

## ASSESSMENT BETWEEN ORAL HEALTH KNOWLEDGE, ATTITUDE AND PRACTICE WITH DENTAL CARIES AMONG 6-YEARS-OLD PRIVATE PRE-SCHOOL CHILDREN

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### ABSTRACT

*In many developed countries, oral health has improved in older children in recent decade, but remains a significant problem in younger children. Knowledge, attitude and practice (KAP) elements play an important role in promotion of oral health. The aim of this study was to analyze the oral health KAP in 6-year-old children in private pre-school and its relationship with caries presentation in their oral cavity. In this cross-sectional study on 35 children aged 6-year-old from private pre-school, KAP of the subjects were assessed using modified adapted questionnaire and caries detection through dental check-up. Data were analyzed using Chi-squared test in SPSS version 21.0. Statistical significance was set at  $P < 0.05$ . Results of this study showed that the scores of children in knowledge, attitude and practice were  $94.7 \pm 5.7\%$ ,  $71.4 \pm 28.6\%$  and  $42.9 \pm 57.1\%$ , respectively. These children seem to have good oral health knowledge and attitude but not in term of practice. Among these children, the percentages of children presented with caries were  $74.0 \pm 26.0\%$ . Practice showed to have significant relationship with caries experience among the children ( $P = 0.04$ ) but not for knowledge and attitude. In conclusion, this study showed that 6-year-old children in private pre-school have good knowledge and attitude regarding oral health but oral health practice showed significant relationship with caries experience was not satisfactory. Furthermore, parent's knowledge on children's oral health should not be taken for granted as its play a big role on the educating and foster children's good oral health practice. In addition, other external factors also should be considered instead of relying on KAP elements only in 6-year-old children.*

Keywords: Attitude, dental caries, knowledge, practice, pre-school children.

### INTRODUCTION

Dental caries is one of the most common childhood diseases in the world. In many developed countries, dental caries has improved in older children in recent decade, but remains a significant problem in younger children (Pine et al., 2000). According to United States Surgeon General's report (2000), dental caries is stated as the most common chronic childhood disease of children aged 5 to 17 years and is five times more common than asthma and seven times more common than hay fever. In the United States, over 50% of 5 to 9-year-old children have at least one cavity or restoration. Based on The Malaysian Oral Health Survey in 2005, approximately 76.2% of 5-year-old children have caries with mean decayed, missing, filled tooth index (dmft) of 5.57. Meanwhile, 5-year-old and 6-year-old pre-school children in Malaysia showed caries incidences around 74.5% in 2007.

Early childhood caries (ECC) is the term that is widely used by dentists to describe caries that occur in children. Definition of ECC is the presence of one or more decayed (non-cavitated or cavitated lesions), missing (due to caries) or filled tooth surfaces in any primary tooth in a preschool-age child between birth and 71 months of age (Berg & Slayton, 2015).

Risks of getting ECC are divided into two which are biological and socio-demographic (Berg & Slayton, 2015). Biological factor associated with nutritional variables, feeding habits and early colonization of cariogenic microorganisms. Social risk factors include low parental education, low socio-economic status and lack of awareness about dental disease (Hallett & O'Rourke, 2003).

Several studies reported that parents positive dental attitudes resulted in children with fewer carious teeth, better oral hygiene, and having received more dental care. Besides, parent's oral health knowledge and good dental care practices are also important in premature loss of primary teeth and can effectively reduce the risk of future decay in permanent teeth also mentioned that early dental visit is another essential preventive for young children. It allows dental professionals to detect early caries lesion, evaluate dental development, provide anticipatory guidance and dietary counselling and motivate parents towards adopting preventive behaviours (Shani, Jacob, Wei, Ismail, 2012; Setty & Srinivasan, 2011; Hussein, Abu-Hassan, Schroth, Ghanim, 2013; Hoefl, Barker, Masterson, 2010).

Children with inadequate oral health knowledge are twice as likely to have caries as children with adequate knowledge and on other studies showed that there is an association between increased knowledge and better oral health (Du, Luo, Zeng, Alkhatib, Bedi, 2007; Wong, Lo, Schwarz, Zhang, 2001). According to study done in Chennai, oral health knowledge creates a sense for each individual to adopt self-care practices but it is not necessarily related to better health behaviour. Almost 90% knew that it is essential to brush teeth twice a day however less than 20% of the subjects practicing the knowledge. In addition, the importance of visiting dentist once in every six months was known by 74% of subjects however 59% of them never been to dentist (MadhanKumar, Singarampillay, Natrajan, 2012).

Study done by Gao, Ruan, Zhao, Huang, Tian (2014) found that dental caries prevalence among 4 to 6-year-old village children in Shaanxi Province, Western China, was relatively high, while the prevalence of dental caries among 12 to 15-year-old was low, although periodontal condition was poor in that age group. The children lacked of knowledge about dental caries, gum disease and the use of fluoride. Tooth brushing and oral health knowledge were inversely associated with dental caries and gingival bleeding in 12 to 15-year-old.

Oral health knowledge, attitude, and practice (KAP) of 12-year-old showed that the levels of knowledge and attitude were good, but the level of practice was not satisfactory, especially diet-related practice. Although it was found that awareness about the effect of excess sweets or soft drinks was high (86%), 43% of children consumed soft drinks and 27.3% ate sweet food several times a day. They concluded that oral health knowledge does not necessarily related to better health behaviour. In addition, they found that the KAP of urban students was significantly more than that of rural students. Overall, the results also showed that oral health behaviours were not totally explained by knowledge and attitude, and are influenced by parents' educational level and region where the children live (Rad, Shahravan, Haghdoost, 2015).

Raman et al. (2012) showed that although 60% of the respondents practice brushing tooth twice daily, most of them did not know what dental floss was and therefore rarely used it. Respondents showed high awareness of dental caries but not on periodontal disease. The low knowledge and awareness of periodontal disease was reflected by high prevalence of periodontal disease which is almost 90% and low DMFT scores in majority of the respondents. Overall, this study indicates that oral health awareness and behaviour with an emphasis on periodontal health in school children need to be improved.

There was a study done in Kuching to evaluate the practice of oral hygiene among the secondary school students and to determine the relationship between oral health knowledge, attitude and practice, and socio-demographic background. For knowledge of oral health, 56.5% scored below the mean score. It showed that the knowledge of oral disease on various areas was still poor. Almost all of the respondents (97.6%) brushed their teeth with brush and toothpaste (with or without fluoride) and about half of the respondents used mouthwash to maintain their oral health. However, the use of dental floss was still not very popular (Lian, Phing, Chat, Shin, Baharuddin, Che'Jalil, 2010).

Although most of the students stated that regular dental visit was necessary, the data showed that approximately only a quarter of the students (24.4%) had regular dental visit every 6 to 12 months and the most common treatment sought by the students during their last dental visit was dental check-ups. This showed that the awareness of oral health does not necessarily influence good dental practice (Lian, Phing, Chat, Shin, Baharuddin, Che'Jalil, 2010).

In a region of central Nepal, findings showed that most children practicing oral hygiene behaviour and aware of the preventive effects of tooth brushing and the harmful effects sweets intake on oral health. However, more than 30% of children are eating sweets every day. This study suggested the need for oral health education (Fukai, Yano, Kamachi, Nakamura, 2012).

Zhu, Petersen, Wang, Bian, Zhang (2003) did a study to analyse the oral health behaviour profile of the two age groups in relation to province and urbanisation, and to assess the relative effect of socio-behavioural risk factors on dental caries experience. It was found that children and adolescent who lives in urban area had better oral hygiene habit that those who live in rural area. About half of the respondent never visited dentist and less than one-third reported going to dental visit in previous 12 month. In general, attitude to prevent oral disease was positive however dental education needs to be improved to increase knowledge.

This study aims to analyze the level of knowledge, attitude and practice with caries experience among pre-school children. It is also to assess the relationship between knowledge, attitude and practice with caries experience.

## **METHODOLOGY**

This study was conducted after receiving ethical approval from Ethics Committee. Approval letter was obtained from the principal of the school. Consent letter has been sent to parents to get their consent for their children to be participating in this study.

### **Research design**

A cross-sectional study conducted in four private pre-school located in Kajang, Selangor and Pulau Pinang. A total of 35 children age 6-year-old were selected based on inclusion and exclusion criteria.

#### Inclusion criteria:

6 years old children – born from 1<sup>st</sup> January 2010 to 31<sup>st</sup> December 2010.

Healthy.

Consent obtained from parents.

Children who can communicate and understand in English or Malay.

#### Exclusion criteria:

Medically compromised children.

Disabled children – mental and physical.

No consent from parents.

Children who does not understand Malay or English.

**Questionnaires**

Adapted questionnaire from Peterson (2000), Sternberg (2000) and National Oral Health Survey was used. Pre-test questionnaire was done on 6-year-old children and questions changed accordingly. Method of delivering questionnaire is assisted questionnaires and photos are provided.

**Clinical examination**

Clinical examination was performed by two operators and inter-calibration was done preceding the research with supervisor as gold standard to ensure that a consistent standard of the diagnosis are maintained.

**Data analysis.**

All the data were analyzed by using SPSS version 21.0. The levels of knowledge, attitude and practice were analyzed by using method adopted from Rad, Shahravan, Haghdoost (2015) as shown in Table 1.

**Table 1: Method of Calculating KAP scores**

Variables	Number of questions	Score to answers	Level of variables (%)
Knowledge	5	1 = Correct 0 = Wrong / Don't know	Poor = 0 - 1.7 (0 - 33) Moderate = 1.8 - 3.4 (34-67) Good = 3.5- 5.0 (68-100)
Attitude	7	1 = Correct 0 = Wrong / Don't know	Poor = 0 - 2.3 (0 - 33) Moderate = 2.4 - 4.8 (34-67) Good = 4.9 -7.0 (68-100)
Practice	4	1 = Good practice 0 = Poor practice	Poor = 0 - 1.3 (0 - 33) Moderate = 1.4 - 2.7 (34-67) Good = 2.8 -4.0 (68-100)

Chi-square test was used to determine the association between knowledge, attitude and practice with caries. P- value was set to be statistically significant at p<0.05.

**RESULTS**

**Socio-demographic of the children**

A total of 35 children aged 6 years old comprising of 46% male and 54% female participated in this study. The sociodemographic background of the respondents is in Table 2.

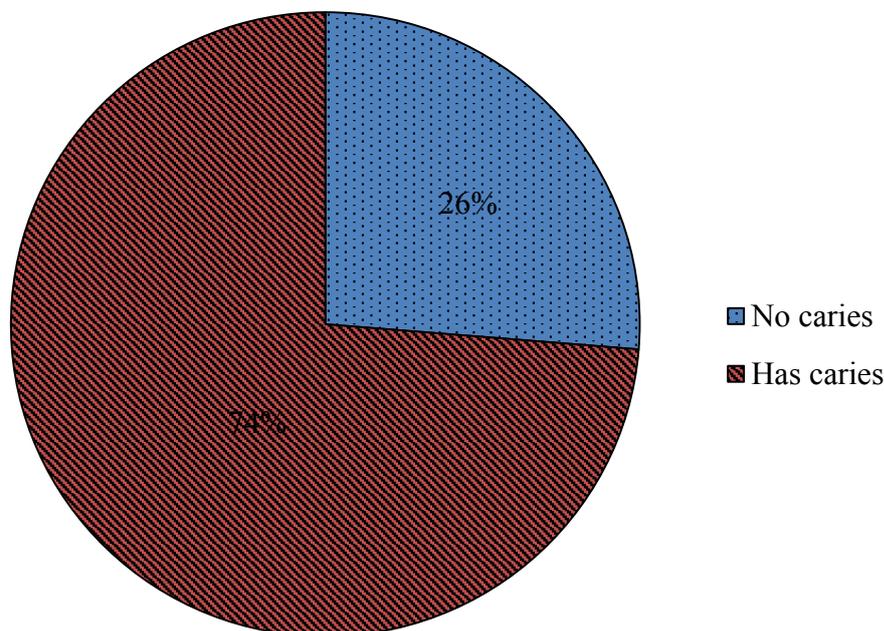
**Table 2: Socio – demographic background**

Variable		N	Percentage (%)
Gender	Males	16	46.0
	Females	19	54.0
School	Nur Khalifah Saujana Impian	19	54.3
	Pasti Roudhatul Islam	6	17.1
	Nur Khalifah Puncak Perdana	5	14.3
	Taska Al Islah	5	14.3

**Percentage of dental caries**

As shown in Figure 1, more than half of the children with percentage of 74% had dental caries and children who were caries free were only 26%.

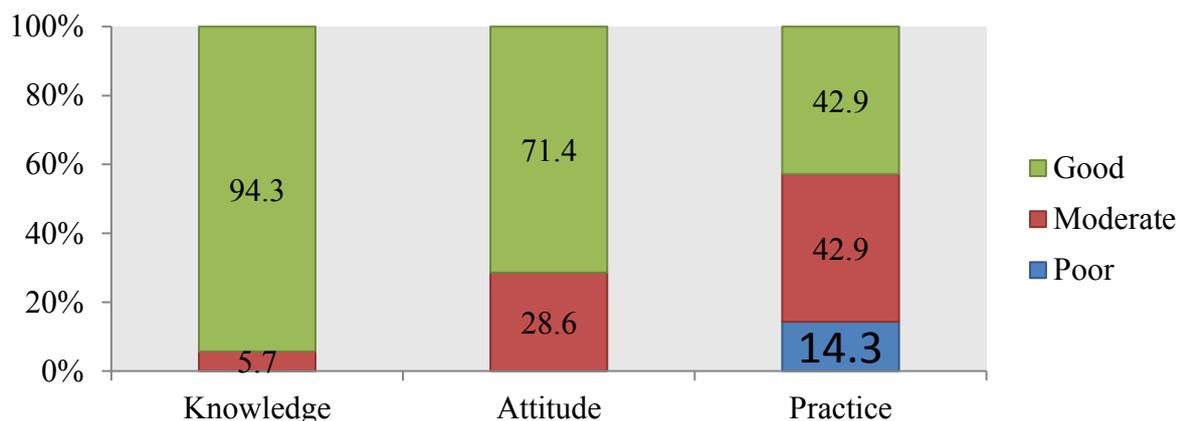
**Figure 1: Percentage of children with and without caries**



**Levels of knowledge, attitude and practice.**

The level of knowledge, attitude and practice are presented in Figure 2. Among these children 94.3% have good knowledge and only 5.7% have moderate knowledge with 0% of them with poor knowledge level. Attitude level shows that 71.4% have good attitude, 28.6% have moderate attitude and none of them have poor level of attitude. However the good and moderate levels do not translated into good practice. Less than half of the children with percentage of 42.9% have good practice and another 42.9% have moderate practice. About 14.3% of the children have poor practice.

**Figure 2: Levels of KAP on oral health**



**Analysis of knowledge, attitude and practice.**

Table 3 displays the assessment of the knowledge about oral health. For knowledge of oral health, 94.3% of the children have good knowledge while only 5.7% of them have moderate knowledge level. In this section, the children were asked about dental plaque and dental caries. All of the children know the condition of the teeth with dental plaque, 94.3% were able to tell how carious teeth look like. About 74.3% of them knew the causes of dental caries.

**Table 3: Analysis of knowledge questions.**

No	Questions	Correct		Wrong	
		N	%	N	%
1	Which photo shows presence of dental plaque?	35	100.0	0	0.0
2	Which photo shows good oral health condition?	34	97.1	1	2.9
3	Which photo shows dental caries?	33	94.3	2	5.7
4	What is the effect of dental caries to us?	29	82.9	6	17.1
5	What is the cause of dental caries?	26	74.3	9	25.7

Among the 6-year old children, 71.4% have good attitude and 28.6% have moderate attitude. Table 4 shows the assessment on the attitude of the children. About 94.3% of them have their own toothbrush. The children also were asked to choose between frayed bristle toothbrush and unworn bristle toothbrush. About 71.4% choose the unworn bristle toothbrush over frayed bristle. When the children were asked have they ever go to the dentist before, 62.9% have experience went to the dentist and only 7.1% never met dentist. Even though only 62.9% have experience went to the dentist, 85.7% know what a dentist will do if they meet them.

**Table 4 : Analysis of the attitude questions.**

No	Questions	Good / Correct		Bad / Wrong	
		N	%	N	%
1	Do you have your own tooth brush?	33	94.3	2	5.7
2	Have you ever go to dentist before this?	22	62.9	13	37.1
3	Which toothbrush good for you?	25	71.4	10	28.6
4	What do you think if your teeth are like this?	29	82.9	6	17.1
	What do you think if your teeth are like this?	24	68.6	11	31.4
	What do you think if your teeth are like this?	25	71.4	10	28.6
5	What did a dentist do to you?	30	85.7	5	14.3

Most of the children brush their teeth more than once a day with percentage of 65.7% and 34.3% brush less than once per day or did not answer the question. Among these children, 97.1% brush their own teeth. As a response from the question about brushing under parental supervision, 57.1% do not receive any help from their parents. Only 42.9% receive help from parents and 34.3% have parents brush their teeth.

**Table 5 : Analysis of the practice questions.**

Questions		Total	Percentage (%)
How often do you need to brush your teeth?	Less than once per day	12	34.3
	No answer / Don't know		
	Once per day	23	65.7
	Twice per day		
	More than twice per day		
Do you brush your own teeth?	Yes	34	97.1
	No	1	2.9
Does your mother/father help to brush your teeth?	Yes	15	42.9
	No	20	57.1
Does your mother/father brush your teeth?	Yes	12	34.3
	No	23	65.7

**Association between knowledge, attitude and practice with caries.**

The Pearson’s Chi Square analysis in Table 6 shows the association between knowledge, attitude and practice with caries. P value was set to be statistically significant at  $p < 0.05$ . There is no significance association between knowledge and attitude with caries with p value of 0.808 and 0.873 respectively. Whereas, there is significant association between practice and dental caries with p-value of 0.036

**Table 6: Association between knowledge, attitude and practice with caries.**

Variable	Caries (p-value)
Knowledge	0.808
Attitude	0.873
Practice	0.036

**DISCUSSION**

In general, the result in this study showed good level of knowledge and attitude but the level of practice was not satisfactory especially on parent’s supervision on tooth brushing. This is supported by Berkowitz (2013) which stated that knowledge was not necessarily translated into good practices, indicating lack of motivation among parents. Another study also stated that oral health knowledge did not necessarily related to better health behaviour (Rad, Shahravan, Haghdoost ,2015).

Although it was found that most of the children have good oral health knowledge (94.3%), but percentage of children presented with caries is 74%. It is showed that oral health knowledge does not necessarily relate to good oral health condition in 6- year-old children. This is contradicted with a study by Du et al. (2007) which is stated that children with inadequate oral health knowledge were twice as likely to have caries. Another study also showed that there was an association between increased knowledge and better oral health (Wong, Lo, Schwarz, Zhang, 2001).

In this study, the practice of oral hygiene showed a statistically significant result while not in other element which are knowledge and attitude on oral health as the association is negligible. This may be due to factors of parental supervision as children should be under supervision by parent or elderly until age of 8 for proper oral healthcare. As another elements did not show any relation with the patient’s oral health care, it seems that the proper children’s practice toward oral hygiene care should be encourage along with supervision by parent.

Based on Shivaprakash, Elango, Baweja, Noorani (2009) it was confirmed that the finding of KAP of oral health cannot be understood simply based on the KAP elements only. Other factors such as socioeconomic factor, parents level of education and region where the children live should be considered too as it may have influence the quality of oral health condition presented among the children. The parent’s health beliefs, behaviour and practices usually have direct influence on their children’s dental health.

**CONCLUSION**

It can be concluded that the practice had significant relationship with the caries presentation in oral cavity. In 6 years old student, encouragement and supervision on their practice on taking care of oral health need to be emphasize.

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