to believe that good oral health brings them to achieve their goal of good health and good quality of life.

The oral health status of older people and the use of professional services are influenced by a number of factors. They are purposed to be socialization, cultural background, environments, income, education and an individual's experience with dental care (1,6). Our information about the patterns of dental service utilization and barriers to dental care for Thai elderly can be much benefit to dental public health. As

a result of this deficiency in information, this project was designed. Chonburi province was selected primarily for three reasons. The province is located in the eastern region of Thailand and about 80 kilometres from the east of Bangkok. The number of elders was relatively large and the elderly association was willing to participate and to be interviewed.

OBJECTIVES

This study aimed to determine :

1. Barriers to dental care utilization in a group of the Thai elderly in Chonburi province
2. Oral health status and attitude towards oral health and dental care utilization in a group of the Thai elderly in Chonburi province
3. The types of dental service and dental attendance patterns of the users
4. The association of dental care utilization with some interesting factors were also investigated

SCOPE OF THE STUDY

This study was conducted in all area of Chonburi province in February and March, 2002. Information were gathered by interviewing and oral examination, samples were non-institutionalized elderly persons randomly sampled from those aged 60 years and older. The subjects were not too ill and willing to cooperate.

EXPECTED OUTCOMES AND BENEFITS

The information on groups who have been nonusers and the reasons for nonattendance may enhance to develop dental services and oral health policy as regards to the needs of the elderly.

DEFFINITION OF TERMS

The elderly in Thailand , has been defined as that cohort of people aged 60 years and older.

Oral health is defined as a standard of an oral health and related tissue which enables an individual to eat, speak, and socialize without active disease, discomfort, pain, or embarrassment and which contributes to general well-being (9).

Attitude is defined as feeling or affect towards an object or behavior. In other words, attitudes include a set of beliefs and the individual 's evaluation of those beliefs (3).

Socio-demographic characteristics are defined as the characteristics of the elderly which include gender, age, marital status, educational attainment, living arrangement, financial resources and occupation.

Oral debris is the soft foreign matter on the surfaces of the teeth that consists of bacterial plaque, materia alba, and food debris (10).

Dental calculus is defined a hard deposit of inorganic salts composed primarily of calcium carbonate and phosphate mixed with debris, microorganisms, and desquamated epithelial cells (10).

There are two main types of dental calculus which are differentiated primarily by location on the tooth in relation to the free gingival margin (11) :

1. Supragingival calculus denotes desposite - usually white to yellowish - brown in colour - occlusal to the gingival margin.

2. Subgingival calculus denotes desposits apical to the free gingival margin. These desposits usually are light brown to black in colour because of the inclusion of blood pigments.

Denture retention (Retention of a denture) (12)

There are two definition of denture retention :

1. The resistance in the movement of a denture away from its tissue foundation especially in a vertical direction.

2. A quality of a denture that holds it to the tissue foundation and / or abutment teeth.

Denture stability (Stability of a Denture) (12)

There are two definition of denture stability :

1. The resistance of a denture to movement on its tissue foundation, especially to lateral (horizontal) forces as the opposed to vertical displacement (denture retention).

2. A quality of a denture that permits it to maintain a state of equilibrium in relation to its tissue foundation and / or abutment teeth.

Physiologic rest position (***Vertical dimension of rest***) (12)

There are three definitions of physiologic rest position :

1. The mandibular position assumed when the head is in an upright position and the involved muscles, particularly the elevator and depressor groups, are in equilibrium in tonic contraction, and the condyles are in a neutral, unstrained position.

2. The position assumed by the mandible when the attached muscles are in a state of tonic equilibration. The position is usually noted when the head is held upright.

3. The postural position of the mandible when an individual is resting comfortably in an upright position and the associated muscles are in a state of minimal contractual activity.

Vertical dimension of rest (rest vertical dimension) is the distance between two selected points measured when the mandible is in the physiologic rest position (12).

Vertical dimension of occlusion (occlusal vertical dimension) is the distance between two points when the occluding members are in contact (12).

Points of references can be placed on the nose and the chin or on the forehead of chin (13).

Freeway space (Interocclusal rest space) is the difference between the vertical dimension of rest and the vertical dimension while in occlusion (12).

The following equation will aid in understanding this concept :

Vertical dimension of rest = Vertical dimension of occlusion + Freeway space

Centric relation

The most retruded physiological relation of the mandible to the maxilla to and from which the individual can make lateral movements. It is a condition that can exist at various degrees of jaw separation. It occurs around the terminal axis (12).

Centric occlusion is the occlusion of opposing teeth when the mandible is in centric relation . This may or may not coincide with the maximal intercuspation position (12).

Maximal intercuspation is the complete intercuspation of the opposing teeth independent of condylar position , sometimes refered to as the best fit of the teeth regardless of the condylar position (12).

Working occlusion is the occlusion contacts of teeth on the side to which the mandible is moved (12).

Working side is the side toward which the mandible moves in a lateral excursion (10).

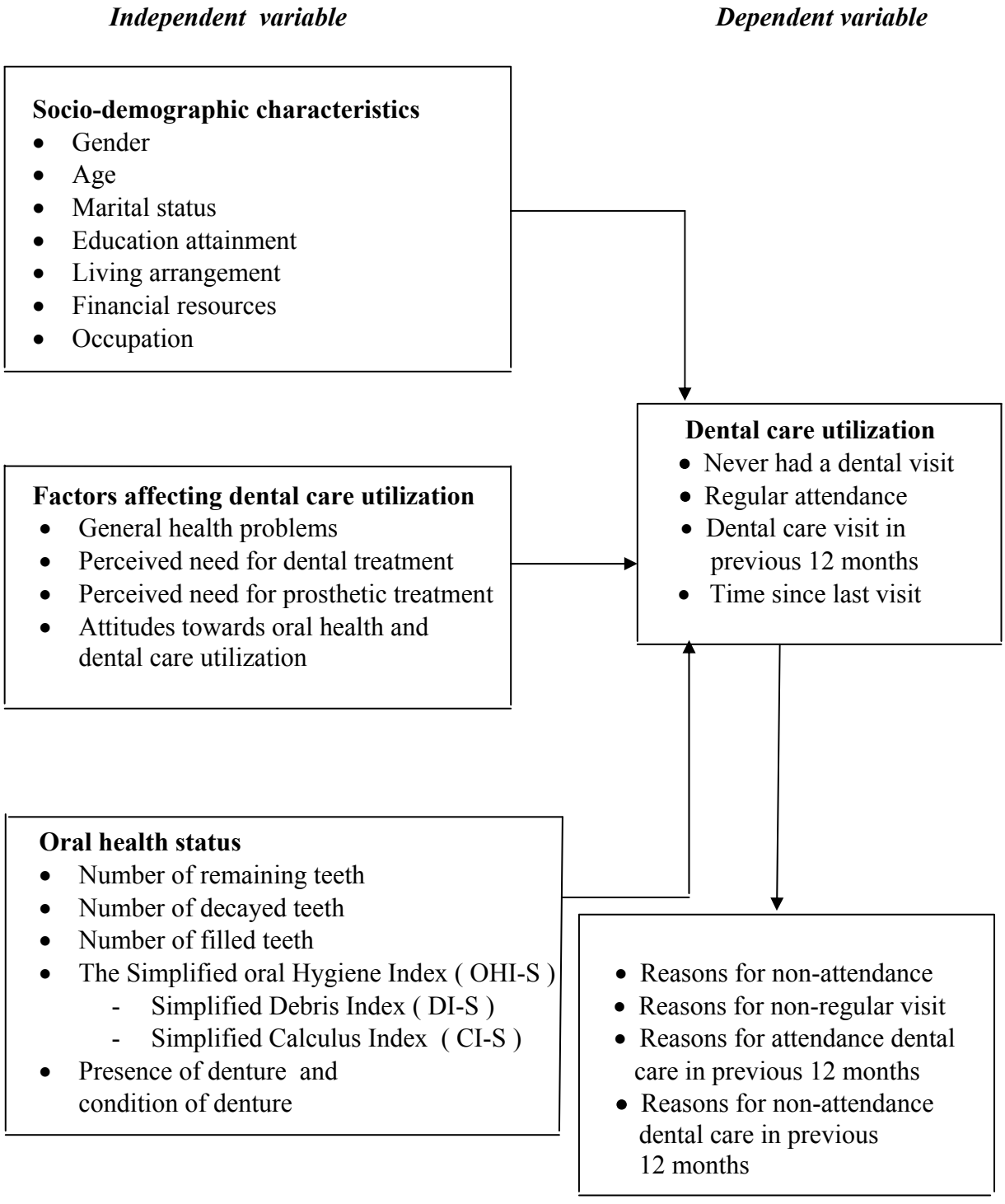
Working side contacts is contacts of teeth made on the side of the articulation toward which the mandible is moved during working movement (12).

Balancing side (Nonworking side) is the side of the mandible move towards the median line in a lateral excursion. The condyle on that side is referred to as nonwoking side condyle (10).

Balancing side contacts (Nonworking side contacts) is contacts of the teeth on the side opposite to the side toward which the mandible moves in articulation.

Balancing side interference (Nonworking side interference) is undesirable contacts of the opposing occlusal surfaces on the nonworking side.

CONCEPTUAL FRAMEWORK



CHAPTER II

LITERATURE REVIEW

The elderly and the oral health of the elderly population

At present, at least 9.3 % of Thai population is over the age of 60. While the proportion of the elderly was less than 10 %, Jittapunkul et al (14) found that the rate of elderly hospitalization in state hospital in Thailand was 30% and this caused the situation of bed-blocker. On the other hand, visits to dentists tended to decrease. Sinavarat et al (15) investigated the utilization of dental services by the elderly at the Faculty of Dentistry, Mahidol University during 1997-1999. The results indicated that only 4.6 % of the entire patients who seeked dental care services was the elderly persons. They had high demand for new prosthesis and emergency treatment, with relatively little demand for routine check-up. Lack of demand for dental care among the elderly appears to be an essential problems for dental profession in developing delivery system to treat elderly patients.

The current dental situation of the elderly is related to the history of dental provision and attitude over the whole life span of the individual. It has been well documented internationally that tooth loss increases with age. In the past, facts about the oral health status of the elderly usually showed that they had lost all or most of their teeth and had poor dentures or no dentures (16). More recent surveys, however, indicated a greater prevalence of retained teeth (17 , 18 , 19). Tooth loss is not a consequence of normal aging. It is expected that both the decrease of edentulousness and the increase in number of natural teeth will continue in the future.

An explanation of these changes in edentulousness may be associated with changing values and attitudes towards dentistry of various age cohorts. These attitudes have been influenced by the technologic advances in restorative dentistry, such as development of effective local anesthesia, the emergence of the high-speed handpiece

and fluoridation of water supplies. The attitude of dentists also has changed from one of extraction and replacement with complete dentures to one of restoration and maintenance of teeth and more recently to prevention and restoration of function and aesthetics (4,7).

Wilson and Branch (20) evaluated the attitudes of 500 community-dwelling aged 75 years and older. They found that age variable was not a good predictor of perceieved need or the use of dental services. The presence of teeth was a better predictor of perceived need than the usually reported factors of income and education.

As the older population can retain some teeth, they tend to have heavily restored dentitions. It has also been reported that older adults have higher dental caries experience, missing and filled teeth (DMF) and root surface caries (21,22). Furthermore, findings from numerous epidemiological studies reveal that older people frequently have poor oral hygiene, high levels of plaque and calculus, and high prevalence of periodontal disease (23). Persons who are functionally dependent because of physical frailty, mental confusion, or dementia are at the highest risk for caries and periodontal disease because of their inability to maintain oral hygiene independently (7).

Many older persons are likely to have chronic diseases, and so the prevalence of drug treatment increases in complexity with advancing years. These medications may cause hyposalivation or xerostomia. As saliva plays an important role in maintaining oral homeostatis, reduction of salivary flow can result in significant local and systemic consequences to the elderly, including rampant caries, periodontal disease, candidiasis, dysphagia and considerable subjective discomfort (23).

Data of the utilization of dental services by the elderly at the Faculty of Dentistry, Mahidol University from 1997-1999 indicated that 11.5 % of the elderly patient were edentulous, 88.5 % still maintained their natural teeth. The mean number of the remaining teeth was 18.5. The study also revealed that dental caries (68.3 %) and periodontal disease (40.3 %) became the oral health problems of these older adults. The most common oral lesions found in the elderly were denture stomatitis and candidiasis (5.8 %) (15). Dharmbhibhit and Buajeep (25) surveyed the oral health of

elderly patients from 1990-1992. It was reported that 87.8 % of the subjects had natural teeth. Sixty nine percent of the dentate elderly had gingival recession. The root caries index for patients with gingival recession was 49.8 %.

From these facts about the elderly 's oral health status, it can be concluded that the elderly are in need of professional dental services. By contrast, there is low effective utilization and demand for dental services by the elderly.

It has been well documented that regular attendances is beneficial to oral health . To promote regular attendance of the old population it is necessary to understand the factors that are barriers to dental care utilization and to develop oral health policy that suit the elderly ’s needs.

Barriers to dental care utilization

In the United States and some western countries, many studies have sought to investigate the barriers to dental care that prevent older adults from seeking treatment. Some results have been published as to the relative importance of these barriers.

Gender

Gender differences are more important in younger populations than among the elderly. Young females make 10-25 % more visits to dental providers than do males. But in the elderly, the difference is not significant. Perhaps because of greater utilization in the earlier years, older women are more likely than older men to be edentulous (26). And according to Ettinger and Beck (8), utilization of dental care by the edentulous elderly is substantially lower than that of the entire elderly population. Another factors may be that older men change their attendance behavior, perhaps in response to greater perceived need than the young (27).

Age

As the age increases, visits to physicians increase, whereas visits to dentists tend to decrease (2,3). While there is an increased risk of chronic systemic diseases as the

ages, the oral health is less important. Many people believe that dental diseases are not life - treatening and oral symptoms can be easily ignored.

Education

The Iowa survey of dental health in 1980 indicated that the older the age cohort, the lower their educational level and the less likely they were to be regular utilizers of dental services (8). Kaldelman and Lepage (6) concluded that the educational level essentially exerted its influence on the dental condition and the type of treatment carried out for elderly people.

Income

Economic factors are important in influencing dental utilization behavior. Kandelman and Lepage (6) analyzed the socio-economical status of the older persons. The results demonstrated that elderly persons having the highest salaries possessed the greater number of teeth and fillings. This implied an influence of financial factors upon the state of dental care and their use of professional services. When the socio-economic status was analysed with reference to the type of work undertaken in the past it was shown to influence the dental condition and the seeking of treatment in the same way as the income factor. This result was not surprising since there was a strong correlation between financial resources and occupations.

Tomar et al (28) studied the reasons for not visiting a dentist of adults in California. Cost of dental care was one of the principle reason. Cost was more frequently cited as the main reason for not going to a dentist among women than among men.

Lester et al (29) reported barriers to dental care in frail and functionally dependent older adults. They found that the elderly had poor perceived need of treatment and worried of costs of treatment. Knowledge of costs and exemption of charges was poor. But those who had received treatment were less likely to cite cost as a barrier. Therefore, explanations for underutilization by the elderly should not be limited to a matter of affordability only. It has been found that providing free or low

cost dental services to a population group for whom dental services were previously expensive does not necessarily enhance utilization (30).

General health problems

Kaldelman and Lepage (6) reported that handicap played an important role in the seeking of treatment. This study confirmed the observation of Stiefel et al (31). Physical and mental psychological impairments make cooperation and tolerance to dental procedures difficult. Several studies demonstrated that oral health status of this population is worse than that of the general population due to obstacles in obtaining dental services. However, decreasing levels of general health also decreases visiting to dentists (32,33).

Fear

Fear is defined as an emotional and physical response to a threat and danger (32). Fear and anxiety is the most usual reaction that is popularly refered to when the topics of dentists or dental visits are brought up. Therefore, fear is recognized as a significant barriers to the utilization of oral health services. Many studies found relationship between a high level of dental fear and no dental visits within the last five years, lack of a regular source of dental care, and history of avoiding dental visits (32, 34 ,35).

Attitudes

One of the barriers for dental care utilization of the elderly is an attitudinal nature. Some older people may have negative attitudes towards oral health. They exhibit low expectations regarding dental health. Chronic dental disease may be perceived by the elderly to be a natural outcome of aging (35). The majority of the elderly do not feel that it is necessary to visit a dentist despite observed extensive needs. They believe that nothing can be done to improve their oral health and aging is naturally associated with tooth loss. They are satisfied with the appearance of their teeth. These attitudes may preclude the use of dental services. It has been suggested that positive attitudes of the elderly towards dentistry need to be motivated. The elderly should realize that the feeling of well-being and a favorable self-image, ability to communicate and socialize and adequate nutrition, tastes and enjoyment of foods

can be dependent upon good oral health status and hygiene (16). Furthermore, these attitudes should be coupled with a greater understanding of how oral disease and tooth loss can be prevented.

Transportation

Many of the elderly are dependent on others for transportation. Transportation problems, lack of escorts and problems of accessibility of dental care for handicapped, homebound and institutionalized elderly are serious factors in their dental neglect (16,29). The results of the survey done by Lester et al (29) suggested that many elderly preferred to have treatment at home. This requires the availability of portable equipment. It needs a " house call " from the dentist which requires additional time per patient. Unfortunately, dentists, in general, lack the experience of treating patients away from the dental office (16).

Perceived need

An additional access barrier to dental care is the perceptions of need for dental treatment. Several population surveys have shown that the major reason that people do not visit dentists is beliefs that they do not have any oral conditions that require treatment.

Tennstedt et al (36) found that no perceived need was the most frequently cited reason for nonutilized group, including no problem or a problem not considered serious enough to seek care.

According to Tomar et al (28), no perceived reason to go was more frequently cited as the main reason for not going among men than women, and among edentulous persons than those with natural teeth.

Since adults are retaining more of their natural dentition into later life, the treatment needs of the elderly are expected to increase due to the greater number of teeth at risk to dental diseases (37). Gift and Newman (38) found that the presence of teeth was highly correlated with reporting a dental visit. Not surprisingly, dentulous older persons are more likely than edentulous persons to use dental services. Edentulous patients are less likely to perceive a need for treatment. A number of

studies (27, 29, 39 ,40) found perceived need, as tooth aches and oral discomfort, to be the most powerful predictors of dental care utilization.

CHAPTER III

MATERIALS AND METHODS

1. Research Design

The study was a descriptive research. The study subjects were a group of the elderly in Chonburi province who participate the elderly association. There were two distinct part, the first part was an interviewer-administered questionnaire. The interview was administered by 4 project assistants who were trained in interviewing techniques. Approximately 5 minutes were necessary for completion of the interview.

The second part was an oral examination conducted immediately following the interview. The dental data were collected by one dentist. All data were collected in February and March, 2002.

2. Population and Sample Group

Chonburi province was selected primarily for three reasons. The province is located in the eastern region of Thailand and about 80 kilometres from the east of Bangkok. The number of elders was relatively large and the elderly association was willing to participate and to be interviewed.

The samples consisted of community dwelling, noninstitutionalized elders aged 60 and older, living in Chonburi province. Excluded from the study were the elders considered to be unable to withstand the examination, and those with dementia.

2.1 Sample size estimation

According to Daniel (1995) (41), the sample size was calculated by using the equation :

$$n = \frac{N Z^2 \sigma^2}{e^2 (N - 1) + Z^2 \sigma^2}$$

For shortcut estimation of sample size :

$$n = \frac{N}{1 + N (e)^2}$$

when n = number of samples ;

N = number of the whole elderly population in Chonburi province * ;

e = allowabled error (0.05).

According to the above equation , the sample size was

$$n = \frac{90{,}397}{1 + 90{,}397 (0.05)^2}$$

$$n = 398.23$$

The minimum number of the samples estimated by the equation was 398 elders.

* There are 90,397 elders in Chonburi province which is 8.53 % of the entire population (42).

Sample selection

The sampling strategy involved multi-stage sampling.

Stage 1 Chonburi province was stratefied into 4 strata by characters and population size. There were metropolitan - Muang district, urban - population 150,000 and over, suburban - population 80,000 to 150,000 and rural - population under 80,000.

Strata 1 *metropolitan* - consisted of population 248,121 :

1. Muang district (248,121)

Strata 2 *urban* - consisted of population 339,455 :

1. Banglamung district (163,118)
2. Sriracha district (176,337)

Strata 3 *suburban* - consisted of population 323,756 :

1. Bunbung district (88,243)
2. Panus nikom district (118,285)
3. Sattahip district (117,228)

Strata 4 *rural* - consisted of population 148,364 :

1. Nongyai district (21,332)
2. Panthong district (46,243)
3. Kohsichang district (4,782)
4. Bothong district (42,495)
5. Kohchan subdistrict (33,512)

Stage 2 From each strata, simple random sampling without replacement proportional to size of the population in order to get samples of 400 subjects. The data from National Statistical Office (31 December 1999), the elders in Chonburi province was 8.53 % of Thai population.

Strata 1 population 248,121 : 21,164 elders : 94 subjects

Strata 2 population 339,455 : 28,955 elders : 128 subjects

Strata 3 population 323,756 : 27,616 elders : 122 subjects

Strata 4 population 148,364 : 12,655 elders : 56 subjects

Total : 400 subjects

Stage 3 Individuals who come to participate the elderly association activities at local hospital were randomly selected proportional to size of total population in each strata.

Strata 1 : 94 subjects were randomly selected from Muang district

Strata 2 : 128 subjects were randomly selected from Banglamung (64 subjects) and Sriracha district (64 subjects)

Strata 3 : 122 subjects were randomly selected from Panus nikom district (61 subjects) and Bunbung district (61 subjects)

Strata 4 : 56 subjects were randomly selected from Panthong district

3. Protection of Human Subjects

Before the interview and oral examination, potential participants were informed the purposes of the study and their right to participate or not. The duration of the process and the freedom to discontinue participation at any time were described. The collecting data were treated as confidential and presented as a group.

4. Questionnaires and instrumentation

4.1 Questionnaires

The questionnaire consisted of 2 parts. They were socio-demographic characteristics and factors affecting dental care utilization.

Part 1 Socio-demographic characteristics

The questionnaire included :

1. Gender
2. Age - counted at last birthday
3. Marital status
4. Educational attainment - recorded at the highest level of formal education
5. Living arrangement
6. Financial resources

Part 2 Factors affecting dental care utilization

Section 1 : Factors affecting dental care utilization

This section included :

- general health problems ;
- perceived need of dental treatment ;
- perceived need of prosthetic treatment .

Section 2 *:* Attitudes towards oral health and dental care utilization

Dental attitudes were measured from knowledge about oral health and oral health care. Scored 0 was given to wrong attitudes while score 1 to right attitudes. Total scores were grouped into poor, fair and good attitude.

- Subjects with no dentures responsed 11 items and total scores were grouped as the following ;

Scores			Rating
1-4	points	:	poor
5-7	points	:	fair
8-11	points	:	good

- Subjects wearing dentures responsed 14 items and total scores were grouped as the following ;

Scores			Rating
1-5	points	:	poor
6-10	points	:	fair
11-14	points	:	good

Section 3 : Dental care utilization

This section included :

A . Experience of a dental visit / reasons for non-attendance ;

Reasons for non-attendance included no symptoms, fear of dental treatment, expense problems, disability in travelling alone and other reasons.

B. Regular attendance / reasons for non-regular visit ;

Reasons for non-regular visit included no symptoms, fear of dental treatment, expense problems, disability in travelling alone and other reasons.

C. Attendance dental care visits in previous 12 months / reasons for attendance dental care visits in previous 12 months / reasons for nonattendance dental care visits in previous 12 months ;

Reasons for attendance in previous 12 months included dental caries and dental pain, periodontal problems, denture problems and other reasons.

Reasons for nonattendance in previous 12 months **i**ncluded no symptoms, fear of dental treatment , cost , disability in travelling alone and other reasons.

4.2 Instrumentation

According to World Health Organization (43), instruments for oral examination included an available comfortable chair, a plane mouth mirror **,** and an explorer no . 5

4.1.1 Plane mouth mirror ;

Figure 1 Plane mouth mirror

4.1.2 Explorer no.5

Figure 2 Explorer no. 5

The dental variables that were measured included :

- Number of the remaining teeth
- Dentition status (Decayed and Filled Teeth : DFT)

- Oral health status (Simplified Oral Hygiene Index : OHI-S)
- Denture status and need for dentures

5. Validity and Reliability of the Questionnaires

5.1 Validity

For content validity of the questionnaires, specialists in this field were consulted for correction and revision the content of the questionnaires. The questionnaires was corrected and revised according to suggestions of specialists.

5.2 Reliability

Forty elders were interviewed according to the questionnaires in order to check for the understanding of the questions and reliability of the answers.

6. Data collection

All subjects were interviewed according to the questionnaires by trained project assistants and then all subjects had their oral examination by one dentist. The subject sat on a chair available using natural light for conducting examination.The area was arranged for maximum efficacy and ease of operation.

1. Number of the remaining teeth : assessed on fully erupted permanent teeth (only remaining crown).

2. Decayed and filled Teeth (DFT)

2.1 Purpose

To determine total dental caries experiences, past and present.

2.2 Selection of teeth

A. DFT was based on 28 teeth

B. Teeth not counted

1. Third molars.

2. Unerupted teeth. A tooth considered erupted teeth when any part projected through the gingiva.

3. Congenitally missing and supernumerary teeth.

4. Primary teeth.

2.3 Procedure

A. Instrument

Each tooth was examined in a systemic sequence, using a plane mouth mirror, an explorer No.5 and adequate light.

B. Examination

Criteria for Identification of Dental Caries

A tooth was considered carious when

a. The lesion was clinically visible and obvious.

b. The explorer tip could penetrate into soft yielding material.

c. Discoloration or loss of translucency typical of undermined or demineralized enamel was apparent.

d. The explorer tip in a pit or fissure resisted removal after moderate to firm pressure on insertion.

2.4 Recording

A. Each tooth was recorded once.

B. " D " Recording

1. When both dental caries and restoration were present, the tooth was listed as D.
2. When a crown was broken down as a result of dental caries, it might be recorded as D.

C. " F " Recording

1. Permanent and temporary fillings were recorded as F.
2. A tooth with defective filling but without evidence of dental caries was recorded as F.

2.5 Scoring

A. Individual DFT

1. Total each component separately.
2. Total D + F = DF

DF as individual = Number of D + Number of F

B. Group Average

1. Total the DFs for each individual examined.
2. Divide the total DFs by the number of individual in the group.

$$\text{DF as group} = \frac{\text{Total DF as individual}}{\text{Number of All Subjects}}$$

3. The Simplified Oral Hygiene Index (OHI-S)

by Greene and Vermillion (11)

The Simplified Oral Hygiene Index (OHI-S) is composed of the combined Simplified Debris Index (DI-S) and Simplified Calculus Index (CI-S).

3.1 Purpose

To assess oral cleanliness by estimating the tooth surface covered with debris and / or calculus.

3.2 Selection of tooth surfaces

A . Identify the six specific teeth

The six surfaces examined for the OHI-S were selected from four posterior and two anterior teeth.

1. *Anterior portion*

- The labial surfaces of the maxillary right and the mandibular left central incisors were scored.
- In the absence of either of anterior teeth , the central incisor on the opposite side of the mid - line was substituted.

2. *Posterior portion*

- The first fully erupted tooth distal to the second bicuspid, usually the first molar but sometimes the second or third molar, was examined on each side of each arch.
- The buccal surfaces of the selected maxillary molar and the lingual surfaces of the selected mandibular molars were inspected.

Only fully erupted permanent teeth were scored . A tooth was considered to be fully erupted when the occlusal or incisal surface had reached the occlusal plane.

Natural teeth with full crown restorations and surfaces reduced in height by caries or trauma were not scored . Instead , an alternate tooth was examined.

B. Extent

For this procedure each surface, buccal or lingual, was considered to encompass half of the circumstance of the tooth.

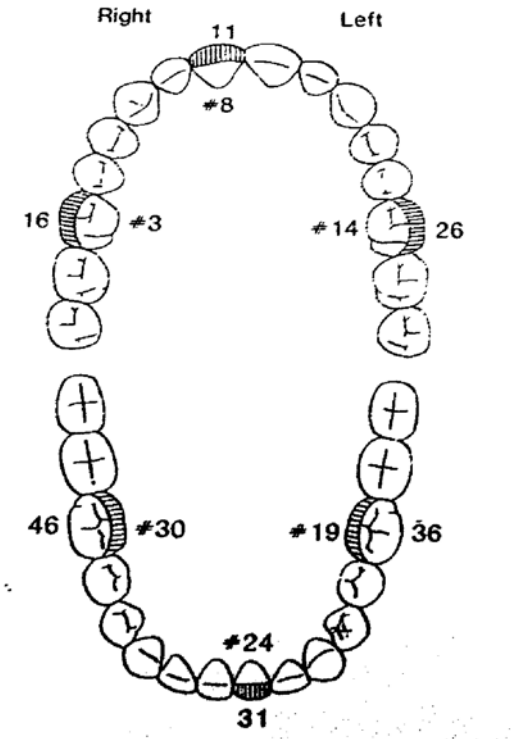


Figure 3 The Simplified Oral Hygiene Index. Six tooth surfaces were scored as follows: facial surfaces of the maxillary right and mandibular left central incisors, and the lingual surfaces of mandibular molars.

3.3 Procedure

A. Qualification

At least two of the six possible surfaces might be examined for an individual score to be calculated.

B. Evaluation

To obtain the scores for debris and calculus, each of six preselected tooth surfaces was examined first for debris and then for calculus.

C. Record Debris Scores

The side of the tip of a explorer was run across the tooth surface covered by debris.

Criteria

0 – No debris or stain present.

1 – Soft debris covering not more than one third of the tooth surface being examined , or the presence of extrinsic stains without debris, regardless of surface area covered.

2 – Soft debris covering more than one third but not more than two thirds of the exposed tooth surface.

3 – Soft debris covering more than two thirds of the exposed tooth surface.

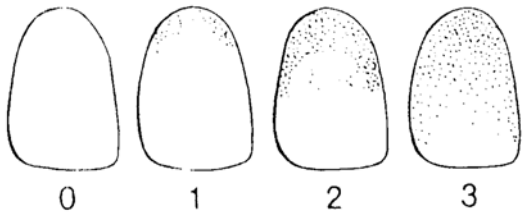


Figure 4 For dedris index , scoring of 0 to 3 was based on tooth surfaces covered by debris as shown.

D. Record Calculus Scores

An explorer was used to estimate surface area covered by supragingival calculus desposits. Identify subgingival desposits by exploring. Record only definite deposits of hard calculus.

The following scoring system was used :

0 – No calculus present.

1 – Supragingival calculus covering not more than one third of the exposed tooth surface being examined.

2 - Supragingival calculus covering more than one third but not more than two thirds of the exposed tooth surface or the presence of individual flecks of subgingival margin calculus around the cervical portion of the tooth.

3 – Supragingival calculus covering more than two thirds of the exposed tooth surface or a continuous heavy band of subgingival calculus around the cervical portion of the tooth.

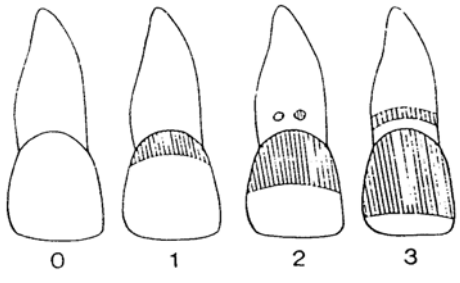


Figure 5 For calculus index, scoring of 0 to 3 was based on location and tooth surface area with calculus as shown.

3.4 Scoring

A. OHI-S for an individual

1 . Simplified Debris Index (DI-S) and Simplified Calculus Index (CI-S) were determining

a . Divided total scores by number of teeth scored.

b. DI-S and CI-S values range from 0 to 3.

Individual score were calculated to one decimal place.

$$\text{DI-S as individual} = \frac{\text{Total Debris Scores}}{\text{Number of Teeth Scored}}$$

$$\text{CI-S as individual} = \frac{\text{Total Calculus Scores}}{\text{Number of Teeth Scored}}$$

2. Simplified Oral Hygiene Index (OHI-S)

a . Combined the DI-S and CI-S.

b. OHI-S value ranges from 0 to 6.

Individual score were calculated to one decimal place .

OHI-S as individual = DI-S as individual + CI-S as individual

B . OHI-S Group Score

The average of the individual scores was computed by totalling the scores and dividing by the number of individuals.

Group scores might be calculated to either one or two decimal places depending on the sample size and used to be made of the data.

$$\text{DI-S as group} = \frac{\text{Total DI-S as individual}}{\text{Number of All Subjects}}$$

$$\text{CI-S as group} = \frac{\text{Total CI-S as individual}}{\text{Number of All Subjects}}$$

The average individual or group debris and calculus score were combined to obtain the Simplified Oral Hygiene Index.

$$\text{OHI-S as group} = \text{DI-S as group} + \text{CI-S as group}$$

$$\text{OHI-S as group} = \frac{\text{Total OHI-S as individual}}{\text{Number of All Subjects}}$$

C . Suggested Nominal Scale (range from 0 to 3)

DI-S and CI-S

Rating	*Scores*
Excellent	0
Good	0.1 - 0.6
Fair	0.7 - 1.8
Poor	1.9 - 3.0

OHI-S

Rating	*Scores*
Excellent	0
Good	0.1 - 1.2
Fair	1.3 - 3.0
Poor	3.1 - 6.0

4. Presence of denture and condition of denture

Upper and lower arch were examined and recorded separately.

4.1 Presence of denture

Each arch was recorded as no denture, partial denture or complete denture.

4.2 Condition of denture

If a subject was wearing one or two removable dentures , the denture was examined in 5 categories included retention, stability, vertical dimension, occlusion and defects of denture.

Condition of denture included :

4.2.1 Retention

4.2.2 Stability

4.2.3 Occlusal vertical dimension determination

1. Freeway space determination
2. Phonetics
3. Esthetics

4.2.4 Occlusion

4.2.5 Defects of denture

4.2.1 Retention of denture (44)

Assessment of retention of a denture combined with two methods . When the denture were held in position in the mouth ;

1. Dentist applied forces to remove the denture in a direction opposite that of its insertion.

2. To investigate denture movement while subject opened the mouth widely.

Retention of a denture was assessed as good , fair or poor depending on the quality of inherent of the denture that resisted the forces . Lack of retention caused the denture base to shift when forces were applied.

4.2.2 Stability of denture (44)

Stability of a denture was assessed as good, fair or poor depending on denture quality of being firm, steady, and constant in position when forces were applied. The denture were held in position in the mouth, dentist 's index finger applied forces on occlusal surface of the denture on premolar area bilaterally .Then the dentist should rise one index finger alternately and investigate denture movement concurrently. Lack of stability caused the denture base to shift when forces were applied.

4.2.3 Occlusal vertical dimension determination

Determination of vertical dimension combined with 3 methods :

1. Free way space determination ;

2. Phonetics method ;

3. Esthetics.

Vertical dimension was assessed as acceptable or unacceptable.

1. Free way space determination (45)

Freeway space could be measured by the difference of rest vertical dimension and occlusal vertical dimension. Points of reference were placed on the tip of the nose and the chin.

A. Physiologic rest position

The subjects sat comfortably on the chair, with the trunk upright and the head unsupported. After insertion of the denture into the subject's mouth, the subject swallowed and let the jaw relax. When relaxation was obvious, measured the distance between reference points.

B. Vertical dimension of occlusion

The vertical dimension of occlusion was measured with the upper and lower teeth in the maximum intercuspation.

A range of 2 to 4 mm of freeway space was considered within normal limited, the occlusal vertical dimension was considered as acceptable. If the difference was greater than 4 mm or less than 2 mm, the occlusal vertical dimension might be considered as unacceptable.

2. Phonetics method (45)

The production of ′*s*′ sound brought the anterior teeth close together. When the ′*s*′ sounds were articulated, the mandible moved forward. The incisal edge of the anterior teeth did not make contact.

If occlusal vertical dimension was considered as acceptable, when ′*s*′ sound was pronounced, there should be no contacting of teeth . If the anterior teeth touched when these sounds were made, the occlusal vertical dimension was not acceptable.

3. Esthetics (45)

Excessive freeway space resulted in a reduced interarch distance when teeth were in occlusion. Facial distortion appeared more noticable with overclosure than with the slightly opened closure, as the chin appeared to be closer to the nose, the commisure of the lips turned down and the lip lost their fullness. The muscles of facial expression lost their tonicity, and the face appeared flabby instead of firm and full. The cause of angular cheilitis was sometimes attributed to overclosure of occlusion.

4.2.4 Occlusion

Subjects were separated into two groups as wearing complete dentures and partial dentures. In each group, one dentist assessed dentures in centric position and occlusal disharmony. If the subject was wearing complete denture, centric relation was verified. This could be done by intraorally observing intercuspation. If the subject was wearing partial dentures, maximum intercuspation was verified. Occlusion was assessed as acceptable and not acceptable.

A . Intraoral observation of centric relation (44)

The test of accuracy of centric relation when the mandible was pulled back by the subject as far as it would go and closure was stopped at the first tooth contact. Any error in centric relation would be apparent when the teeth slided over each other.

B. Intraoral observation of maximum intercuspation (46)

Maximum intercuspation was verified by having the subject closed the mouth in centric occlusion, the upper and lower teeth were contacted . If the upper and lower teeth were not contacting, interferances were on denture teeth in centric occlusion.

4.2.5 Defects of denture

Defects of denture was recorded as broken flange, broken plate, broken teeth, broken clasp and other defects.

7. Data analysis

The questionnaires, after being edited, were coded and verified according to the criteria previously described. The data were analyzed by using SPSS version 10.0 (Statistical Package for Social Science for Windows) as the follows ;

1. Descriptive statistics were used to describe the data concerning socio-demographic characteristics of all the 400 study samples.

2. To test the association between dependent variables such as dental care utilization and independent variables such as socio-demographic characteristics, factors affecting dental care utilization and oral health status, using the chi-squared statistic test with a value of $p < 0.05$.

CHAPTER IV

RESULTS

Results were described into 5 parts

1. Socio-demographic characteristics
2. Oral health status
3. Attitudes towards oral health and dental care utilization
4. Pattern of dental care attendance and barriers to uptake of dental care
5. Association of dental care utilization with other affecting factors

1. Socio-demographic characteristics

The data were collected from 411 subjects. Because of 82 subjects discontinued all questionnaires and/or an oral examination. Therefore completed data were calculated from 329 subjects (80 %). Good health was reported by 33.7 % of the subjects. Most of the general health problems were headache. The elders reported dental caries and toothache to be their major oral health problems. Most elders could walk by themselves. Some needed help of a walking aid or a carer. The socio-demographic characteristics of the study samples were presented in Table 1 and Table 2 .

The majority of the subjects were female (81.8 %). The ages of the subjects ranged from 60 to 85 years, with a mean age of 66.06 years (SD = 4.86 years). More than half of the elders (56.8 %) were in the age group of 60-65 years (Table 1).

Table 1 Number and percentage of subjects classified by age group

Age group	**Number**	**Percentage**
60-64 years	187	56.8
65-69 years	90	27.4
70-74 years	30	9.1
75 + years	22	6.7
Mean = 66.06 , **SD** = 4.86		
Total	329	100.0

More than half of the subjects were married (52.0 %) and lived with others (94.3 %). Most (83.9 %) had completed primary school , and had income supported by family (40.7 %). Among the elders who had income from working , they reported their occupations as farmer or agriculturists (16.7 %), employee(15.5%), trader, vender or merchant (14.9 %), and others (5.5 %) (Table 2).

Table 2 Number and percentage of the elders classified by personal characteristics

Personal characteristics		Number (n = 329)	Percentage (%)
Gender	**:** Female	269	81.8
Marital status	**:** Married / Cohabitation	171	52.0
	Widow / Widower	110	33.4
Education attainment :			
Primary school graduated		276	83.9
Living arrangement :			
With others (>2 persons)		310	94.3
Financial resources :			
Income supported from family		134	40.7
Occupation :	Farmer / Argriculturist	55	16.7
	Employee	51	15.5
	Trader / Vender / Merchant	49	14.9
	Others	18	5.5

2. Oral health status

2.1 Tooth loss

In the study of 329 subjects, 70 subjects (21.3 %) were total edentulism and 249 subjects (75.7 %) were partially dentate individuals and 10 subjects (3.0 %) had complete dentition (Table 3).

Table 3 Number and percentage of edentulous , partial dentate , complete dentate subjects classified by age group

Age group	Edentulous		Partial dentate		Complete dentate		Total
	No	%	No	%	No	%	
60-64 years	27	8.2	151	45.9	9	2.7	187 (56.8)
65-69 years	21	6.4	69	21.0	0	0	90 (26.4)
70-74 years	8	2.4	21	6.4	1	0.3	30 (9.1)
75 + years	14	4.3	8	2.4	0	0	22 (6.7)
Total	70	21.3	249	75.7	10	3.0	329 (100.0)

2.2 Dentate subjects

In 259 partial dentate subjects and complete dentate subjects (78.7 %), it was found that the mean number of remaining teeth was 15.52 ± 6.91, caries were present in 99.2 % of dentate subjects. The mean number of decayed teeth per subjects was 3.19 ± 1.57 and mode of them was 3. The mean number of filled teeth was 2.64 ± 1.46 mode of them was 2 . The DFT value was 5.81 ± 2.24 and mode of them was 7.

To assess oral cleanliness of the subjects, the Simplified Oral Hygiene Index (OHI-S) was determined. It was noted that 246 dentate subjects were accepted in the OHI-S criteria to calculate an individual score. Approximately 60 % of the subjects were presented in fair rating of OHI-S, only 1 percent were in good oral hygiene condition (Table 4).

Table 4 Oral hygiene status in 246 dentate subjects *

Rating of OHI-S	Number	Percentage
Good (0.1-1.2)	3	1.2
Fair (1.3-3.0)	146	59.4
Poor (3.1-6.0)	97	39.4

Minimum = 1.0 , Maximum = 5.0

Mean = 2.91 , SD = 0.92

* 246 dentate subjects were accepted in the OHI-S criteria for an individual score to be calculated .

2.3 Denture state

Edentulous subjects

Of the 70 total edentulous subjects, 69 elders (98.6 %) wore complete upper and lower dentures, one elder (1.4 %) wore upper complete denture only. In 70 complete denture wearers, both upper and lower dentures were presented with fair retention of 54.3 %, along with 52.9 % of fair stability. Denture vertical dimension and occlusion was generally acceptable for more than half of the dentures, but 32.8 % had defects : primarily broken flange and broken plate (27.1 %). Eighty-six percent of the elders were satisfied with their dentures, while the dentist considered new dentures made for 36 elders (51.4 %).

Partially dentate subjects

There were 249 partially dentate subjects, 127 elders (51 %) wore complete or partial dentures or both and 122 elders (49.0 %) had no dentures. Of the 122 elders, 92.6 % need dentures.

In the group of denture wearers (both complete and partial dentures), 51.2 % had both upper and lower partial dentures, 22.8 % had either upper or lower partial dentures, 19.7 % had complete dentures occluding with partial dentures and only 6.3 % had either upper or lower complete dentures occluding natural teeth .Seventy-two percent of dentures had no defect. Of the denture defects, primarily defects were broken plate and broken teeth (28.3 %). Eighty-seven percent of denture wearers were satisfied with their dentures, while 18.1 % of them had dentures that were considered acceptable by dentist. All of denture wearers, 32.3 % wore their dentures during they slept.

2.4 Treatment needs

Overall, most of dentate subjects and edentulous subjects required dental treatment. Amongst the dentate group, prophylaxis or periodontal treatment was needed for 93.9 % of the subjects, restorative treatment was needed for 99.2 %. Despite this high treatment need only 57.9 % of the subjects perceived a need for dental treatment.

For total edentulous and partially dentate subjects, who have dentures , 14.1% perceived need of prosthetic treatment while the dentist suggested adjustment of existing dentures for 23.5 % of subjects and new dentures made for 27.8 % and 12.2 % of subjects did not need prosthetic treatment.

3. Attitudes towards oral health and dental care utilization

In this study, attitudes towards oral health and dental care utilization were measured by 14 belief items.

The total attitude scores for non - denture wearer were ranged from 3 to 11. The average score was 7.11 (SD = 1.70). The total scores for denture wearer ranged from 3 to 14 . The average score was 9.66 (SD = 1.68). (Table 5)

Table 5 Attitude scores for non - denture wearer and denture wearer

	Range	**Mean ± SD**
Non - denture wearer	3 - 11	7.11 ± 1.70
Denture wearer	3 - 14	9.66 ± 1.68

These total scores were grouped into poor, fair and good attitude. Most of the subjects had fair attitude (73.2 %). Seven percent of the subjects had poor attitude. Mode of poor attitude elders were presented in partial dentate without denture group, along with mode good attitude elders were in partial dentate with denture group. Mode of total edentulous group were presented in fair attitude.

Table 6 Categories of attitude classified by dentition status and wearing of denture

Attitude	Dentition status and wearing of dentures				
	Complete dentition	Partial dentate with denture	Partial dentate without denture	Total edentulous	Total
Good	0 (0.0 %)	48 (14.6 %)	2 (0.6 %)	15 (4.6 %)	65 (19.8 %)
Fair	9 (2.7 %)	77 (23.4 %)	100 (30.4 %)	55 (16.7 %)	241(73.2 %)
Poor	1 (0.3 %)	2 (0.6 %)	20 (6.1 %)	0 (0.0%)	23 (7.0 %)
Total	10 (3.0 %)	127 (38.6 %)	122 (37.1%)	70 (21.3%)	329(100.0%)

The results indicated that more than half of the subjects could understand the causes of tooth decay and gum diseases. They also knew that tooth brushing was important for good oral health but 38.3 % of the subjects did not brush their teeth before going to bed.

Fifty-two percent of the elders believed that they did not need dental treatment if the symptom subsided within a few days. They also believed that they would lose all their teeth when they bacame older. If they lost only a few teeth and they still functioned well with their remaining teeth, then they thought that they did not need dentures . And they believed that their dentures could last a life - time.

Nearly all of the subjects (92.7 %) agreed that they should have their teeth checked every 6-12 months while some of them thought that having the dentures checked routinely was not necessary (4.0 %).

4 . Pattern of dental care attendance and barriers to uptake the dental care

4.1 Pattern of dental care attendance

When asked 138 elders who did not attend the dentist in the year preceding the survey when they last received dental care, 12 individuals (8.8 %) stated that they had not received care in the last 5 years and 27 individuals (19.6 %) could not remember when the time of last dental visit was. Mode of the time since last dental visit in both edentulous and dentate subjects were in 2-3 years (55.7 %). Details regarding time of last dental visit stratified by whether the participant was edentulous or dentate subjects are presented in Table 7.

Table 7 Time since last dental visit and dentition status (N= 138)

Time since last dental visit	Edentulous subjects No	%	Dentate subjects No	%	Total
1 years	5	3.6	8	5.8	13(9.4)
2 years	12	8.7	35	25.4	47(34.2)
3 years	12	8.7	18	13.0	30(21.7)
4 years	3	2.2	6	4.3	9(6.5)
> 5 years	6	4.3	6	4.3	12(8.6)
cannot remember	8	5.8	19	13.8	27(19.6)
Total	46	33.3	92	66.6	138(100.0)

4.2 Barriers to dental care utilization

Nineteen individuals (6 %) stated that they had never received dental care. They were asked for the reasons they had not sought or received care. Thirteen individuals (4 %) claimed to be due to no symptoms, while 2.7 % mentioned the high cost of treatment (Table 8).

Only 14 individuals (4%) claimed to attend the dentist on a regular basis. The lack of attendance for regular dental care could have been due to no symptoms.

In the year preceding the survey, 172 elders (52.3 %) had attended the dentists. Amongst the elders who had used dental services in the year 2001, 148 elders (86.05 %) were dentate subjects and 24 elders (13.95 %) had no teeth. The main reasons for utilization of dental services were dental pain or dental caries (31.39 %), denture problems (30.81 %) and periodontal problems (16.86 %).

The barriers to dental care attendance reported by 19 subjects who never attended dental care are shown in Table 8. No symptoms, expense problems and fear of dental treatment showed frequency as 13, 9 and 8 respectively.

Table 8 Barriers to dental care as perceived by subjects who never attended dental care (N=19)

Reasons	Frequency (N = 19 persons)
No symptoms	13
Expense problems	9
Fear	8
Disability in travelling alone	5
Believed that dental treatment can disturb nervous system	1
Total	36

For 138 edentulous and dentate subjects who did not attend dental care in previous 12 months, no symptoms and expense problems were the most commonly reported barriers with frequency of reasons of 128 and 40 respectively (Table 9).

Table 9 Frequency of barriers to dental care as perceived by edentulous (n = 46) and dentate (n = 92) subjects who did not attend dental care in previous 12 months (N= 138 persons)

Reasons	Edentulous subjects		Dentate subjects		Total
	Frequency	%	Frequency	%	
No symptoms	43	33.6	85	66.4	128 (100.0)
Expense problems	6		34		40
Disability to travelling alone	5		20		25
Fear	3		9		12
Others	7		10		17
Total	64	28.8	158	71.2	222 (100.0)

5. Association of dental care utilization with other affecting factors

Regarding subjects who had ever experienced of dental visit, the result showed that dental care utilization was not in association with gender, age, income, education and general health with ever attendance.

Concerning subjects who did not attend dental care in previous 12 months. The result showed that there was association of financial resources (p-value = 0.031) and education attainment (p-value = 0.024) with dental care utilization in previous 12 months (Table 10).

Table 10 Dental care utilization in previous 12 months in association with gender, age, income, education and general health

Socio-demographic characteristics	d.f.	χ^2	P-value
1. Never attendance (N = 19)			
Gender		(Fisher exact test)	0.129
Age group		(Fisher exact test)	0.639
2. Non-attendance in previous 12 months (N = 157)			
Gender		(Fisher exact test)	0.117
Range of age	3	0.824	0.844
Financial resources	5	12.301	0.031
Education attainment	2	7.462	0.024
General health problems		(Fisher exact test)	0.817

5.1 Oral health status

It was found that the time since last dental visit was associated with the number of the remaining teeth (p-value = 0.008) and the rating of the Simplified Oral Hygiene Index (OHI – S) (p-value = 0.024) (Table 11).

Table 11 Oral health status in associated with time since last dental visit

Variable		Time since last dental visit					P- value
		In previous 12 months	1 yrs	2 yrs	3 yrs	> 4 yrs and never attendance	
Decayed and filled teeth (DFT) (N = 240) [a]							
1-5	teeth	69	4	12	10	13	0.594
6-15	teeth	79	4	23	8	18	
Number of remaining teeth (N = 302) [b]							
0	teeth	24	5	12	12	9	0.008
1- 32	teeth	148	8	35	18	8	
Rating of the Simplified Oral Hygiene Index (OHI-S) (N= 246) [c]							
Good and fair		93	2	24	5	17	0.024
Poor		49	4	11	12	12	

a. Excluded edentulous subjects and elders who could not remember time since last visit

b. Excluded 27 elders who could not remember time of last dental visit

c. 246 dentate subjects were accepted in the OHI-S criteria for an individual score to be calculated.

5.2 Perceived need

Amongst 259 dentate subjects, 257 subjects (99.22 %) were considered to require dental treatment. The treatment needs were periodontal treatment (93.82 %) and restoration (99.22 %). Although there was a high need for treatment , only 150 subjects (57.90 %) perceived their need. The elders reported dental caries to be their major oral health problems. It was found that there was association between perceived need of dental treatment with dental attendance in previous 12 months (p-value = 0.04).

Of those 197 elders wearing dentures, 38 elders (19.29 %) stated that their dentures did not satisfy them while the dentist considered 158 elders (80.20 %) possessed non-acceptable dentures. Only 9 elders (4.56 %) who were not satisfied their denture had dental care visit in previous 12 months with denture problems.

5.3 Attitudes

Although the subjects in the survey generally held positive attitudes towards dental health, with regard to the importance of maintaining good oral hygiene as well as the causes of oral diseases, they did not practice oral health care properly.

In the year preceding the survey, 54.78 % of the subjects who had good attitudes had made use of dental services while there were 51.98 % and 33.33 % of the subjects who had fair and poor attitudes respectively had visited a dentist.

Amongst 12 elders who had regular visit, 8 elders (57.1 %) had fair attitudes while 6 elders (42.9 %) had good attitudes.

CHAPTER V

DISCUSSION

The data were collected from 411 elders in 6 districts in Chonburi province. Interviewing and oral health examination were incompleted in some of the elders. So this study contained only 329 complete data. All subjects were interviewed with the questionnaires by trained project assistants and then all subjects had their oral examination by one dentist.

5.1 Socio-demographic characteristics

According to the survey done by Thai National Statistical Office in 1999, it was reported that the number of male and female elders in Chonburi were 46.50 % and 53.50 % respectively. It can be seen that the number of females comparing with males in the province was not much different. But the result from the study showed much difference in the number of males and females. There were 82 % females and 18 % males. It is possible that the subjects were collected from the elderly who participated in the elderly association activities at local hospital. Generally females were interested in participation in social activities and paid more attention to keep good health than did males.

More than half of the elders (56.8 %) were in the age of 60-65 years. The results showed most elders could walk by themselves and tended to participate in social activities. This supports the study of Lester and et al (29) which found that transport difficulties was one of the most commonly reported barriers to perceive dental care by the subjects.

The socio-demographic characteristics of the subjects in the study were similar to the results of the 5th national survey in 2003-2004 by Dental Health Division,

Department of Health, Ministry of Public Health , Thailand (47). It was found that most of the elderly were in age group of 60-74 years. Most had completed primary school (77.7%). Half of them had income supported by family (52.9 %). They reported their occupation as an assistant in family business(27.5 %) and own business (12.0 %). Therefore , the subjects in this study could represent a group of Thai population. The results from the analysis part can be explained in related topics.

5.2 Oral health status

The data from the 5 th national survey of oral health of Thai elderly in 2003-2004 (47) showed the mean number of remaining teeth was 19.57, the mean number of decayed teeth per subjects was 2.1 and the mean number of filled teeth per subjects was 0.1. The Decayed Missing and Filled teeth (DMFT) value was 14.4. Fifty six percent of the subjects had untreated dental caries. Ninety six percent had dental caries and /or loss of tooth. Eighty two percent of the subjects had periodontal diseases and they needed advance periodontal treatment.

The results of the 5 th national survey supported the findings from numerous epidemiological studies which revealed that older people frequently have poor oral hygiene, high levels of plaque and calculus, and high prevalence of periodontal disease (23).

The results of the study showed lower in number of remaining teeth but higher in the mean number of decayed and filled teeth than the data from the 5 th national survey. Because of methods in collecting data of the study, all subjects were selected only from the elderly who could travel alone to participate hospital activities, homebound or dependent elderly were excluded. These subjects tended to have their teeth extracted rather having them restored when they had dental problems. It is well accepted that the knowledge of oral health care is essential for the elderly to keep good oral health. Selecting of types of treatment depends on multifactors such as educational attainment, attitudes to dental treatment, financial resources and other factors.

The data from the 5 th national survey in 2003-2004 (47) revealed 8.2 % were total edentulism. Eighteen percent of the elderly had dentures while 71 % needed dentures. Most of the elderly needed partial dentures and 5.3 % needed complete dentures. Comparing to this study, the results showed higher percentage of edentulous subjects than the data from the 5 th national survey. All of the edentulous subjects in the study had complete dentures. From socio-demographic characteristics, most of the subjects in the study were socialized female. They tended to pay more attention to their appearance and oral health. Furthermore, they could participate social activities at local hospital. These subjects had more chance to get information about free service of complete dentures provided by the government. But this policy did not cover prosthesis for partial dentate elders. As the results, only half of the partially dentate individuals had dentures and nearly all partially dentate individuals who did not have dentures needed dentures. It is possible that the government policy may be a barrier to receive prosthetic treatment in the elderly.

Regarding the conditions of dentures, many elderly possessed unacceptable dentures. Lack of interest in oral health and inadequate information about regular oral and denture check-up may be the main reasons. The elders should be motivated to maintain good oral health and prostheses. The government policy should set a policy to provide not only denture but also knowledge of maintenance of good oral health and denture condition.

Considering treatment need, most of dentate subjects needed prophylaxis or periodontal treatment and restorative treatment. Despite this high treatment need only half of subjects perceived their need for dental treatment. It can be seen that only 14.1 elders who had dentures perceived need for adjustment or new dentures made while the dentist suggested adjustment of existing dentures for 23.5 % of subjects and new denture made for 27.8 %.

Comparing to other studies, Gift and Newman (38) found dentulous older persons are more likely than edentulous persons to use dental services. Edentulous patients are less likely to perceive a need for treatment. This is in agreement with the study of Wilson and Branch (5). They found that perceived lack of need has been

found to be higher for the edentulous elderly than for the dentate. According to Tomar and et al (28) no perceived reason to go was more frequently cited as the main reason for not going among edentulous persons than those with natural teeth. Many studies confirmed importance of perceived need of treatment that was found less in edentulism than dentate subjects.

5.3 Attitudes towards oral health and dental care utilization

The results revealed that most of the subjects had only fair attitudes. They should be motivated in attendance of dental care when they had dental problems and practice oral health care properly. They should realize the importance of the dental problems and have positive attitudes towards dentistry. The results of this study agree with the same findings of Kiyak (3). He found that dental attitudes was one of the most powerful predictors of dental care utilization.

According to Claus (16), the majority of the elderly do not feel that it is necessary to visit a dentist despite observed extensive needs. They believe that nothing can be done to improve their oral health and aging is naturally associated with tooth loss. They are satisfied with the appearance of their teeth. These attitudes may preclude the use of dental services. It has been suggested that positive attitudes of the elderly towards dentistry need to be motivated. The elderly should realize that the feeling of well-being and a favorable self-image, ability to communicate and socialize and adequate nutrition, tastes and enjoyment of foods can be dependent upon good oral health status and hygiene (16).

5.4 Pattern of dental care attendance , barriers to uptake of dental care and association of dental care utilization with other affecting factors

Despite the elderly in this study accumulated many dental problems, many of them did not receive dental care regularly. The latest dental care was the last 2 years. The study found the number of the remaining teeth and oral health condition

associated with pattern of dental care attendance. It supported the results of Gift and Newman (38). They found that the presence of teeth was highly correlated with reporting a dental visit. This is in agreement with same as Wilson and Branch (20). They stated that the presence of teeth was a better predictor of perceived need of treatment.

Although there was a high need of treatment, approximately half of the subjects who had dental problems perceived their need. The elders reported dental caries to be their major oral health problems.

Only 5 % of denture wearers who had denture problems and perceived their prosthetic treatment had dental care visit in previous 12 months.

Subjects who had poor attitude had made use of dental services in the year preceding the survey lower than subjects who had good attitude and fair attitude. The elders who attended regular dental care had fair to good attitudes.

This is in agreement with many studies (27, 29, 39 ,40). They found perceived need such as tooth aches and oral discomfort, to be the most powerful predictors of dental care utilization. This study showed the most frequent barriers reported by the subjects were no symptoms and expense problems. Several population surveys have shown that the major reason that people do not visit dentists is beliefs that they do not have any oral conditions that require treatment. To seek dental services, individuals must believe that they have dental problems and that they need dental care. According to Tennstedt and et al (36), they found that no perceived need was the most frequently cited reason for nonutilized group, including no problem or a problem not considered serious enough to seek care. No symptoms could represent no perceived need of subjects. This agree with the study of Kiyak (3). It showed that found perceived need and dental attitudes to be the most powerful predictors of dental care utilization.

One of the barriers to dental care utilization of the elderly is an attitudinal nature. Some older people may have negative attitudes towards oral health. They exhibit low expectations regarding dental health. Chronic dental disease may be perceived by the elderly to be a natural outcome of aging (36). As referred by Kandelman and Lepage

(6), older people who have accumulated considerable dental problems during their lives have a negative attitude towards their own health and a tendency to accept the deterioration of their teeth as an integral part of old age.

It also supported the study of Claus (16). The majority of the elderly do not feel that it is necessary to visit a dentist despite observed extensive needs. They believe that nothing can be done to improve their oral health and aging is naturally associated with tooth loss. They are satisfied with the appearance of their teeth. These attitudes may preclude the use of dental services. It has been suggested that positive attitudes of the elderly towards dentistry need to be motivated. The elderly should reallize that the feeling of well-being and a favorable self-image, ability to communicate and socialize and adequate nutrition, tastes and enjoyment of foods can be dependent upon good oral health status and hygiene.

Kandelman and Lepage (6) stated that financial factors and educational level also influenced the dental condition, the seeking of treatment and the type of treatment. Dolan TA (9) found that the lower their educational level the less likely they were to be regular utilizers of dental services.

The expense problems influenced from cost of treatment or financial resources. Tomar and et al (28) studied the reasons for not visiting a dentist among adults in California. Cost of dental care was one of the principle reason. Cost was more frequently cited as the main reason for not going to a dentist among women than among men. Lester and et al (29) reported barriers to dental care in frail and functionally dependent older adults. They found that the elderly had poor perceived need of treatment and worried of cost of treatment. Knowledge of costs and exemption of charges was poor. But those who had received treatment were less likely to cite cost as a barrier. Therefore, explanations for underutilization by the elderly should not be limited to a matter of affordability only. It has been found that providing free or low cost dental services to a population group for whom dental services were previously expensive does not necessarily enhance utilization (30).

It has been well documented that regular attendances beneficial to oral health. To promote regular attendance, the elderly were necessary to perceive need of treatment. Perceived need of treatment related with attitudes towards dentistry, number of remaining teeth and oral condition and educational level. It is suggested to provide knowledge of good oral health to population from childhood to the elderly especially in the poor attitude and in low educational group. The population, especially the male elderly, should be motivated and should pay more attention to their oral health status including relationship between oral health and general health. The expense problems is one of the barriers to dental care attendance. The problems relate to costs of treatment or financial resources therefore they should know the approximate costs of treatment in advance.

CHAPTER VI

CONCLUSION

6.1 CONCLUSION

The majority of the subjects were female with a mean age of 66.06 years, completed primary school, had income supported by family. More than half of the elders were in the age group of 60-65 years, married and lived with others .Good health was reported by 33 % of the subjects. Most elders could walk by themselves. Amongst the elders who had income from working, they reported their occupations as farmer or agriculturists, employee, trader, vender or merchant. The elders reported dental caries and toothache to be their major oral health problems.

According to the results of the study, the subjects presented high decayed teeth, filled teeth and poor oral conditions. It was found that there was high need of dental treatment while half of them perceived their need. All edentulous subjects had complete dentures whereas only half of patially dentate subjects had dentures. Almost partially dentate subjects who did not have denture needed dentures. Most of denture wearers were satisfied with their dentures. Approximately half of complete denture wearers and 18 % of partial denture wearers had acceptable dentures considering by dentist. Only fourteen percent of denture wearers perceived need of prosthetic treatment.

Mode of time since last dental visit in both edentulous and dentate subjects were within 2-3 years. Nine percent of the subjects stated that they had not received dental care in the last 5 years. It was found that the time since last dental visit was in association with the number of the remaining teeth (p-value = 0.008) and the rating of the Simplified Oral Hygiene Index (OHI – S) (p-value = 0.024).

The subjects who had poor attitudes had made use of dental services in the year preceding the survey lower than those who had good attitudes and fair attitudes. The elders who had good and fair attitudes attended dental care regularly.

The main reasons for utilization of dental services in the subjects who attended dental care in previous 12 months were reported as dental pain or dental caries, denture problems and periodontal problems respectively. No symptoms and expense problems were reported as barriers to dental care utilization in the study. No symptoms and expense problems were the most commonly reported as barriers by the subjects who never had received dental care and those who did not attend dental care in previous 12 months. While no symptoms was claimed as the main barriers by the subjects whom did not attend dental care on a regular basis. Because of no perceived need, attitudes to dental care utilization and educational level, the subjects tended to report that they had no symptoms. Expense problems was considering from costs of dental treatment and financial resources.

Regular attendances was beneficial to oral health. To promote regular attendance and reducing barriers to dental care utilization, the government sector plays importance role as oral health care service providers for the elderly. The elderly were necessary to perceive need of treatment. It is suggested to provide knowledge of good oral health to population from childhood to the elderly especially in the poor attitude and in low educational group. The population, especially the male elderly should be motivated and should pay more attention to their oral health status including relationship between oral health and general health. All people should know the approximate costs of treatment in advance.

6.2 RECOMMENDATION

To promote regular attendance and reducing barriers to dental care utilization , there are some recommendations for implementation and also for further study based on the findings of this study.

1. Oral health education should be promoted and plays more active role by oral health personnels especially in low educated elderly.
2. The oral health personnel should have strongly performance on home visit program for the elderly especially on homebound and dependent group.
3. Before giving elderly cards to the elders, the hospital personnels should give more explannation about their right, benefit of the cards to provide make more understanding about how to use cards properly.
4. To study about barriers to dental care utilization, population survey should be done in whole country to get more informations that would be beneficial for oral health promotion planning by the government sector.
5. Some of the variables that influence dental care utilization should be done by using methods such as in depth interview or focus group.

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APPENDIX

SPECIALISTS

Specialists in the study :

1. Assoc. Prof. Pojaman Sinavarat
2. Assoc. Prof. Piangchan Rojanavipart

แบบสัมภาษณ์
อุปสรรคในการเข้ารับบริการทันตกรรมของผู้สูงอายุกลุ่มหนึ่งในจังหวัดชลบุรี

ตอนที่ 1 ข้อมูลส่วนตัวของผู้ตอบแบบสอบถาม รหัส

1. ชื่อ_____ นามสกุล _____ ___ ___ ___ (3)

2. เพศ 1. หญิง 2 . ชาย ___ (4)

3. อายุ _____ปี ___ ___ (6)

4. สถานภาพสมรส 1 . โสด 2 . แต่งงาน / อยู่ด้วยกัน ___ (7)
3 . หย่า / แยกกันอยู่ 4 . หม้าย

5. ท่านจบการศึกษาสูงสุด 1. ไม่ได้เรียนหนังสือ 2 . ประถมศึกษา ___ (8)
3. มัธยมศึกษา ,ประกาศนียบัตร 4 . ปริญญาตรีหรือสูงกว่า
5 .อื่น ๆ (ระบุ) _____

6. ปัจจุบันท่านมีสมาชิกในครัวเรือนรวมท่านด้วย _ (9)
1. อาศัยอยู่คนเดียว 2 . อาศัยอยู่ 2-5 คน 3. อาศัยอยู่เกิน 5 คน

7. ปัจจุบันท่านใช้จ่ายเงินจากแหล่งใด ___ (10)
1. เงินจากการเกษียณอายุงาน 2. เงินจากครอบครัว บุตร หลาน
3. เงินจากการทำงานมีรายได้เป็นของตนเอง
4. 1 และ 2 5. 1 และ 3 6 . 2 และ 3 7. 1 , 2 และ 3

8. ถ้าทำงานที่มีรายได้เป็นของตนเองจากอาชีพใด ___ (11)
1. ค้าขาย 2. เกษตรกรรม 3. รับจ้าง
4. อื่น ๆ (ระบุ) _____

ตอนที่ 2 ปัจจัยที่เกี่ยวข้องต่อการรับบริการทางทันตกรรมและการใช้บริการทางทันตกรรม

<u>ส่วนที่ 1</u> ปัจจัยที่เกี่ยวข้องต่อการรับบริการทางทันตกรรม

1. ท่านมีปัญหาสุขภาพร่างกายหรือโรคประจำตัวหรือไม่ ___ (13)
1. มี (ระบุ) _____ 2. ไม่มี

2. ปัจจุบันท่านมีปัญหาสุขภาพช่องปากและต้องการการรักษาหรือไม่ ___ (14)
1. มี (ระบุ) _____ 2. ไม่มี

3. ท่านมีและใช้ฟันปลอมอยู่หรือไม่ ___ (15)
1. ไม่มีฟันปลอม 2. มีแต่ไม่ได้ใช้ 3. มีและใช้ฟันปลอม

4. ถ้ามีฟันปลอม ท่านพอใจฟันปลอมหรือไม่ ___ (16)
1 . พอใจ 2 . ต้องการแก้ไข / ทำใหม่
3. มีปัญหาแต่ไม่อยากแก้ไข เพราะ _____

ส่วนที่ 2 ทัศนคติ ต่อ สุขภาพช่องปาก, การใช้บริการทางทันตกรรม

ชี้แจง โปรดทำเครื่องหมาย √ ลงในช่องที่ตรงกับความคิดเห็นของท่าน

1. เมื่ออายุมากขึ้น ฟันจะค่อยๆ หลุดไปตามธรรมชาติจนหมดทั้งปาก ___ (26)
   1. เห็นด้วย 2 . ไม่เห็นด้วย
2. การแปรงฟันอย่างน้อย 3 นาที ช่วยให้ฟันและเหงือกแข็งแรง ___ (27)
   1. เห็นด้วย 2 . ไม่เห็นด้วย *** ท่านแปรงฟัน _____ นาที
3. ถ้ามีฟันผุและมีอาการปวดฟันแต่ฟันสามารถใช้งานได้ ยังไม่ต้องปรึกษาทันตแพทย์ ___ (28)
   1. เห็นด้วย 2 . ไม่เห็นด้วย
4. โรคเหงือกอักเสบ-รำมะนาดจะเกิดกับผู้สูงอายุทุกคนตามธรรมชาติ ___ (29)
   1. เห็นด้วย 2 . ไม่เห็นด้วย
5. การขนมหวานทำให้ฟันผุมากกว่าการทานผลไม้ ___ (30)
   1. เห็นด้วย 2 . ไม่เห็นด้วย
6. เมื่ออายุมากขึ้น ฟันจะค่อย ๆ โยกมากขึ้น ตามธรรมชาติ ___ (31)
   1. เห็นด้วย 2 . ไม่เห็นด้วย
7. ท่านเห็นความสำคัญของการแปรงฟันก่อนนอนทุกวัน ___ (32)
   1. เห็นด้วย 2 . ไม่เห็นด้วย **ท่าน_____แปรงฟันก่อนนอน
8. โรคเหงือกอักเสบ-รำมะนาดทำให้เกิดกลิ่นปากได้ ___ (33)
   1. เห็นด้วย 2 . ไม่เห็นด้วย
9. ถ้ามีอาการปวดฟันซี่หนึ่งและหลังจากนั้น 2-3 วัน อาการปวดหายไป แสดงว่าฟันซี่นั้น ยังไม่ต้องรับการรักษา ___ (34)
   1. เห็นด้วย 2 . ไม่เห็นด้วย
10. ถ้ามีฟันบางซี่ถูกถอนไป 1-2 ซี่ ไม่จำเป็นต้องใส่ฟันปลอมพื่อทดแทนฟันซี่นั้น เพราะเคี้ยวอาหารได้ละเอียดเหมือนกัน ___ (35)
    1. เห็นด้วย 2 . ไม่เห็นด้วย
11. การพบทันตแพทย์เป็นประจำทุก 6 เดือนหรือทุก 1 ปีเพื่อตรวจฟันหรือรับการรักษา ช่วยลดโรคในช่องปากได้ ___ (36)
    1. เห็นด้วย 2 . ไม่เห็นด้วย

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12. ถ้าไม่มีการถอนฟันเพิ่ม ฟันปลอมชุดเดิมไม่มีการแตกหรือหัก สามารถใช้ฟันปลอมชุดเดิมได้ตลอดชีวิต ไม่จำเป็นต้องทำชุดใหม่ ___ (37)
    1. เห็นด้วย 2 . ไม่เห็นด้วย
13. ถ้าท่านใช้ฟันปลอม การถอดฟันปลอมออกตอนกลางคืน ช่วยป้องกันเหงือกใต้ฟันปลอมอักเสบได้ ___ (38)
    1. เห็นด้วย 2 . ไม่เห็นด้วย

*** ท่านถอดฟันปลอมตอนกลางคืน 1. ใช่ 2. ไม่ใช่

14. เมื่ออายุมากขึ้น สันเหงือกที่ถอนฟันไปแล้วยังคงมีการเปลี่ยนแปลงตลอดเวลา
ดังนั้นท่านควรตรวจสภาพฟันปลอมทุกปี ___ (39)

1. เห็นด้วย 2 . ไม่เห็นด้วย

*** ท่านตรวจฟันปลอมทุกปี 1. ใช่ 2. ไม่ใช่

ส่วนที่ 3 การใช้บริการทางทันตกรรม

1. ท่านเคยพบทันตแพทย์เพื่อตรวจหรือรับการรักษาทางทันตกรรมหรือไม่

1. เคย 2.ไม่เคย เพราะ (ตอบได้มากกว่า 1 ข้อ) ___ ___ (19)

2.1 ไม่มีอาการ 2.2 กลัว 2.3 ไม่มีเงินค่ารักษา

2.4 เดินทางไม่สะดวก 2.5 อื่นๆ (ระบุ) _____

2. ท่านพบทันตแพทย์ เพื่อตรวจสุขภาพช่องปากเป็นประจำทุก 6 เดือนหรือทุก 1 ปีหรือไม่

1. ใช่ 2.ไม่ใช่ เพราะ (ตอบได้มากกว่า 1 ข้อ) ___ ___ (21)

2.1 ไม่มีอาการ 2.2 กลัว 2.3 ไม่มีเงินค่ารักษา

2.4 เดินทางไม่สะดวก 2.5 อื่นๆ (ระบุ) _____

3. เมื่อ 1 ปีที่ผ่านมา ท่านพบทันตแพทย์ หรือไม่ ___ ___ (23)

1. พบ เพราะ (ตอบได้มากกว่า 1 ข้อ)

1.1 ฟันผุ , ปวดฟัน 1.2 ฟันโยก , เหงือกบวม

1.3 ปัญหาฟันปลอม 1.4 อื่น ๆ (ระบุ)_____

2 . ไม่พบ เพราะ (ตอบได้มากกว่า 1 ข้อ)

2.1 ไม่มีอาการ 2.2 กลัว 2.3 ไม่มีเงินค่ารักษา

2.4 เดินทางไม่สะดวก 2.5 อื่นๆ (ระบุ) _____

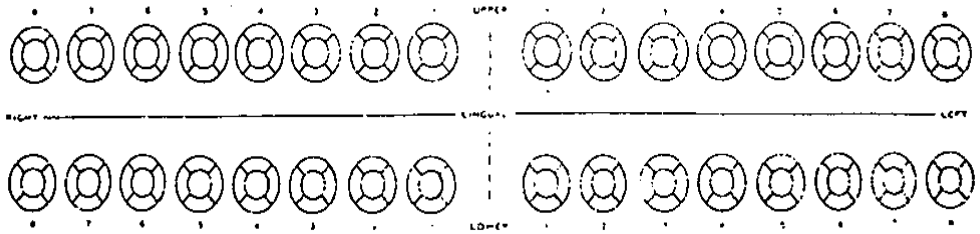
4. ท่านพบทันตแพทย์ครั้งสุดท้ายเมื่อใด ___ (24)

1. 1 ปีมาแล้ว 2. 2 ปีมาแล้ว 3. 3 ปีมาแล้ว

4. 4 ปีมาแล้ว 5. มากกว่า 5 ปี 6. จำไม่ได้

ตอนที่ 4 ข้อมูลการตรวจสุขภาพช่องปาก

1. มีฟันธรรมชาติเหลืออยู่ _____ ซี่ (ไม่นับ retianed root) __ __ (42)
2. Decayed and Filled Teeth (DFT)

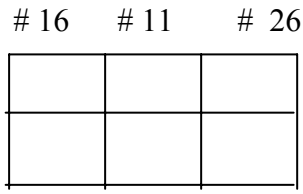


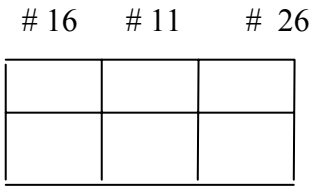
-จำนวน decayed tooth _____ ซี่ __ __ (44)

-จำนวน filled tooth _____ ซี่ __ __ (46)

- DFT as individual = ____+ _____ = _____ __ __ (48)

3. The Simplified Oral hygiene Index (OHI - S)





Debris Calculus

DI - S = _____ = _____ __ (49)

CI - S = _____ = _____ __ (50)

OHI - S = _____ + _____ = _____ __ (51)

4.Presence of denture

1. Upper arch 1.1 no denture 1.2 partial denture 1.3 complete denture __ (53)

2. Lower arch 2.1 no denture 2.2 partial denture 2.3 complete denture __ (55)

5. Condition of denture

1 Retention

1.Upper arch 1.1 good 1.2 fair 1.3 poor __ (57)

2.Lower arch 2.1 good 2.2 fair 2.3 poor __ (59)

2. Stability

1.Upper arch 1.1 good 1.2 fair 1.3 poor __ (61)

2.Lower arch 2.1 good 2.2 fair 2.3 poor __ (63)

3. Vertical dimension 3.1 acceptable 3.2 non-acceptable __ (65)

4. Occlusion 4.1 acceptable 4.2 non-acceptable __ (67)

5. Defects 5.1 broken flange 5.2 broken plate 5.3 broken teeth

5.4 broken clasp 5.5 _____ __ (68)

6. Dentist 's opinion of denture

1. Upper arch 1.1 acceptable 1.2 need adjustment 1.3 remake 1.4 need denture __ (69)

2. Lower arch 1.1 acceptable 1.2 need adjustment 1.3 remake 1.4 need denture __ (70)

CHONBURI PROVINCE (42)

Chonburi province is located on the east of Thailand. The total population are 1,059,756 persons. There are 533,981 males and 525,775 females. Chonburi province is devided into 10 districts (amphurs) and 1 subdistrict (king-amphurs) in area of 4,363,000 km^2.

Table 12 Chonburi province population

Amphur	Total	Male	Female	Density (person/km^2)
	1,059,756	533,981	525,755	243
1.Muang district	248,121	123,162	124,959	1,084
2.Bunbung district	88,243	44,207	44,036	136
3.Nongyai district	21,332	11,082	10,250	53
4.Banglamung district	163,118	80,371	82,747	348
5.Panthong district	46,243	22,681	23,562	267
6.Panus nikom district	118,285	57,557	60,728	258
7.Sriracha district	176,377	88,702	87,635	286
8.Koh-sichang district	4,782	2,399	2,383	277
9.Sattahip district	117,288	64,931	52,357	351
10.Bothong district	42,495	21,382	21,113	54
11.Koh-chan subdistrict	33,512	17,507	16,005	138

From : National Statistical Office (31 December 1999)

There are 90,397 elders in Chonburi province which is 8.53 % of the entire population.

STUDY VARIABLES

Variable	***Coding***
Independent variables	
Socio-demographic characteristics	
Gender	1 = Female ; 2 = Male ; 99 = Unknown
Age	60 years and older ; 99 = Unknown and 99 years and older
Marital status	1 = Single ; 2 = Married / Cohabitation ; 3 = Divorced / Separation ; 4 = Widowed / Widower 99 = Unknown
Education attainment	1 = No qualifications ; 2 = Primary school graduate ; 3 = High school graduate or Certificated ; 4 = Bachelor degree or higher ; 5 = Others ; 99 = Unknown

Living arrangement	1 = Alone ; 2 = With others (2-5 persons) ;
	3 = With others (> 5 persons) ;
	99 = Unknown
Financial resources	1 = Government official remuneration and Savings ;
	2 = Income supported from family ;
	3 = Income from working ;
	4 = 1 & 2 ;
	5 = 1 & 3 ;
	6 = 2 & 3 ;
	7 = 1,2 & 3 ;
	99 = Unknown
Occupation	1 = Trader / Vendor / Merchant ;
	2 = Farmer / Agriculturist ;
	3 = Employee ;
	4 = Others ;
	99 = Unknown

Factors affecting dental care utilization

General health problems	1 = Yes ; 2 = No ; 99 = Unknown
Perceived need for dental treatment	1 = Yes ; 2 = No ; 99 = Unknown
Perceived need of prosthetic treatment	1 = Yes ; 2 = No ; 99 = Unknown

Attitudes towards oral health and dental care utilization

Oral health status

Number of remaining teeth	0 - 32
Number of decayed teeth	0 - 32
Number of filled teeth	0 - 32
The Simplified Oral Hygine Index (OHI-S)	1 = Excellent ; 2 = Good ; 3 = Fair ; 4 = Poor
- Debris index (DI-S)	1 = Excellent ; 2 = Good ; 3 = Fair ; 4 = Poor
- Calculus index (CI-S)	1 = Excellent ; 2 = Good ; 3 = Fair ; 4 = Poor
Presence of denture	1 = no denture ; 2 = partial denture ; 3 = complete denture

Condition of denture

1. Retention of denture	1 = Good ; 2 = Fair ; 3 = Poor
2. Stability of denture	1 = Good ; 2 = Fair ; 3 = Poor
3. Vertical dimension	1 = Acceptable ; 2 = Non-acceptable
4. Occlusion	1 = Acceptable ; 2 = Non-acceptable
5. Defects	1 = Broken flange ; 2 = Broken plate ; 3 = Broken teeth ; 4 = Broken clasp ; 5 = Other defects

Dentist ’s opinion of denture	1 = Acceptable ; 2 = Need adjustment 3 = Remake ; 4 = Need denture 5 = No need denture

Dependent variables

Ever had a dental visit	10 = Yes (ever) ; 20 = No (never) ; 99 = Unknown
Reasons for non-attendance	10 = Yes ; 20 = No ; 99 = Unknown
-No symptoms	
-Fear	
-Expense problems	

- Disability in travelling alone

-Other reasons

Regular attendance 10 = Yes ; 2 = No ;

99 = Unknown

Reasons for non-regular visit 10 = Yes ; 20 = No ;

-No symptoms 99 = Unknown

-Fear

-Expense problems

-Disability in travelling alone

-Others

Reasons for attendance dental care in previous 12 months

-Dental pain or Dental caries 10 = Yes ; 2 = No ;

-Periodontal problems 99 = Unknown

-Denture problems

-Others

Reasons for non-attendance dental care in previous 12 months

-No symptoms 10 = Yes ; 2 = No ;

-Fear 99 = Unknown

-Expense problems

-Disability in travelling alone

-Others

Time since last visit	1 = 1 yrs ; 2 = 2 yrs ; 3 = 3 yrs ; 4 = 4 yrs; 5 = ≥ 5 yrs ; 6 = can not remember ; 99 = unknown
Reasons for non-attendance	1 = no problem ; 2 = fear of dental treatment ; 3 = costs ; 4 = disability in traveling alone; 5 = others ; 99 = unknown
Reasons for non-regular visit	1 = no problem ; 2 = fear of dental treatment ; 3 = cost ; 4 = disability in travelling alone; 5 = others 99 = unknown

Reasons for attendance in previous 12 months	1 = dental caries , dental pain
	2 = periodontitis
	3 = denture problems
	4 = others
	99 = unknown

BIOGRAPHY

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