ORIGINAL ARTICLE

Predictors of dental service utilization among visually impaired people in Chiang Mai, Thailand

Pinpinut Wanichsaithong[1], Jiraporn Chompikul[2], Aroonsri Mongkolchati[2] and Piyanart Chatiketu[3]

[1] *M.P.H.M., ASEAN Institute for Health Development, Mahidol University, Thailand*
Department of Family and Community Dentistry, Faculty of Dentistry, Chiang Mai University, Thailand
[2] *Ph.D., ASEAN Institute for Health Development, Mahidol University, Thailand*
[3] *Ph.D., Department of Family and Community Dentistry, Faculty of Dentistry, Chiang Mai University, Thailand*

Corresponding author: *Jiraporn Chompikul* ***Email:*** *jiraporn.chm@mahidol.ac.th*
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Abstract

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The purposes of this cross-sectional study were to examine factors associated with utilization of dental health services among visually impaired people and also identify barriers affecting such utilization. A structured questionnaire and an oral examination were used to collect data in January, 2013. In total, 266 visually impaired people participated in the study. Data were analyzed using chi-square tests and multiple logistic regression.

The utilization of dental health services in the past year among visually impaired people was 26.3%. Based on the Chi-square tests, education, occupation, perception of oral status, perception of oral health problems and perceptions of the oral health service system were found to be statistically significant associated with dental service utilization. In logistic regression, significant predictors of dental service utilization among visually impaired people included perception of oral status (adj OR = 4.45, 95% CI = 1.41-14.05), perception of oral health problems (adj OR = 4.66, 95% CI = 1.96-11.07) and perception of the dental service system (adj OR = 2.44, 95% CI = 1.32-4.49). The three most commonly reported barriers to dental visits were “no one takes me to the dentist”, “not enough time” and “waiting until the pain gets worse”.

The findings suggested that the significant key factor to increase utilization among visually impaired people is providing an appropriate oral health education to improve the knowledge of oral health care, and finally lead to change the perception of oral problems in these people. Furthermore, special dental service system should be established to minimize barriers to care and serve needs of these people.

Keywords: dental service utilization, visually impaired people, oral status

วารสารสาธารณสุขและการพัฒนา
ปีที่ 13 ฉบับที่ 1 มกราคม - เมษายน 2558

ปัจจัยที่มีความสัมพันธ์กับการใช้บริการทันตกรรมของผู้พิการทางสายตาในจังหวัดเชียงใหม่ ประเทศไทย

ปิ่นปินัทธ์ วณิชย์สายทอง[1] จิราพร ชมพิกุล[2] อรุณศรี มงคลชาติ[2] และปิยะนารถ จาติเกตุ[3]

[1] *M.P.H.M. สถาบันพัฒนาสุขภาพอาเซียน มหาวิทยาลัยมหิดล ประเทศไทย*
ภาควิชาทันตกรรมครอบครัวและชุมชน คณะทันตแพทยศาสตร์ มหาวิทยาลัยเชียงใหม่ ประเทศไทย
[2] *Ph.D. สถาบันพัฒนาสุขภาพอาเซียน มหาวิทยาลัยมหิดล ประเทศไทย*
[3] *Ph.D. ภาควิชาทันตกรรมครอบครัวและชุมชน คณะทันตแพทยศาสตร์ มหาวิทยาลัยเชียงใหม่ ประเทศไทย*

บทคัดย่อ

ปิ่นปินัทธ์ วณิชย์สายทอง จิราพร ชมพิกุล อรุณศรี มงคลชาติ และปิยะนารถ จาติเกตุ
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การศึกษาครั้งนี้เป็นการวิจัยแบบภาคตัดขวาง (Cross-sectional study) เพื่อสำรวจปัจจัยที่มีความสัมพันธ์กับการใช้บริการทางทันตกรรมของผู้พิการทางสายตา และเพื่อค้นหาอุปสรรคที่ขัดขวางการไปใช้บริการของผู้พิการ ในการเก็บข้อมูลงานวิจัยนี้ใช้วิธีการสัมภาษณ์แบบมีเค้าโครงและการตรวจช่องปากของผู้พิการทางสายตา โดยทำการเก็บข้อมูลช่วงเดือนมกราคม พ.ศ.2556 จำนวนผู้พิการทางสายตาที่เข้าร่วมงานวิจัยมีทั้งสิ้น 266 คน วิเคราะห์ข้อมูลโดยใช้การทดสอบไคกำลังสอง และการถดถอยลอจิสติค

ผลการศึกษาพบว่าร้อยละ 26.3 ของผู้พิการทางสายตา เคยไปใช้บริการทางทันตกรรมในปีที่ผ่านมา ในส่วนของการทดสอบด้วยไคกำลังสองพบว่า ปัจจัยที่มีความสัมพันธ์กับการไปใช้บริการทางทันตกรรมของกลุ่มผู้พิการทางสายตาอย่างมีนัยสำคัญทางสถิติ ได้แก่ ระดับการศึกษา ประเภทของอาชีพ การมีฟันปลอม การรับรู้ปัญหาสุขภาพช่องปาก และการรับรู้เกี่ยวกับระบบบริการสุขภาพช่องปาก และเมื่อวิเคราะห์ข้อมูลด้วยการถดถอยลอจิสติกพหุคูณ พบว่าปัจจัยที่ความสัมพันธ์กับการไปใช้บริการทางทันตกรรมในกลุ่มผู้พิการทางสายตา ได้แก่ การมีฟันปลอม (adj OR = 4.45, 95% CI = 1.41-14.05), การรับรู้ว่าตนเองมีปัญหาสุขภาพช่องปาก (adj OR = 4.66, 95% CI = 1.96-11.07) และมีการรับรู้ในแง่ดีเกี่ยวกับระบบบริการทางทันตกรรม (adj OR = 2.44, 95% CI = 1.32-4.49) สามสาเหตุสำคัญที่ทำให้ไม่สามารถไปใช้บริการทางทันตกรรมคือ ไม่มีคนพาไปรับบริการ ไม่มีเวลาไปทำ รอจนกว่าจะปวดมากกว่านี้ถึงจะไปรับบริการ

ดังนั้นควรจัดให้มีทันตสุขศึกษาที่เหมาะสมเฉพาะกลุ่ม เพื่อพัฒนาความรู้เกี่ยวกับดูแลสุขภาพช่องปาก และเพื่อให้เปลี่ยนการรับรู้เรื่องปัญหาสุขภาพช่องปากในคนพิการทางสายตา ยิ่งไปกว่านั้นควรจัดตั้งระบบบริการทางทันตกรรมแบบพิเศษเพื่อลดอุปสรรคในการเข้ารับบริการและตอบสนองความต้องการของผู้พิการทางสายตา

คำสำคัญ: การใช้บริการทันตกรรม ผู้พิการทางสายตา สุขภาวะช่องปาก

Introduction

Globally in 2004, WHO estimated that the average prevalence rate for adults (those over 18) with very significant disabilities was approximately 2.2% or about 92 million people. Moreover, the number of people with disabilities is gradually increasing.[1] In Thailand, according to the latest Disability Survey of the National Statistical Office in 2007, there are 1.9 million people with disabilities (2.9% of the total population). The highest proportion of people with disabilities is in the Northern region (4.4% of the regional population).[2] Among those with physical handicaps in the disability survey, the most common disability was visual impairment. Moreover, the percentage of people with visual impairment was higher in 2007 than in 2002.[2] However, the number of people with visual impairment is a matter of some controversy and the exact number has not been determined.[1-5] In Thailand, the number of people with visual impairment who were registered with the National Social Development and Human Security Office in 2012 was approximately 150,000 and 20% of those people lived in the Northern region.[5]

Although there are a great number of people with visual impairment, information concerning the utilization of dental health services among this group is scarce. There are few studies in the world [6-11] and none in Thailand about dental health service utilization and its associated factors among people with visual impairment. Moreover, it was not possible to obtain a definite percentage for dental health service utilization among these individuals from any database from either Ministry of Public Health or the Ministry of Social Development and Human Security. Therefore, the rate of utilization of dental services for people with visual impairment is still open to question.

Despite the fact that there is universal coverage of health services in Thailand, it has been found that nearly 80% of people with disabilities in Thailand have never utilized any medical or dental services.[12] In order to increase dental health service utilization among this group, there is a need to verify utilization rates and identify factors affecting utilization rates among visually impaired people. The purpose of this study was to examine associations between predisposing factors, enabling factors, need factors as well as perception of service system delivery and the utilization of dental health services among adults with visual impairment.

Methods

Sample

Convenience sampling was used to collect data from participants. The researcher established a temporary research unit at the office of the Massage Association for the Blind of Chiang Mai and advertised the study via community radio to persuade people with visual impairment to enroll. In addition, to obtain a larger number of subjects, the researcher also set up a mobile research unit on the International Disability Day, 2013. The sample size was estimated using a confidence interval of 95%, and an acceptance error of 2%, Thus, the required sample size was at least 266 order to provide sufficient power of test. A total of 266 adults and senior citizens with visual impairment participated in this cross-sectional study during January and February, 2013. Age grouping was according to the National Oral Health Survey criteria for age groups: adult and elderly[13].

Research instruments

A cross-sectional survey was performed, using structured interviews. The structured interviews were developed based on a questionnaire used in the sixth National Oral Health Survey[12] and combined with Anderson's Behavioral Model of Health Service Utilization[13]. Then, the interviews were conducted by a research assistant. The study was approved by the Ethics Committee of Mahidol University (COA. No. 2012/364.1112). Informed consent was assured by obtaining verbal consent from the blind participants.

The pretest data, in which the number of respondents was 30, were analyzed for internal consistency. The Cronbach's alpha coefficients for attitude (6 items), practice (7 items) and perceptions (10 items) were 0.522, 0.600 and 0.714, respectively. The pretest data obtained in the knowledge section were analyzed for internal consistency using KR-20. It was found that the KR-20 for inter-item consistency in the knowledge part (9 items) was 0.579. However some questions were revised for clarity.

The structured questionnaires was composed of the following sections. Socio-demographic Factors. The age of the participants was grouped into two levels as the National Oral Health Survey criteria: adult (35- 44 years old) and elderly (60 - 74 years old)[12]. Level of education was classified into two categories: "low" for those whose highest level of education was lower than high school and "high" for those whose highest level of education was equal to or higher than high school. Family monthly income was classified into two categories: "low" for those whose monthly family income was less than or equal to 7,500 baht/month and "high" for those whose family income was more than 7,500 baht/month.

For Enabling factors and availability of services, the items included in this section were: duration of disability, distance from home to oral health services, presence or absence of a caregiver, type of health insurance and disability registration.

In the knowledge part, the score was 1 for a correct answer and 0 for an incorrect answer. The total knowledge score was[9]. In this study, knowledge was classified into three categories according to Bloom's percentage. A score higher than 80% was considered good, a score between 60 and 80% was rated as fair and a score below 60% was deemed to be poor.

In attitude part, there were two kinds of statements: positive and negative. The answers for this part were "agree", "disagree", and "neutral" or "not sure". The score for positive statements was 2 for agree, 1 for neutral or not sure and 0 for disagree. For negative statements, the score was 0 for agree, 1 for neutral or not sure and 2 for disagree, which is the opposite of the scores for positive answers. The total score for attitude was categorized into two groups: positive and negative. A score equal to or higher than the median for the total attitude score was considered as positive; a scores lower than the median for the total attitude score were rated as negative.

In practice part, an answer indicating the most appropriate practice was scored at 2, an answer showing acceptable practice scored 1 and an incorrect answer scored 0. The total score was 14. The total score for practice was categorized into two groups: good and poor. A score equal to or higher than the median for the total practice score was rated as good. A score lower than the median for the total practice score was considered poor.

For the perceptions of oral health, this section elicited data about the respondents' perception of having oral health problems, types of oral health problems in the year prior to the interview, perceptions about participants' oral status and perceptions of treatment needs.

In the perceptions of oral health service systems, participants were asked about their perceptions of human resources, medical technology, health information, and finance, which affect the utilization of dental health services among people with visual impairment. Agreement on each item was given a score of 1. Those who chose "disagree" or "not sure" for an item received a score of 0. The total score was classified into two levels: good perceptions and poor perceptions. A score equal to or higher than the median for the total perception score was classified as good; a score lower than the median for the total perception score was rated as poor.

In the utilization of services, participants were asked about the history of dental utilization during the past year, chief complaints, types of treatment, and types of service provided. The part regarding the reasons for not going to the dentist aimed to ascertain the barriers to dental health services; open-ended questions were also used to obtain data about this topic (these questions were optional).

Statistical Analysis

The analysis was divided into three parts. Descriptive statistics were used to describe the frequency and percentage distribution, median, quartile deviation, minimum and maximum for each independent and dependent variable in this study. The chi-square test was used to examine associations between each independent variable and utilization of oral health services. Finally, multiple logistic regression was performed to determine significant predictors for the utilization of oral health services.

Results

A total of 266 visually impaired people participated in this study. Three-quarters of the respondents (74.8%) were aged between 35 and 44 years of age and the remainder were between 60 and 74 years old. The median age was 41 years, the minimum age was 35, and the maximum age was 74. The numbers for male and female respondents were almost equal, and about 60% were married. About 60% of the respondents had an educational level equal to or lower than primary school level. The largest group of the respondents (21.8%) was working as Thai masseurs. The median monthly family income of the respondents was 7,500 baht; the minimum was 1,000 baht; and the maximum was 20,000 baht.

Nearly half of the respondents (48.9%) were completely blind in both eyes, and just over 50% suffered from innate blindness. Almost 60% of the individuals with acquired blindness had been visually impaired for more than 30 years. More than half of the respondents lived one to 10 kilometers from a dental service setting, and 62% had caregivers. Around 90% of the respondents had been using the universal coverage health insurance scheme, and almost all of them had registered as being official disabled.

Approximately 50% of the respondents had fair knowledge levels, and just over 50% had positive attitudes regarding prevention of oral health disease and oral health care. Nearly 70% of the respondents had a good level of practice. Only 7% of the

respondents had prostheses. With regards to perceived oral health problems, more than two-thirds of the respondents perceived that they had an oral health problem, and the three most commonly perceived oral health problems were tooth hypersensitivity (55.6%), dental calculus (47.6%) and toothache (39.7%). About two-thirds of the respondents had previously perceived that they needed oral health treatment. With respect to perceptions towards health service system delivery, just over 50% of respondents had a good opinion of the dental service system.

Table 1 outlines the characteristics of dental health service utilization. In this study, only a quarter (26.3%) of visually impaired people had utilized dental services during the previous year, amounting to 28.6% of adult respondents and 19.4% of elderly respondents. Leading causes for utilization among adult clients were “toothache or tooth sensitivity” (48.3%), “dental caries” (28.3%) and “dental calculus” (6.7%), while the leading causes for uses among elderly clients were “toothache or tooth sensitivity” (46.2%), “need for prosthesis” (30.8%) and “dental caries” (23.3%). The most common service settings for dental care were private dental clinics or hospitals (44.3%), whereas the second and third settings were tertiary hospitals (30%) and community hospitals (22.9%), respectively. The most common barriers to receiving care among adult respondents were “no one takes me to the dentist” (80.5%), “not enough time” (52.8%) and “wait until the pain gets worse” (42.7%), respectively. Among the elderly, the most common barriers were “no one takes me to the dentist” (76.1%), “not enough time” (71.6%) and “dental anxiety” (49.3%).

Table 1 Characteristics of dental health utilization

	Number	Percent
Utilization of dental health service during last year (n =266)		
Yes	70	26.3
No	196	73.7
Cause of use (n=70)		
Having tooth decay	17	24.3
Having tooth ache or sensitivity	35	50.0
Having calculus	4	5.7
Gum bleeding or inflammation	2	2.9
Need prosthesis	6	8.6
Feeling abnormal in oral cavity	6	8.6
Place (n=70)		
Sub-district health promoting hospital	2	2.9
Community hospital	16	22.9
Tertiary hospital	21	30.0
Private clinic or hospital	31	44.3
Barriers to dental health service utilization* (n =266)		
No money	31	11.7
No time	153	57.5
No one brings me to see a dentist	193	72.6
Having dental fear	97	36.5
Belief about being neurotic after tooth extraction	10	3.8
Wait until having more pain	109	41.0
Nothing wrong in my oral health	103	38.7
Others	8	3.0

*Multiple answers

The associations among various factors related to the utilization of dental health services were examined by means of statistical analysis. Based on the results of the chi-square tests, education, occupation, perception of oral status, perception of oral health problems and perception of the oral health service system were found to have statistically significant associations with dental service utilization. However, the following factors were not found to be significant associated with dental service utilization: age, gender, marital status, income, type of blindness, duration of blindness, distance from the house to get services, having caregivers, insurance types, disability registration, knowledge, attitude, and practice regarding oral health prevention. Table 2 shows only associations between dental service utilization among people with visual impairment during the last year and some significant independent factors. Individuals who had received education equal to or higher than the high school level were more likely to utilize dental health services than those with lower educational levels. With regards to occupation, visually impaired people who were business owners were more likely to utilize dental health services than those who were employees or in other forms of work. There was a statistically significant association between perceptions of oral status and dental service utilization. People with visual impairment who needed prosthesis were more likely to utilize dental health services than those who had only natural teeth. Moreover, perception regarding oral health problems was significantly associated with dental service utilization; people with visual impairment who perceived that they had oral health problems were more likely to utilize dental health services. Individuals who had good perception of oral health service system delivery were more likely to utilize the dental health service than those who had bad opinions of the services.

Table 2 Factors associated with dental service utilization

Variables	Utilization of dental health service in the previous 12months				
	n	Yes %	No %	Crude OR (95% CI)	p-value
Education					
≥ High school	35	42.9	57.1	2.40 (1.51-5.00)	**0.017***
< High school	231	23.8	76.2	1	
Occupation					
Business owner	28	42.9	57.1	2.33 (1.04-5.20)	**0.036***
Employee or other	238	24.4	75.6	1	
Perception of oral status					
Having prosthesis	18	50.0	50.0	3.07 (1.16-8.07)	**0.023***
Only natural teeth	248	24.6	75.4	1	
Perception of oral health problem					
Having oral problem	189	32.8	67.2	4.21 (1.91-9.80)	**< 0.001****
Do not have problem	77	10.4	89.6	1	
Perception of oral health service system					
Good perception	140	34.3	65.7	2.47 (1.38- 4.39)	**0.002***
poor perception	126	17.5	82.5	1	

* p-value < 0.05 ** p-value < 0.01

Table 3 shows the final model for Multiple Logistic Regression. In the final model, perception of oral status, perception of oral health problems and perceptions of oral health service system delivery were found to have a statistically significant association with dental health utilization after adjusting for educational level and occupation.

Table 3 Adjusted odds ratios for dental health utilization using Multiple Logistic Regression

Variables	Adj. OR	95% C.I. for OR		p-value
		Lower	Upper	
Education level				
≥ High school	1.91	0.86	4.25	0.113
< High school	1			
Occupation				
Business owner	2.13	0.90	5.05	0.086
Employee or other	1			
Perceived oral health status				
Having prosthesis	4.45	1.41	14.05	**0.011***
Only natural teeth	1			
Perceived oral health problem				
Having oral problem	4.66	1.96	11.07	**<0.001****
Do not have problem	1			
Perception of oral health service system				
Good perception	2.44	1.32	4.49	**0.004****
poor perception	1			

* p-value < 0.05 ** p-value < 0.01

Discussion

In this study, it was found that only just over a quarter (26.3%) of people with visual impairment made use of dental services during the past year. This study shows a lower rate of utilization than did a study of disabled adults in the U.S., where, on an annual basis, 36.5% of disabled people aged 15 years and older reported one dental visit per year.[14] Moreover, in a previous study in Belgium, a cross-sectional study of dental utilization among people with disabilities revealed a rate of use of between 50 and 55%.[15] The reason might be because in the U.S.[16,17] and Belgium[15], there are special dental health delivery systems for older adults and people with disabilities.

Furthermore, the utilization rate obtained in the present study are also lower than those for dental service utilization among the general population, derived from the sixth Chiang Mai province Oral Health Survey Report, 2008.[18] The results of the present study correspond with those of previous studies in various countries.[9,11,15,19] The reason for lower rates of dental service utilization among visually impaired people might be that they are more dependent[10,16,20];

they cannot go to the service by themselves and they need a caregiver to take them to the dentist. Moreover, the lower rate of utilization might be due to a low priority regarding oral health among this group of people and their caregivers.[20,21]

The leading reasons causing people to require dental services were nearly the same for people with visual impairment and for the general population. Since the leading cause of utilization of the service is toothache and tooth sensitivity, it can be assumed that more clients might visit a dentist in order to solve their oral health problems because of signs and symptoms than for routine check-ups. This finding is consistent with the results from many previous studies among both the general population and those with disabilities.[6,10,14,19,22] Private dental clinics or hospitals were the most popular service settings (44.3%), although the government provides free dental service at any government hospital as basic treatment in the oral health benefit packages for people registered as having a disability. Thus, it can be assumed that private dental services are more convenient for visually impaired people. This finding differs from the results of previous studies done in the UK, where those suffering from visual impairment were less likely to receive private dental care than was the general population.[11] The barriers to utilizing dental services most frequently cited by respondents were "no one takes me to the dentist", "not enough time "and "wait until the pain gets worse". In comparison, in a study of the visually impaired elderly in England[11,19], which is a developed country, the most frequently cited reason for not utilizing dental services was that respondents were edentulous and no longer perceived a need for dental treatment. Moreover, there were fewer problems regarding caregivers taking them to the dentist since England may have more a convenient transportation system and other facilities for disabled people. These barriers are different from the barriers found in previous studies, in which "cost" or "financial concerns" were usually found to be the most frequent barriers to dental service utilization.[10,14,15] The reason might be because, in Thailand, the universal coverage scheme provides basic dental care free of charge.

As shown in Table 2, the most significant factor associated with dental service utilization among visually impaired people was perceptions of oral health status (p-value = 0.023). Clients who had prostheses were more likely to utilize dental services than those who had only natural teeth. It can be assumed that this was because they had already utilized the dental service and, as a result, may be more familiar with it than those who had only natural teeth. Furthermore, perception of oral health problems was found to be a significant factor. This result corresponds with those of previous studies[10,15] which found that people with disabilities often utilize dental services, especially when they accept the symptoms and perceive the problems. In general, people who perceive signs and symptoms, especially pain or bothersome feelings, are more likely to seek dental treatment than ones without perceived oral problems. This result has also been found in previous studies.[19] Finally, perception of the oral health service system were found to be significantly associated with utilization of the dental service among people with visual impairment in this study and in a previous study.[6] It also was found that good perception of the service system or an appreciation of service system delivery was positively associated with utilization of the dental service.

There were some limitations of this study. This study was confined to a single province in Thailand. For this reason, it is inappropriate to generalize the findings to the whole of Thailand. The dependent variable relied on recall of utilization during the previous 12 months. Thus, the data is subjected to the recall bias in respondents' memories. The research design was cross-sectional study, therefore, this study could not identify the causes and effects.

Recommendations

Despite the fact that dental services in Thailand are free, the prevalence of dental service utilization is still low among visually impaired people. To increase dental service utilization, effective health information related to dental health services should be encouraged. As a result of the findings of this study, radio, television programs and the internet should be used to publicize not only about dental services, but also useful information about oral health care for clients in order to change and correct their perceptions of oral status and perceptions of oral health problems. Moreover, a realistic volunteer system should be established because people with visual impairment in this study showed that they were depend on caregivers for their receiving oral services. Eventually, the government should also establish special dental service systems (which included many activities such as setting up transportation to dental clinics, providing volunteers to take people with visual impairment to clinics and mobile dental services) to minimize barriers to care and serve needs of visually impaired people.

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