



## Relationship between Oral Behaviors and Dental Problems among International School Teenagers Age 15 to 19 in Thailand

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Type of Publication: Original Research Paper

Conflicts of Interest: Nil

### Abstract

Oral behaviors are activities that involve the mouth such as smoking and ingesting food. Dental problems play an important role in our overall health and well-being; having poor oral hygiene may lead to dental cavities and gum disease which may lead to other serious diseases such as heart disease, cancer, and diabetes. Having good oral behaviors should maintain good dental health. Increased oral condition issues, individuals not receiving constant-ongoing treatment, and lack of knowledge on positive oral behaviors, may perhaps lead to serious dental conditions. Our study aims to 1) determine whether there is a correlation between oral behaviors and dental problems among international school teenagers aged 15 to 19 in Thailand, and 2) explore the participants' behaviors on dental health. To determine the correlation between 2 factors, we conducted a cross-sectional survey. The data was collected by sending out a survey questionnaire about dental behaviors to international school students in Wang Thonglang, Minburi, and Pattaya. Samples were collected randomly from multiple international schools including Ruamrudee International School, International School of Chonburi, Singapore International school, and International Community School with a total of 187 responses. We analyzed data using the Statistical Product and Service Solution (SPSS). The findings indicated that oral behaviors and dental conditions do not correlate and may be due to the limitations in the questionnaires, since the dental problems in the questionnaires varied in prevalence pattern.

**Keywords:** Dental health, Oral Hygiene, International school, Adolescents, Behavior, Dental Problems

### INTRODUCTION

Approximately 48 percent of the population worldwide suffers from oral conditions (Oral Lesions and Dental Status among Institutionalized Orphans in Yemen: A Matched Case-Control Study, n.d.), and roughly 2.3 billion individuals are diagnosed with permanent tooth caries.

Although untreated oral problems such as tooth decay are one of the biggest problems in our society today, including teenagers, Thailand has yet to become aware of their unhygienic oral behaviors and dental

conditions. Referring to a Bangkok Post website survey, half the population of children in Thailand experience tooth decay, and up to 65 percent of the southernmost provinces in Thailand such as Songkhla, Yala, Pattani, and Narathiwat, had the highest regional rate of individuals with tooth decay (Bangkok Post Public Company Limited, 2012). As a matter of fact, one may not realize that negative oral behaviors such as not brushing their teeths for a certain period of time, if proceeded and continued, may exacerbate the problem and increase the risk of getting tooth decay

(Mayo Clinic, 2017). Obtaining good oral health is necessary for good health in general, as it provides many health benefits such as fresher breath, better gum health, or healthier pregnancy and stronger fertility (Perfect Teeth, 2019) and prevents other risk factors that may develop such as diabetes, heart disease, or dementia (Federici Dental, 2018). For instance, it is vital that children aged 15 to 19 have good oral behaviors, and they must be educated on how to manage good oral hygiene to acquire positive overall health. According to Healthline 2019, data designate that up to 90 percent of school children have at least one dental condition such as tooth decay - areas of the tooth have been permanently damaged for which may occur when individuals do not follow hygienic oral behaviors. This may imply that adolescents are one of the major target groups for knowledge on oral conditions. The problem can arise rapidly as bacteria form a plaque and the acid coat produced by some bacteria on the teeth starts to eat its way to the enamel and finally to the underlying dentin or the connective tissue (WebMD, 2018). As a result, improper oral behaviors may lead to further severe conditions including gum disease, receding gum, and cracked teeth. However, the relationship between oral behaviors and dental health remains largely elusive. To elucidate the relationship between oral behaviors and dental health among Thai teenagers, this study aims to determine a correlation between oral behavior among teenagers age 15-19 and dental caries under the hypothesis that teenagers with healthier and hygienic oral behaviors have fewer dental problems than those with negative oral behaviors.

## METHODOLOGY

### Participants

The sampling population consisted of international school students aged 15-19 from three districts, Wang Thonglang, Minburi, and Pattaya. We have gathered 187 responses in total; 57.2 percent of which were male, 39.6 percent were female, and 3.2 percent preferred not to state their gender.

### Instrument

A 3-section questionnaire consisting of 24 questions in total was based primarily on the existing research survey by the Department of Oral Medicine and Periodontology, Faculty of Dentistry, Sana'a University, Sana'a, Yemen (Al-Maweri et al., 2014), and we developed a few novel questions:

Section 1 is composed of 4 general questions including the participant's gender, age, congenital disorder, and whether or not they smoke.

Section 2 regards the oral behavior of participants, and this section comprises 11 items. All questions were arranged using the five-point Likert scale (ranging from 1 (strongly disagree) to 5 (strongly agree)).

Section 3 regards the dental health of participants, and this section comprises 8 items. All questions were arranged using the five-point Likert scale.

To determine the index of item objective congruence (IOC) (Turner & Carlson, 2003), the questionnaire was quality checked, revised, and approved by three experts before the distribution. To determine the internal reliability of the questionnaire using the Cronbach Alpha, 30 participants were chosen to complete the questionnaire as a pilot group. The Cronbach Alpha value was calculated using the Statistical Product and Service Solution (SPSS) version 27, and the value obtained was 0.834 which is suitable for practical use (Taber, 2017).

## RESULTS

In the survey, there were five choices in each question starting from one being "strongly disagree" to five being "strongly agree." The data were analysed to determine the correlation between oral behaviours and dental problems by SPSS version 27. According to table 2, the mean indicates the average score of items in the two sections of the questionnaire; this score ranges from 1 to 5 in accordance with the 5-point likert scale. The standard deviation describes the variance the data observed the variables is distributed around its mean (Hayes, 2021).

Pearson's correlation was used to determine the relationship between oral behaviors and dental health. As a result, it showed that they did not correlate.

**Table 1.** General information of participants (N=187)

		Valid Percentage (%)
Age	15	27.1
	16	15.2
	17	37.0
	18	14.7
	19	6.0
Gender	Male	39.8
	Female	57.0
	Others	3.2
Smoking or not	Yes	10.8
	No	89.2
Congenital disorder/chronic health problems	Yes	16.1
	No	83.9

According to table 1, it illustrates that more than 80% neither have health problems nor smoke. This would influence the results due to the fact that smoking can also make treatment for gum disease less successful. Which means that some of the participants might be smokers but might have good oral behaviors such as brushing their teeth twice a day. This might lead to why it's not correlated.

**Table 2.** Descriptive Statistics

	Mean	Std. Deviation	N
Oral Behaviors	3.43	0.57	187
Dental Health	2.24	0.59	187

According to table 2, among 187 participants the mean of oral behaviors was 3.43 out of five choices. This indicates good oral behaviours; its standard deviation was around 0.57. In contrast, the mean of dental health was 2.24 out of five which indicates in most of the questions (in dental health) that participants may have poor dental health, whereas its standard deviation was about

0.59. By learning from this mean number, it could also be that 20 participants just chose the choices randomly without reading the questions.

**Table 3.** Correlation between oral behaviors and dental health

		Oral Behaviors	Dental Health
Oral Behaviors	Pearson Correlation	1	0.089
	Sig. (2-tailed)	-	0.229
	N	187	187

According to table 3, oral behaviors and dental health did not correlate. Pearson correlation test at the significant level of 99 percent revealed that there is no statistically significant correlation between oral behaviors and dental health, as we got the p-value of 0.229.

## DISCUSSION

Our study indicated that there is no correlation between the participant's oral behaviors and their dental health. This could be due to the limitations of the questionnaire. In the "Dental Health" section of the questionnaire, we stated several dental problems to determine whether or not the participants had good dental health. The dental problems vary in their prevalence patterns, as some are seen more frequently while some are extremely rare. For example, the prevalence of dental caries among adolescents can be as high as 58% (Heng, 2016) while the prevalence of tooth fracture is only at 5% (Lubisich et al., 2010). The huge difference in the percentage prevalence of each dental problem made it very challenging to collectively determine whether or not our participants have good dental health.

Low socioeconomic status is one of the risk factors that contributed to the development of oral diseases (Werneck et al., 2010). However, our study is aimed specifically at international school students in Thailand, who usually spend relatively high school expenses. International school fees in Thailand are

expensive at an average of \$17,200 per year (Chan, 2020) while school fees for public governmental schools in Thailand only range between \$0-200 per year (Ministry of Education Thailand, 2012). This indicates that the family of students who are enrolled in such schools must have a relatively high income (high socioeconomic status). Youth with richer parents also tend to have access to better dental care from professionals. This could be a reason for some of the participants with good dental health despite their bad oral behaviors.

## CONCLUSION

The main problem in this project is whether the teenager's oral behaviors play a role in the dental health of individuals. We initially hypothesized that there will be a correlation between oral behaviors and dental health. However, after conducting a cross-sectional survey research, we found that there is no correlation between these variables. This is very surprising to us, but after we carefully examined the raw data, we found multiple possible reasons that could explain our unexpected results as discussed above. In the future, it might be better to gain more responses, include the income of each individual in the general questions and do the similar research in medium and low-income groups; so that the survey results become more precise and informative.

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