

Oral health knowledge, behaviour and practices among people living in Bangkok, Thailand

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Abstract: Background: Oral diseases such as dental caries are common health problems in people worldwide. It is shown that about 90% of school children worldwide and most adults have experienced caries, with the disease being most prevalent in Asian and Latin American countries. However, Oral diseases are preventable. Therefore, the need for community-oriented preventive programs is emphasized to overcome the high prevalence of oral diseases.

Objective: This study aims to understand and recognize the factors that affect people's behaviour and assess the knowledge, behaviour and practices of people who live in Bangkok to help improve their oral health practices.

Study Methods: Cross-Sectional Study was used to gather information by using questionnaires through an online platform, Google Form. All people living in Bangkok were eligible and were invited to participate in the study. There were 884 people participated in this study. The data were analyzed using descriptive statistics; frequency, percentage, mean and standard deviation. We use inferential statistics, Pearson's correlation coefficient, and a generalized linear model to analyze correlation relationships and predictive factors of variables in this study.

Result: A total of 884 participants, the majority of the participants were aged 51-60 (n=247, 27.9%), most of them were female (n=595, 67.3%), and most of them were Teachers / Professors / Managers / Company employee / Vassal / State enterprise (n=423, 47.9%) and the majority of the participants achieved Bachelor's degree as the highest educational attainment (n=438, 49.5%). Participants showed a moderate level of oral health-related knowledge (M=6.94, SD=1.26). In comparison, reporting a good level of attitude toward oral health (M=21.77, SD=2.80) and a good level of oral health practice (M=24.10, SD=3.78). There was a positive correlation between x and y (r=0.468, p<0.01). The attitudes towards oral health (Exp (β)=0.444, 95% CI: 0.522-0.678, p<0.05), gender (Exp (β)=0.160, 95% CI: 0.818-1.758, p<0.05) and education attainment (Exp (β)=0.118, 95% CI: 0.253-1.007, p<0.05) predicted the oral health practice.

Conclusion: The participants showed a good level of attitude toward oral health and oral health practice, only in knowledge related to oral health at a moderate level. There was a correlation between attitude toward oral health and oral health practice in people living in Bangkok.

Keywords: Oral health, Oral diseases, Knowledge, behaviour and practices.

1. INTRODUCTION

The World Health Organization emphasizes oral health as a critical indicator of overall health, well-being and quality of life. It encompasses various diseases and conditions, including dental caries (tooth decay), periodontal (gum) disease, tooth loss, oral cancer, oro-dental trauma, noma and congenital disabilities such as cleft lip and palate [1]. The common causes of oral diseases, according to The World Health Organization, are such as inadequate exposure to fluoride, high consumption of high sugar food and beverages, high use of tobacco, high alcohol consumption and inaccessibility to good

dental care. Oral health is a good way to indicate well-being and quality of life because all the processes to take care the oral health requires money and proper knowledge. It is essential to have tools and understanding to use the tools and regular dental checks up.

Oral diseases such as dental caries are common health problems in people worldwide. It is shown that about 90% of school children worldwide and most adults have experienced caries, with the disease being most prevalent in Asian and Latin American countries [2]. A study about socio-behavioural variables and oral hygiene of 12-year-old school children in Udaipur district showed that Oral hygiene status was poor, more among boys with debris contributing a major part to the oral hygiene index [3]. Another study suggests that oral diseases are prevalent. According to the National Institute of Dental and Craniofacial Research [4], 92% of adults 20 to 64 have had dental caries in their permanent teeth. Dental problems are also widespread in Thailand. A study of system dynamic analysis of dental caries status among Thai adults and elderly showed that the prevalence of dental caries among the population aged 15 years, 35–44 years, and 60–74 years increased from 62.1 to 62.7, 85.6 to 91.8 and 95.6 to 98.5 per cent between 2000 and 2017.

This information showed that this problem is widespread among all ages worldwide. However, most oral diseases are preventable. The preventions can be promoting a well-balanced diet low in free sugars, stopping the use of all forms of tobacco, and reducing alcohol consumption [5]. Therefore, the need for community-oriented preventive programs is emphasized to overcome the high prevalence of dental caries in Bangkok. This study intends to evaluate Thai people's knowledge, attitude and oral health practice. This study aims to understand and recognize the factors that affect people's behaviour and assess the knowledge, behaviour and practices of people who live in Bangkok to help improve their oral health practices.

Objective

1. To assess oral health knowledge, attitude and oral health practice among Thai People.

2. METHODS

Participants and procedure

This was a cross-sectional observational study. An online questionnaire was purposely developed and made available through Google Form between 1/10/2021 and 31/10/2021. All people living in Bangkok were eligible and were invited to participate in the study. The invitation was sent by email and to social media groups to the target groups belong to. The students who can access the internet have access to these social media groups, so they all receive an invitation. In this invitation, information about the objectives of the study as well as the ethical guarantee of confidentiality and anonymity in the data collected as stated in the informed consent was explained. Participation was completely free and voluntary, and no personal data were collected from any participant. A total of 884 people participated in the study.

Instrument

The questionnaire was developed based on a literature review including (1) Oral health from the World Health Organization (2) related studies performed on similar topics were assessed each of the dimensions analyzed in this study. A preliminary version of the instrument was reviewed by three experts to validate its content. A pretest was performed with a small sample of people to test for comprehension and difficulty. The final version of the questionnaire contained 25 questions; 4 about the sociodemographic data (gender, age, Occupation and Education attainment) and 21 items divided into 3 sections.

Knowledge related to oral health and teeth: This section consists of 10 questions related to ground knowledge about oral health. The participants were asked to choose only one correct answer for choices (A, B, C, and D). One point was assigned to each correct answer, while providing an incorrect answer received 0 points. The sum of all items was made; hence higher scores corresponding to a higher level of knowledge. The score varies from 0 to 10. Greater or equal to 8 is considered a good level, greater than 6 but less than 8 is considered a moderate level, and less than 6 is considered a poor level.

Attitude towards dental health: this scale was composed of 5 items, and response categories consisted of a five-point Likert scale (from 1-strongly disagree to 5 agree), with the highest score corresponded to more positive attitudes toward preventive behaviors. A sum of all the items was made to obtain a score. The "Attitude toward dental health" factor consisted of 5 items, and the higher values corresponded to a more positive attitude toward dental health. The score varies from 6 to 30. Greater or equal to 21 is considered a good level, greater than 17, but less than 21 is considered a moderate level, and less than 17 is considered a poor level.

The oral health practice of participants: these questions referred to the number of preventive behaviours adopted and included 6 items. The data analysis reports 6 items. Each item was answered using a five-point scale (From 1-Never to 5-Always), with one point assigned to each behaviour that was always practised. The number of behaviours practised was added up. A high score on this scale indicated good preventive behaviours. The score varies from 6 to 30. Greater or equal to 20.8 is considered a good level, and greater than 14.4 but less than 20.8 is considered a moderate level, and less than 14.4 is considered a poor level.

Statistical analysis

The analysis was performed using SPSS for Windows, version 26. To analyze psychometric characteristics of the scales, an exploratory factor analysis, using principal component analysis with varimax rotation, was carried out. Reliability was analyzed through the calculation of item-total correlation coefficients and Cronbach's alpha (α) for the scales of the questionnaire. The descriptive analysis was presented in absolute (n) and relative (%) frequencies, mean (M) and standard deviations (S.D.). To assess the differences between the outcome variables (Knowledge, attitudes and behaviours) and the sociodemographic characteristics, considering the sample size, an independent t-test and the ANOVA were used as appropriate. The correlations between the outcomes of the study were calculated by Pearson's Correlation. Lastly, a generalized linear model was calculated to determine the predictive variables of the preventive behaviours. Exp (β) and the respective 95% confidence intervals (95% I.C.) were presented. Statistical significance was defined as $p < 0.05$.

Ethical Considerations

This research uses an anonymous data collection method to collect data from people living in Bangkok aged 16 to 65 and above by using a Google form. The invitation was sent through the internet to social media groups. In these invitations, information about the study's objectives and the ethical guarantee of confidentiality and anonymity in the data collected as stated in the informed consent was explained.

Participation was completely free and voluntary, and no personal data were collected from any participant.

3. RESULT

The study comprised 800 participants who are living in Bangkok. The sociodemographic characteristics of the sample are presented in Table 1. Most of the participants were female (n=595, 67.3%), and the rest were male (n=289, 32.7%). Most of the participants' ages were 51-60 year of age (n=247, 27.9%), and the least were 21-30 (n=92, 10.4%). In terms of occupation, most of the participants were Teacher / Professor / Manager / Company employee / Vassal / State enterprise (n=423, 47.9%). Health care professionals were the minority in this finding (n=37, 4.2%). For education attainment, most of the participants had a Bachelor's degree (n=438, 49.5%). The numbers of participants who had high school and below and Master's degree and above were relatively close (n=217, 24.5% and n=229, 25.9%).

The participants aged 16-20 revealed a moderate level of knowledge about oral health, correctly answering a mean of 7.11 (SD=1.34) questions in a total of 10.

Table 1: Differences in outcomes according to the sociodemographic characteristics of participants (N = 884)

Sociodemographic characteristics	n (%)	Oral Health Knowledge (Range 0-10) M (SD)	Attitude toward Oral Health (Range 5-25) M (SD)	Oral Health Practice (Range 6-30) M (SD)
Age				
16-20	197 (22.3)	7.11 (1.34)	21.42 (2.86)	24.17 (3.68)
21-30	92 (10.4)	6.88 (1.25)	21.76 (3.00)	23.76 (3.79)
31-40	119 (13.5)	7.05 (1.36)	21.63 (2.93)	23.66 (3.73)
41-50	155 (17.5)	6.90 (1.22)	21.74 (2.72)	24.10 (3.51)
51-60	247 (27.9)	6.85 (1.18)	22.12 (2.73)	24.47 (3.95)
60 and above	74 (8.4)	6.72 (1.24)	21.81 (2.47)	23.85 (4.02)
Gender				
Male	289 (32.7)	6.99 (1.37)	21.21 (2.98)	22.84 (3.95)
Female	595 (67.3)	6.91 (1.21)	22.04 (2.66)	24.72 (3.54)
Occupation				

Healthcare	37 (4.2)	7.78 (1.18)	23.24 (2.63)	25.76 (3.05)
Teacher / Professor / Manager / Company employee / Vassal / State enterprise	423 (47.9)	6.89 (1.26)	21.65 (2.88)	23.89 (3.87)
Student	197 (22.3)	7.11 (1.35)	21.40 (2.80)	24.12 (3.65)
Business man or woman / Retailer	77 (8.7)	6.88 (1.19)	22.13 (2.62)	24.21 (4.13)
Freelance	71 (8)	6.65 (1.15)	22.32 (2.58)	23.96 (3.91)
Others	79 (8.9)	6.67 (1.08)	21.77 (2.45)	24.44 (3.28)
Education attainment				
High school and below	217 (24.5)	6.98 (1.35)	21.63 (2.81)	23.77 (3.82)
Bachelor's degree	438 (49.5)	6.81 (1.27)	21.68 (2.86)	23.82 (3.81)
Master's degree and above	229 (25.9)	7.14 (1.13)	22.06 (2.64)	24.97 (3.54)
Total	884 (100)	6.94 (1.26)	21.77 (2.80)	24.10 (3.78)

The analysis of Pearson's correlation coefficient between the outcomes showed that there is no correlation between attitude toward oral health and oral health knowledge. Furthermore, there is no correlation between oral practice and oral health knowledge. However, there is a strong positive correlation between oral health practice and attitude toward oral health ($r=0.468^{**}$, $p<0.01$). (Table 2)

Table 2: Pearson's correlation coefficient between the study outcomes

Variables	Oral Health Knowledge	Attitude toward Oral Health	Oral Health Practice
Oral Health Knowledge	1		
Attitude toward Oral Health	-0.028	1	
Oral Health Practice	0.006	0.468 ^{**}	1
**Correlation is significant at the 0.01			
*Correlation is significant at the 0.05			

The generalized linear model showed that attitudes towards oral health, gender and education attainment had a significant effect on the preventive behaviors. Therefore, attitudes towards oral health (Exp (β)=0.444, 95% CI: 0.522-0.678, $p<0.05$), gender (Exp (β)=0.160, 95% CI: 0.818-1.758, $p<0.05$) and education attainment (Exp (β)=0.118, 95% CI: 0.253-1.007, $p<0.05$) predicted the oral health practice.(Table 3.)

Table 3: The generalized linear model predicting Oral Health Practice

	B	SE	EXP (β)	Sig (p)	95% CI	
					Lower	Upper
Age	-0.15	0.082	-0.067	0.067	-0.031	0.01
Gender	1.288	0.239	0.16	0	0.818	1.758
Occupation	0.068	0.083	0.024	0.416	-0.095	0.23
Education attainment	0.63	0.192	0.118	0.001	0.253	1.007
Oral Health Knowledge	0.043	0.088	0.014	0.628	-0.131	0.216
Attitude toward Oral Health	0.6	0.04	0.444	0	0.522	0.678

4. DISCUSSION

This study assessed oral health knowledge, attitude toward and oral health practice among aged 15-65 years old people living in Bangkok, Thailand. There were in total of 884 participants. The majority of the participants were aged 51-60 ($n=247$, 27.9%), most of them were female ($n=595$, 67.3%), and most of them were Teachers / Professors / Managers / Company employees / Vassal / State enterprise ($n=423$, 47.9%) and the majority of the participants achieved Bachelor's degree as the highest educational attainment ($n=438$, 49.5%). Participants showed a moderate level of oral health-related knowledge ($M=6.94$, $SD=1.26$). At the same time, reporting a good level of attitude toward oral health ($M=21.77$, $SD=2.80$) and a good level of oral health practice ($M=24.10$, $SD=3.78$). There was a positive correlation between x and y ($r=0.468$, $p<0.01$). The attitudes towards oral health (Exp (β)=0.444, 95% CI: 0.522-0.678, $p<0.05$), gender (Exp (β)=0.160, 95% CI: 0.818-1.758, $p<0.05$) and education attainment (Exp (β)=0.118, 95% CI: 0.253-1.007, $p<0.05$) predicted the oral health practice.

Our results for the level of knowledge related to oral health showed room for improvement as the average score for all ages was still moderate. For example, Aishah Alsumait, Mohamed ElSalhy, Eman Almunezaa, Jitendra Ariga, Sabiha Al-Mutawa and Maryam Amin studied the relationship between oral health knowledge, attitude and practices of primary school teachers and their oral Health-related quality of life. It showed that the mean (95%CI) knowledge score was 60.2% (57.2-62.0), which was still at a moderate level and supports our results [6]. The results in table 1 showed that younger people (16-20 years old) had the highest level of knowledge and the lowest in the oldest generation (60 and above). There are little to no investigations on the level of oral-health-related knowledge of younger and older generations. However, the study of Childhood circumstances, psychosocial factors and the social impact of adult oral health by Anne E. Sanders, A. John Spencer found that The importance of parental rearing to adult oral health may be mediated through the quality and nature of psychosocial attributes [7]. Therefore, the possible hypothesis may be that younger people were still in school and all the actions related to oral health had been disciplined by their parents, so the knowledge was still fresh compared to the older people who had not been using the knowledge and being commanded by older generations.

Attitude and practice toward oral health were at a good level in all age groups. The study about the relationship between oral health-related knowledge, attitudes, practice, self-rated oral health, and oral health-related quality of life among Chinese college students by Suge Zheng, Lili Zhao, Nianting Ju, Tiantian Hua, Shunhua Zhang, and Shengkai Liao showed that among the total students, oral health-related knowledge and attitudes were satisfactory. In contrast, the oral health practice was not optimistic. [8] This supports our results on the level of oral-health attitude at a good level. Pearson's correlation coefficient generalized linear model analysis showed that the attitude toward oral health could predict oral health practice statistically significant. The result is supported by a study about the relationship between oral health-related knowledge, attitudes, practice, self-rated oral health, and oral health-related quality of life among Chinese college students by Suge Zheng, Lili Zhao, Nianting Ju, Tiantian Hua, Shunhua Zhang, and Shengkai Liao. The study showed that there were positive correlations between oral health-related knowledge, attitudes, and practice ($r = 0.437, 0.162, 0.095$, all $p < 0.01$). [8]

Regarding gender, females and males appeared to have similar oral health knowledge. Females had a slightly better attitude toward oral health than males. Even though females and males had a good level of oral practice, female participants achieved higher scores than male participants. This may occur because society usually perceives females as a cleaner personality traits. Therefore, this influences females to be the gender that is more delicate than males, resulting in higher attitudes and practices toward oral health. [9] In terms of occupation, healthcare professionals had the highest knowledge related to oral health. This makes sense because healthcare professionals are constantly using biology knowledge, so applying it to do well in the given test would be easier. The study about knowledge, attitudes, and behavior towards oral health among a group of staff caring for elderly people in long-term care facilities in Bangkok, Thailand, by Chuchai Anunmana, Potchaman Sinavarat and Smon Manosoontorn from Mahidol University found that nurses had higher scores of knowledge related to oral health than the other job positions, and educational level and job position showed significant difference of knowledge [10]

The students had the second-highest score among other occupations. This may be because most of the questions were biology-based questions. This would be easier for students because the knowledge related to biology was still fresh, so they could easily apply to the test. All occupations had a good level of attitude and practice toward oral health. However, healthcare professionals attained the highest scores in both areas. The reasoning behind this may be similar to that of knowledge. Healthcare professionals were constantly trained to have a good level of basic hygiene, which might result in better overall scores in both areas.

Moving on to education attainment, all of them have a moderate level of oral health knowledge, but the highest score belonged to a master's degree and above. All education attainment levels had a good level of attitude and practice toward oral health. Master's degree and above achieved the highest scores for attitude and practice toward oral health. This is supported by a study of Intelligence and education by Ian J Deary and Wendy Johnson. It is stated that there is a moderate to strong correlation between the two (intelligence and educational outcomes), as assessed by years spent in full-time education, the highest qualification obtained by a person or the scores obtained on educational assessments. [11]

Limitation

The questionnaire was given to the students during a Covid19 pandemic period. Therefore, It was difficult for me to spread out the questionnaire manually. So the questionnaire could not be hard copied. This results in the usage of Google forms. Google forms are only available for those people that have access to the internet and smartphone. Therefore, the group that does not have the key was not reached during the data collecting period. The knowledge of oral health questions required some scientific knowledge. Consequently, some participants may search for the questions they were struggling with on the internet. Furthermore, of the attitude toward oral health, some of the participants may not answer the questions honestly.

5. CONCLUSIONS

A total of 884 participants, the majority of the participants were aged 51-60 (n=247, 27.9%), most of them were female (n=595, 67.3%), most of them were Teachers / Professors / Managers / Company employees / Vassal / State enterprise (n=423, 47.9%), and the majority of the participants achieved Bachelor's degree as the highest educational attainment (n=438, 49.5%). Participants who showed a moderate level of oral health-related knowledge (M=6.94, SD=1.26). While reporting a good level of attitude toward oral health (M=21.77, SD=2.80) and a good level of oral health practice (M=24.10, SD=3.78). There was a positive correlation between x and y ($r=0.468$, $p<0.01$). The attitudes towards oral health (Exp (β)=0.444, 95% CI: 0.522-0.678, $p<0.05$), gender (Exp (β)=0.160, 95% CI: 0.818-1.758, $p<0.05$) and education attainment (Exp (β)=0.118, 95% CI: 0.253-1.007, $p<0.05$) predicted the oral health practice.

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