

**THE PRACTICE OF USING CHEWING STICK (*SALVADORA PERSICA*) IN
MAINTAINING ORAL HEALTH: KNOWLEDGE, PERCEPTION AND ATTITUDE
OF MALAYSIAN MUSLIMS ADULT**

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ABSTRACT

Chewing stick (*Salvadora persica*) also known as miswak is a traditional medicinal plant being used in oral health maintenance from ancient time. Even with the many toothbrushes being invented nowadays, chewing stick is still being used by people all over the world, especially among the Muslims. This is so because it has religious and customary values. It is renowned by Muslim as a tool used by Prophet Muhammad pbuh to clean his teeth. Many researchers had reported that chewing stick has as its biological and mechanical values to oral health. Chewing stick had antibacterial, antifungal and antioxidant activities, and also effective in controlling dental plaque which is an important factor in the development of caries and periodontal diseases. Thus, the aim of this paper was to report on the knowledge, perception and attitude of Malaysian Muslims towards the usage of chewing stick (*Salvadora persica*) in maintaining oral health. Five hundred and sixty respondents from Kuala Lumpur were asked to answer a set of questionnaire pertaining to chewing stick and oral health care. A majority of the Malaysian Muslims had limited knowledge pertaining to scientific information of chewing stick with good level of general knowledge. In this study, it was found that Malaysian Muslims have good perception towards chewing stick and their oral health care is satisfactory. Most of them brush their teeth twice daily, but visit dentist only when it is necessary. This study appears to suggest that the usage of chewing stick has a high potential in promoting and maintaining oral health especially among Muslims. This is because its usage can be combined with modern oral health care tools like floss, toothbrush and mouthwash, and foremost, it is one of the most favorable practices of Prophet Muhammad PBUH.

Keywords: *Salvadora Persica*, Perception, Oral Health Care, Knowledge, Religious.

1. INTRODUCTION

Chewing stick (*Salvadora persica*) also known as miswak is renowned by Muslims as a tool used by Prophet Muhammad pbuh to clean teeth and it was also a practice by his companions during their times. Even with the many toothbrushes being invented nowadays, chewing stick is still being used by some people all over the world, especially among the Muslims because it has religious and customary values. Chewing stick is also practised by many people in developing countries because of the availability, low cost, simplicity and/or traditional culture (Goyal, Sasmal, & Nagori, 2011; Halawany, 2012). According to Arab culture, chewing stick is the best dental cleaning tool as the edge of the wood will act as a brush, while the active ingredients in it will help in cleaning and refreshing the mouth.

Studies have shown that chewing stick made up from *Salvadora persica* promised comparable or even better result for use in oral healthcare. The therapeutic and prophylactic effects of it may be attributed to the mechanical cleaning, potential release of biologically active chemicals when used, and/or a combination of both. The pungent taste and chewing effects of it may also contribute to the effectiveness of the chewing stick as it helps to increase saliva secretion in mouth leading to effective buffering by the saliva (Goyal et al., 2011; Hattab, 1997). Chemical analysis of *Salvadora persica* has demonstrated the presence of more than 19 active compounds such as chlorides, fluorides, sulphur, silica, vitamin C, saponins, flavonoid and sterols (Ezoddini-Ardakani, 2010; Farooqi, 2003; Halawany, 2012).

It also has been scientifically proven to be useful in the prevention of tooth decay, plaque accumulation and periodontal disease (Al-Bayati & Sulaiman, 2008; Al-Otaibi, 2003; Almas & Al-Zeid, 2004; Batwa, Bergstrom, Batwa, & Al-Otaibi, 2006; Devi et al., 2011; Ezoddini-Ardakani, 2010; Kaur, 2001; Shetty, Amirisetty, & Agrawal, 2010; Sofrata, 2010). Several studies have also reported on the antibacterial and anticaries effects of *Salvadora persica* on cariogenic bacteria and periodontal pathogens and that it may have a selective inhibitory effect on population of certain bacteria (Al-Bayaty, Al-Koubaisi, Ali, & Abdulla, 2010; Almas, 2001; Darout, Albandar, Skaug, & Ali, 2002; Poureslami, Makarem, & Mojab, 2008; Sher, Al-Yemeni, & Wijaya, 2011; Sofrata, 2010).

The chewing stick gained popularity through being attributed to the daily practice of Prophet Muhammad pbuh whose advanced understanding of preventive medicine is lauded as being only part of his general concern with preventive medicine (Rispler-Chaim, 1992). Malaysian Muslims are also exposed to the practice of using chewing stick due to religious values. Malaysia which is situated in South East Asia is made up of two geographical wings namely Peninsular Malaysia and East Malaysia. The Malaysian population is about 29 million people with 52% of them are Muslims (statistics.gov.my). Thus this paper aims to report on the knowledge, perception and attitude of Malaysian Muslims towards the usage of chewing stick (*Salvadora persica*) in maintaining oral health.

2. LITERATURE REVIEW ON THE PRACTICE OF USING CHEWING STICK ACCORDING TO PROPHETIC TRADITION

The term miswak is derived from Arabic word *saka/swk* which means rubbing for the purpose of cleaning (Manzur, 1975). In English, miswak is known as chewing stick. Different names are used by the people in different parts of the world where it is referred to as *arak* or *miswak* in Arabic, *koyoji* in Japanese, *qesam* in Hebrew, *mastic* in Latin and *darakht-i-miswak* in Persian (Bos, 1993; Goyal et al., 2011). According to many Islamic scholars, the term miswak is referring to the usage of a stick to clean teeth, removal of wastes and eliminate the yellowing effects of food residues stuck on the teeth (Al-Nawawi, 1996.; Al-Zuhaily, 1989; Bassam, 2009; Hasyim, 2003; Zaidan, 1997). In short, chewing stick or miswak is any part of the tree either twigs, branches or roots which is used to clean teeth. Most of all *Salvadora persica* (Arak tree) has been claimed to be the most suitable tree for making the chewing stick and was used by the Prophet pbuh to clean his teeth (Batwa et al., 2006; Ma'ayergi & HA, 1984; Sabiq, 1985; Sher et al., 2011; Zaidan, 1997).

Although the practice of chewing stick is not mentioned in Holy Quran, the general principle of hygiene has been emphasized in the Quran as mentioned in surah at-Taubah (9) ayah 108. Thus hadith plays a significant role in explaining the details of hygienic lifestyle including the maintenance of oral health. About 36 *ahadith* pertaining to the usage of chewing stick by Prophet Muhammad pbuh can be found in Sahih Bukhari and Sahih Muslim. These *ahadith* can be categorized into three subtopics that include method of chewing stick application, recommended time to use the chewing stick and advantage of using chewing stick in oral healthcare (Nordin, 2012).

The method of chewing stick application that has been extracted from the collected *ahadith* showed the attitude of Prophet Muhammad pbuh when using the chewing stick. In short, the stick can be chewed in the mouth and is also used to clean tongue. According to Aishah r.a. and Ibn Qayyim Jawziyah, the end of chewing stick must be cut and soak in water so that the bristles are soft and suitable for use in the oral cavity (Al-Asqalani, 1993; Al Jauziyah, 2003). According to the understanding of the collected *ahadith*, chewing stick can be performed at any time without limitation. The recommended times are prior to prayer and during ablution, recitation of the Quran, meditation (*zikr*) and *qiyamullail* (night prayer). It is also recommended for use when entering mosque or house, when getting up from sleep and

during interaction with people (Nordin, 2012; Rispler-Chaim, 1992). One of the *ahadith* pertaining to the recommended time to use chewing stick is narrated from Aisyah r.a., “*I asked Aisyah: what the Prophet did first when he entered his house, and she replied: He used siwak (first of all).*” (Sahih Muslim, Book of Purification, Pertaining to tooth-stick, Hadith No. 488 & 489)

Among the Prophetic narrations that encourage his followers to practise using chewing stick is the following hadith narrated from Aisyah;

“But for my fear that it would be hard for my followers, I would have ordered them to clean their teeth with siwak on every performance of ablution” (Sahih Bukhari, Hadith No. 887 & 7240, Sahih Muslim, Hadith No. 589)

This hadith shows the strong recommendation for the practice of chewing stick in purpose of maintaining oral health and avoiding foul breath. But the hadith does not imply the compulsory obligation of using chewing stick by Muslims. Most of the Muslim jurists agreed that the practice of chewing stick is strongly recommended (*sunnah muakkadah*) in Islam (Al-Asqalani, 1993; Al-Nawawi, 1996.).

Furthermore many Muslim jurists had written about the advantage of chewing stick which can be classified as either religious or physical benefits. Among these jurists are Ibn Qayyim Jawziyyah, Ibn Nafis, Ibn Hajar al-Asqalani, Al-Nawawi, Imam Jaafar Sadiq, Al-Razi, Ibn Sina, ‘Isa b Masawayh etc. ((Bos, 1993; Nordin, 2012; Rispler-Chaim, 1992). The benefits can be extracted from the hadith narrated by Aishah r.a.; “*The Prophet pbuh said, it (i.e siwak) is a purification for the mouth and it is a way of seeking Allah’s pleasures.*” (Sahih Bukhari, Book of Fasting, Chapter dry or green siwak for fasting person).

This hadith explains that chewing stick offers religious benefits as it is a way to seek the pleasure of Allah and also physical benefits as it helps to clean the mouth. Besides the scholars such as Ibn Qayyim, Ibn Nafis, Ibn Sina, Isa ibn Masawayh, many others have claimed that chewing stick can purify mind, cure forgetfulness, stimulate memory, polish the teeth, strenghten the gums, refine the senses, improve sight, prevent rotten teeth, prevent foul breath and fight the feeling of sleepiness and lethargy (Al Jauziyah, 2003; Bos, 1993).

3. METHODOLOGY

Subjects

A sample of 517 Malaysian Muslim adults aged 19-48 years residing in Kuala Lumpur were selected randomly. The demographic characteristic of the sample is shown in Table 1. Residents of Kuala Lumpur were selected for the study on the basis that Kuala Lumpur is the capital city of Malaysia and included people from all over the states in Malaysia. The primary and secondary education is equivalent to primary and secondary school respectively. The tertiary education of the sample population includes those with diploma and pursuing undergraduate and postgraduate studies. A multistage random sampling procedure was adopted to select the required number of respondents representing all locations stated in the study (Farsi, Farghaly, & Farsi, 2004; Krejcie & Morgan, 1970). The limitation in this study is the questionnaire information on chewing stick is self-reported. This might affect the results as the respondents answered the question based on their perception on the understanding and rating of their oral health.

Survey Procedure and Description

All subjects were given closed-ended questionnaire, with some questions permitting respondents to choose more than one answer. The questionnaire was developed to gain information on (i) demographic information, (ii) knowledge pertaining to usage of chewing stick in maintaining oral health (iii) perception toward the use of chewing stick in maintaining oral health and (iv) attitude towards oral healthcare.

Data Analysis

The analysis method used in this research was simple descriptive statistics in the form of percentage and frequency distribution. The data was being analyzed using SPSS statistics programme version 20 and the significant level was taken at a level of p value <0.05. The mean values of Likert scale showed the level of knowledge and perception of respondent towards chewing stick as the value increase from 1 (very poor), 2 (poor), 3 (satisfactory), 4 (good) and 5 (excellent).

4. RESULT

The demographic characteristic of the sample population is shown in Table 1. The respondents (517 respondents) constitutes of 36.9% males and 63.1% females. Most of the respondents (64%) have tertiary level of education. About 32.6% of the respondents have the experience using the chewing stick in maintaining their oral health.

The distribution of respondents based on their level of knowledge on chewing stick is presented in Table 2. Regarding general knowledge of chewing stick, respondents are in good level with 91.6% of them knows that chewing stick helps in oral healthcare. Their knowledge pertaining to the practice of chewing stick by Prophet Muhammad pbuh is satisfactory. Most of them (94.1%) know that chewing stick usage is favored by Prophet pbuh, and 90.7% of them know that a number of *ahadith* encouraging Muslim to used chewing stick had been narrated from Prophet pbuh. However, they were not sure the detail information on the practices of chewing stick by Prophet Muhammad pbuh. Only about 19.7% of the respondents know that Prophet pbuh used the chewing stick upon entering his house, and 65.5% of them know that Prophet pbuh had asked Aisyah r.a. for chewing stick near to the end of his life.

Regarding the historical knowledge, only about 34.3% of the respondents know that the chewing stick was used by the ancient Babylonian societies. Furthermore, their knowledge on the method of using chewing stick is also at poor level. Even though 53.3% of the respondents know that the chewing stick has to be soaked in water before use, about 43.3% of them were not sure about the practice.

While for benefit and objective of using chewing stick are at satisfactory level of knowledge, most of the respondents know that the biological properties of chewing stick help in the control of bacterial population in mouth (52.9%) and had been confirmed by research and laboratory works (64.9%). Most of respondents (88.1%) know that the objective of using chewing stick during the time of Prophet pbuh is similar to the using of toothbrush with toothpaste in modern time, and 62.2% of them know that both of the deeds is sunnah (practice of Prophet pbuh).

The perception of the respondents towards usage of chewing stick in maintaining oral health is tabulated in Table 3. In short, respondents have a good perception towards chewing stick as a tool in oral healthcare as they tend to agree in most of the questions. About 58.7% of the respondents agreed that using chewing stick in oral healthcare is suitable to practice in Malaysia. About 63.9% of them agreed that chewing stick is the best alternative to the toothbrush in oral healthcare for the Malaysian Muslim population. For the level of cleanliness, about 71.1% of them agreed that the usage of chewing stick ensures the cleanliness of the mouth. Most of the respondents have a good perception towards the potential and scientific evidence of chewing stick in oral health maintenance. About 89.5% of them agreed that the scientific study of chewing stick should be explored further so that Muslims can benefit from it.

Table 4 shows the attitude of respondents towards oral healthcare. Overall the Malaysian Muslims oral healthcare is satisfactory as 93.2% of them agreed that oral healthcare is as important as a whole body healthcare. Most of them (72.9%) agreed that the most effective prevention method in preventing dental problem is good oral healthcare. About 47.1% of the

respondents brush their teeth twice daily and 23.9% of them clean their teeth in order to prevent caries development. However, only 17.9% of the respondents visit dentist every 6 month and most of them (47.8%) visit dentist when deems necessary. The attitude of males and females towards dental visit is significantly different ($p < 0.001$). The last dental visit for males is during their school days (29.1%), whereas for females is the last six month (36.1%). As for the frequency of teeth cleaning, most of the males brush their teeth twice daily (55.8%) while for the females, most brush their teeth two to five times daily (49.7%).

5. DISCUSSION

The World Health Organization (WHO) is encouraging further researches to be carried out, emphasizing on the effectiveness of chewing sticks as it can help to enhance oral health (Organization, 2000). Oral health is not limited to oral and dental hygiene only, but integral to general well being and relates to quality of life (Palombo, 2011). Many studies claimed that chewing stick benefited its users but it must be used in a proper way (moderate) and not excessive to avoid any oral injuries, and also to achieve maximum benefits in oral healthcare (Al-Otaibi, 2003; Farsi et al., 2004; Gazi, Saini, Ashri, & Lambourne, 1990; Halawany, 2012).

Thus, it is important to have adequate knowledge in order to practice using chewing stick in maintaining oral health. It appears that the level of general knowledge regarding chewing stick among the Malaysian Muslims is good. However they have a limited scientific knowledge, evidence, historical knowledge, method of using chewing stick and practice of chewing stick from Prophetic Tradition. Malaysian Muslims also have good perception towards the usage of chewing stick as a device in maintaining oral health. About 32.6% of the respondents have the experience of using chewing stick. A majority of the respondents would like scientific research on chewing stick to be carried out as it has huge implication towards Muslim population.

Reviewing the Prophetic Tradition presented a number of *ahadith* pertaining to the practice of chewing stick that had been narrated by the companions of Prophet Muhammad pbuh. Furthermore, commentaries from Muslim jurists have indicated that Prophet Muhammad pbuh is concern with preventive healthcare specifically the dental care. His great emphasis and priority to the practice of using chewing stick should be clearly understood by Muslims. With the understanding, Muslims would be encouraged to practice the sunnah with in depth knowledge and not only by *taqlid* (following something without knowing the reason). Perhaps the knowledge of Muslims pertaining to chewing stick can be upgraded through dissemination of the information via mass media such as internet, radio, television, and also via any discourse regarding healthcare. The information must be obtained from authorized persons such as Muslim scholars and dentists who themselves have a good level of knowledge pertaining to chewing stick.

When evaluating the oral healthcare practices among Malaysian Muslims, we can say that they were in satisfactory level. Many aspects can be improved such as knowledge on using additional oral healthcare devices (floss and mouthwash) and having regular dental check up in practicing preventive dentistry. Floss and mouthwash can be used together with toothbrush with toothpaste in daily oral healthcare. Both devices help in preventing accumulation of bacteria in mouth and formation of biofilm, which subsequently can lead to oral diseases such as caries and periodontal (Marsh, Martin, Lewis, & Williams, 1999). According to the Malaysia's National Oral Health Plan (Oral Health Division, 2011) (organized by Oral Health Division, Ministry of Health Malaysia), increasing caries experience and prevalence with increasing age in adults is noted from 1990 to 2000. Overall, high prevalence of periodontal conditions exists in the adult population. According to the report, the majority of school leavers and adults are presented with bleeding gums is a cause for concern. It is a reflection of widespread ineffective personal oral hygiene practices which will most likely impact more

severely on periodontal health in later life. This statement is supported by the report that the oral health in the elderly population is not encouraging (moh.gov.my).

Furthermore, Malaysian Muslims should be encouraged to have regular dental check up as it can prevent any early symptom of dental problem. It is reported that only about 6% of adults are using government and healthcare facilities (moh.gov.my). Based on the dental visits, a majority of males and females visit dentist when deems necessary (having tooth pain). However, significant differences between the genders were shown in the second option where the females visit dentist last six month indicating that they had a regular check up with dentist. Female respondents also show a significant difference compared with males in the frequency of tooth cleaning. About 49.7% of the females brush their teeth two to five times daily indicating that females are more concern with oral healthcare than males. Perhaps females are more concern about their appearance and health besides being exposed to health check up (i.e. pregnancy check up).

The usage of chewing stick in maintaining oral health can be implemented and promoted among the Muslims. The Muslims would not hesitate to use the chewing stick if they were to follow the recommendation of its use by Prophet Muhammad pbuh to his followers. The Muslims may either use modern toothbrush or natural toothbrush (chewing stick) as the common objective of the usage (*maqasid syariah*) is for oral hygiene. The use of toothbrush is a way (*wasilah*) to have good oral hygiene (objective). In this modern world, chewing stick may still be relevant as clinical studies and scientific evidences have shown positive effect of its role in oral healthcare. Muslim dentists and nurses should be encouraged to acquire knowledge on the usage of chewing stick as practised by Prophet Muhammad pbuh in promoting preventive dentistry.

6. CONCLUSION

This study appears to suggest that chewing stick has high potential for use in maintaining oral health among the Muslims. This is because its usage can be combined with modern oral healthcare tools (floss, toothbrush and mouthwash) and foremost, for the Muslims, it is one of the most favorable practices of Prophet Muhammad pbuh. Hopefully, this study in addition to being used as a reference by any organization in promoting healthcare program towards improving quality of life of the Malaysian Muslims can also promote the oral healthcare according to the sunnah of Prophet Muhammad pbuh.

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Table 1: Demographic characteristic of the sample population.

Characteristics	Number of cases (N)	Percentage (%)
Age		
20-29	450	80.9
30-39	67	12.1
Gender		
Male	206	36.9
Female	352	63.1
Level of education		
Primary	53	9.5
Secondary	147	26.3
Tertiary	359	64.0
Experience of using chewing stick		
Yes	182	32.6
No	376	67.4

Table 2: The distribution of respondents based on their level of knowledge on chewing stick

Knowledge on chewing stick	Yes	Not Sure	No	Median value
(A) General knowledge	(%)	(%)	(%)	1 - 5
Have you heard or/and know about the practice of using chewing stick in maintaining oral health?	93.6	0.4	6.1	4
Chewing stick helps in oral healthcare	91.6	8.1	0.4	(good)
Chewing stick helps in refreshing the mouth	65.9	27.9	6.1	
(B) Chewing stick practices by Prophet Muhammad pbuh				
A number of <i>ahadith</i> encouraging Muslim to used chewing stick had been narrated from Prophet pbuh	90.7	9.1	0.2	
Usage of chewing stick is favored by Prophet pbuh	94.1	5.7	0.2	
Prophet pbuh used chewing stick every time he wants to perform solat.	86.5	13.5	0	3
Among the first thing Prophet pbuh do when entered his house is using chewing stick to clean his teeth.	19.0	75.6	5.4	(satisfactory)
Prophet pbuh asked Aisyah ra for chewing stick near to the end of his life	65.5	33.2	1.3	
(C) History of using chewing stick in oral healthcare				
Chewing stick was used by the ancient Babylonian societies.	34.3	61.9	3.6	1(very poor)
(D) Method of using the chewing stick				
Chewing stick should be soak in the water before used as to avoid affecting the gum	53.3	43.3	3.2	2
Chewing stick can be used in any time and places without limitation	84.8	12.5	2.7	(poor)

(E) Benefit of using chewing stick				
Chewing stick has biological properties that helps in control bacterial population in mouth	52.9	45.3	1.8	3
Benefits of chewing stick had been approved by research and laboratory works.	64.9	34.5	0.5	(satisfactory)
(F) Objective in using chewing stick				
Usage of chewing stick during Prophet pbuh time has the same objective with the used of toothbrush and toothpaste in modern time	88.1	9.6	2.4	
Usage of chewing stick and usage of toothbrush with toothpaste are include in sunnah (practice) of Prophet pbuh in maintaining oral health	62.2	29.0	8.8	3 (satisfactory)
Chewing stick is use in maintaining oral health, and also a method in pursuing Allah pleasure (<i>redha</i>)	73.4	24.8	1.8	

Table 3: The perception of respondents towards the usage of chewing stick in maintaining oral health.

Perception towards chewing stick	Agree (%)	Not Sure (%)	Disagree (%)	Median values (1-5)
(A) Usage of chewing stick among Malaysian Muslim				
Chewing stick is suitable to practice in present time	76.1	14.2	9.7	
Chewing stick is suitable to practice in Malaysia	58.7	24.0	17.3	3
Chewing stick is suitable to practice by urban and rural population	76.8	12.5	10.7	(satisfactory)
(B) Effect of chewing stick towards oral health				
Usage of chewing stick has the same effect as using toothbrush with toothpaste	51.4	35.1	13.6	3 (fair)
(C) Chewing stick as an alternative to the toothbrush				
Chewing stick is the best alternative to the toothbrush in oral healthcare for the Malaysian Muslim population	63.9	27.9	8.2	3
Chewing stick is the best alternative for people who live in a country with low economic status	30.2	25.5	44.3	(fair)
(D) The level of cleanliness				
Usage of chewing stick ensure the cleanliness of the mouth	71.1	19.0	9.9	3 (satisfactory)
(E) Potential and scientific research of chewing stick				
Chewing stick has great potential in oral health care.	79.1	18.2	2.7	3
The scientific study of chewing stick should be extended so that Muslims can benefit from it	89.5	7.2	3.2	(satisfactory)

Table 4: Attitude of the Malaysian Muslims adult towards oral healthcare

Oral healthcare practice	%	Male		Female	
		N	%	N	%
(I) Oral healthcare devices					
-Toothbrush	92.3	184	89.3	330	93.8
-Toothpaste	86.2	169	82.0	310	88.1
-Floss	26.5	40	19.4	108	30.7
-Mouthwash	38.9	60	29.1	157	44.6
-Miswak	10	33	16.0	23	6.5
(II) Frequency of teeth cleaning					
< 2 times a day	6.8	20	9.7	28	8.0
twice a day	47.1	115	55.8	147	41.8
2-5 times a day	43.0	64	31.1	175	49.7
> 5 times a day	3.0	6	2.9	11	3.1
(III) Teeth cleaning time					
-before sleep	84.6	158	76.7	313	88.9
-waking up	95.5	194	94.2	337	95.7
-before meal	3.4	8	3.9	11	3.1
-after meal	44.4	70	34.0	177	50.3
-before reciting al-Quran	3.4	8	3.9	11	3.1
-before pray (solat)	21.3	30	14.6	89	25.3
-during ablution	12.7	19	9.2	52	14.8
-others	4.0	8	3.9	11	3.1
(IV) Frequency visiting dentist					
-every month	3.2	6	2.9	12	3.4
-once in 6 month	17.1	20	9.7	75	21.3
-once a year	19.9	44	21.4	66	18.8
-never visit dentist	11.7	35	17.0	30	8.5
-if necessary	47.8	97	47.1	168	47.7
(V) Last dental visit					
6 month ago	31.4	47	22.8	127	36.1
1 year ago	20.0	37	18.0	73	20.7
> 1 year	18.9	45	21.8	59	16.8
During treatment/check up at school	22.9	60	29.1	67	19.0
(VI) Treatment/services obtained from dentist					
Teeth extraction	59.6	117	56.8	209	59.4
Teeth patch	67.6	120	58.3	249	70.7
Teeth scaling	54.1	93	45.1	204	58.0
Using braces	8.7	14	6.8	34	9.7
Dental advices	15.3	37	18.0	47	13.4
Monthly check up	19.9	36	17.5	72	20.5
Others	3.1	7	3.4	10	2.8
(VII) Reason to clean teeth					
Avoiding caries	23.9	55	26.7	78	22.2
Avoiding tooth pain	3.8	9	4.4	12	3.4
Avoiding foul breath	11.1	33	16.0	29	8.2
Daily routine	12.4	22	10.7	47	13.4

(VIII) The most effective prevention method to prevent dental problem (i.e. caries and gingivitis)

Good oral healthcare					
Undergo monthly check up	72.9	148	71.8	254	72.2
Reducing intake of sweet food etc.	13.7	24	11.7	51	14.5
	12.8	27	13.1	44	12.5

(X) Oral healthcare is as important as a whole body healthcare, and also can affect a person's quality of life

Yes	93.2	187	90.8	328	93.2
Not sure	11.0	10	4.9	17	4.8
No	21.8	5	2.4	6	1.7

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