FACTORS ASSOCIATED WITH PARENT CAPABILITY ON CHILD'S ORAL HEALTH CARE

Kemthong Mitrakul[1], Vorawee Laovoravit[2], Vittawat Vanichanuwat[2], Attakorn Charatchaiwanna[2], Attakrit Charatchaiwanna[2], Weerapol Bunpradit[2] and Malee Arunakul[1]

[1]Department of Pediatric Dentistry, Faculty of Dentistry, Mahidol University, Bangkok; [2]Faculty of Dentistry, Mahidol University, Bangkok, Thailand

Abstract. We investigated parental attitudes and behavior affecting their ability to care for their children's oral health among Thais who reside in or near Bangkok and to develop a Thai version of a factor analysis questionnaire in order to assess the risk of developing early childhood caries. There were 241 participants, 48.1% were aged 20-to-30 years, 86.3% were married and 48% had two children. Thirty-seven percent of subjects had a monthly income between 10,001 and 30,000 Baht. There were significant associations ($p<0.05$) between parental education levels, monthly incomes and attitudes and behaviors. There were significant associations ($p<0.05$) between parental education levels, careers and causes of stress that affected care of their child's oral health. Factors that affected their ability to care for their child's oral health were from most to least was lack of time, lack of knowledge about brushing, stress from work, not raising their child by themselves, economics problems and being a single parent. Parental attitudes and behavior in regard to their child's oral health were associated with their education levels and monthly income. Factors that affected their ability to care for their child's oral health were their education levels and their careers. These factors should be considered when giving oral hygiene education to improve their parenting capabilities.

Keywords: parent, attitude, behavior, caries

INTRODUCTION

Early childhood caries (ECC) can result in pain, poor growth and development and loss of self-esteem and may lead to psychological problems (Acevedo *et al*, 2009). A recent survey found 56.9% of Thai children aged 12 had carious lesions, 61.4% aged 3 years had caries and 80.6% aged 5 years had caries with mean dmft values of 1.6, 3.2 and 5.4, respectively (Dental Health Division, 2007). Dental caries occur through a complex process involving multiple factors. Skeie *et al* (2010) found the major factors causing ECC include cariogenic microorganisms, fermentable carbohydrates, susceptible teeth and host immunity.

In young children, principal risk factors, such as diet, transmission of pathological microorganisms and oral hygiene, are determined by family values, traditions and lifestyles (Vermaire *et al*,

Correspondence: Kemthong Mitrakul, Department of Pediatric Dentistry, Faculty of Dentistry, Mahidol University, 6 Yothee Street, Ratchathewi, Bangkok 10400, Thailand.
Tel: 66 (0) 2203 6450-3 ext 114; Fax: 66 (0) 2203-6450.
E-mail: mkemthong@yahoo.com

2010). These values are passed on from generation to generation. Factors related to parental norms, knowledge, attitudes, and behavior have been associated with parental abilities, especially the mother's ability to promote adequate dental health behavior in their children (Al-Omiri *et al*, 2006; Skeie *et al*, 2006). A study conducted in Norway (295 families) demonstrated dental self care among parents and older siblings influences behavior of younger child in the family. In a study of 212 Danish children (6 year olds), parents mostly mothers had a good awareness of the roles of sugar and bacteria in the formation of caries. In addition to improper oral hygiene, excessive sweet consumption, heredity, medicine, general illness and saliva were identified by parents as causative factors for dental caries (Vermaire *et al*, 2010). The impact of parental priorities and beliefs about the importance of dental health care has not been thoroughly investigated. The influence of parental view of their responsibilities about their child's oral health has been poorly explored but one study (Vermaire *et al*, 2010) found parental dental attitudes related to parental responsibility taking.

Hectic lifestyles have resulted in increased stress and social problems (Oueis *et al*, 2010; Department of Mental Health, 2010a). In Thailand, the family unit has changed from an extended family to a single family unit. Family members live apart and have less association with each other. Parental and childhood relationships become worse. Some parents prioritize their jobs higher than their family, spending less time with their spouses creating higher divorce rates resulting in more single parents (Department of Mental Health, 2010b). In some families, grandparents helping raise grandchildren.

Some parents forget their parental responsibilities. Children spend more time with their peers, computers and televisions. These changes may affect parent behavior in regard to their child's oral health, resulting in less attention being paid to their child's dental health (Oueis *et al*, 2010). In Thailand, there is little up-to-date information regarding this problem. There are no instruments in Thailand analyzing ECC risk factors, such as attitudes and behavior, which are easy to use. Thus, this study was designed to investigate parental attitudes, behavior and causes of daily stress that affect their ability to care for their child's oral health in Thais living in or near Bangkok, Thailand. These results will be used to develop a Thai version of an ECC risk assessment questionnaire.

MATERIALS AND METHODS

Study design and population

This is a cross-sectional study. The sample size was calculated based on a formula by Cochran (Baelett *et al*, 2001). When a population is > 500, the approximate sample size should be 218 (category data at t=1.96, margin of error = 0.05). Convenience sampling was used to recruit parents of children aged infant to 12 years who came for dental treatment at the Pediatric Dental Clinic, Faculty of Dentistry, Mahidol University and parents of children from two private primary and secondary schools in Khlong Toei, Bangkok, Thailand. The total number of participants was 262 (131 from each group). All subjects lived in an urban area. Data were gathered by means of self-report questionnaires and direct interviews. This study was approved by the Ethics Committee of Mahidol University (MU-IRB 2010/340.1412). Written informed consent was obtained from all participants. Of the 262 parents asked to participate in this

study, 241subjects were included; the rest were excluded due to incomplete data.

The questionnaire

The questionnaire asked about parental age, career, highest education level and monthly income. The first part of the questionnaire asked about parental attitudes to their child's oral health care and high sugar diets. Thirteen questions were included in part one. These asked about opinions as follows: A1. Having good teeth is important because I will not get caries and my breath will be fresh; A2. Brushing teeth is important because I will not get caries and my breath will be fresh; A3. Baby teeth are not important and will eventually fall out; A4. It is important to have your child brush their teeth regularly (twice a day); A5. You or your spouse believe you know how to brush your child's teeth properly; A6.You or your spouse do not know how to brush your child's teeth properly; A7. We intend to brush our child's teeth for him/her twice a day; A8. It is a waste of time and tiresome to force our child to brush their teeth twice a day; A9. Letting our child consume sugary foods and drinks can cause caries; A10. As a family we intend to control how often our child eats sugary foods or drinks between meals; A11. It is worthwhile to give our child sweets/biscuits to behave well; A12. In our family it is unfair not to give sweets to our child; A13. It is often too stressful to say "no" to my child when he/she wants sweets.

The second part of the questionnaire asked about parental behavior regarding their child's oral health care and intake of a high sugar diet. Three questions were included in part two. These asked about: B1. We have time to help brush our child's teeth twice a day; B2. We cannot make our child to brush his/her teeth twice a day; B3. As a family we intend to control how often our child has sugary foods or drinks between meals.

The answers to questions in sections one and two were given as a 5-point Likert scale, as follows: strongly agree, agree, neutral, mildly disagree and strongly disagree. For questions assessing behavior, more than one answer was accepted. Seven questions were asked regarding causes of daily stress. Answers were given according to a 5-point Likert scale.

Statistic analysis

We divided attitudes and behavior scores into two groups. Parents who scored > 75, 65-70, 59-60 and < 58 were grouped as providing "good", "satisfactory", "average" and "poor" care, respectively. Chi-square analysis was performed to determine whether parental age, marriage status, education level, career, number of children or monthly income were associated with their attitudes and behavior regarding their child's oral health. For causes of daily stress, we divided stress levels into two groups. Parents who scored 20-30, ≤ 19 were classified as "highly influenced by stress", and "minimally influenced by stress", respectively. Chi-square analysis was performed to determine associations between parental information and how stress levels influence their ability to care for their child's oral health. The Cronbach's alpha coefficient was 0.7, which is acceptable. The data were analyzed using SPSS software (version 18; SPSS, Chicago, IL).

RESULTS

There was a total of 241 participants, 30% (72/241) fathers and 70% (169/241) mothers. Parents aged < 20, 20-30, 31-40 and 41-50 comprised 5.8, 48.1, 34.9, and 11.2%, respectively (Table 1). Eighty-six point three, 4.1, 5, 3.3 and 1.2% were

Table 1
Distribution and association between parental information such as age, marriage status, etc and their attitudes, behavior in child's oral health care including the daily priority points.

Parental factors	Attitude and behavior total points		*p*-value	Daily priority points (*p*-value)
	(*n*/*N*)	%		
Parent age (years)				
<30	130/241	54	0.883	0.724
>31	111/241	46		
Marriage status				
Married	208/241	86	0.269	0.795
Not marrie[a]	33/241	14		
Parent education levels				
Primary school	48/241	19	0.034[b]	0.005[b]
Secondary school	50/241	20		
Less than B.A.	20/241	10		
B.A. and higher	123/241	51		
Parent careers				
Government	47/239	20	0.302	
Private	41/239	17		0.004[b]
Business	61/239	25		
Self employ	90/239	38		
Number of children				
1	218/241	90	0.582	0.366
>1	23/241	10		
Parent monthly income (THB)[c]				
<10,000	50/241	21	0.012[b]	0.089
10,001-20,000	59/241	24		
20,001-30,000	51/241	21		
>40,000	81/241	34		

[a] indicating separation, divorce, and widow
[b]a Pearson chi-square test showing significant differences ($p<0.005$); [c]1 USD ≃ THB 30

married, single, separated, divorced and widowed, respectively. Participants had only 1, 2, 3, ≥ 4 children in 40, 48, 10, and 2%, respectively. Monthly income was < 10,000, 10,001-30,000, 30,001-50,000, and > 50,000 THB in 21, 37, 21, and 21%, respectively. The majority of participants were married and had a greater than bachelor's education level. The majority had one child, and a monthly income > 40,000 THB. There were significant associations ($p<0.05$) between parental education levels, monthly income and attitudes and behavior regarding their child's oral health. There were significant associations ($p<0.05$) between parental education levels and careers influencing their abilities to care for their child's oral health, as rated by the parents. The most common causes of daily stress from greatest

Table 2
Parent rating problems that affected their capabilities on child's oral health care from the most to least.

Parent rating problems	Mean ± SD deviation
Not enough time for their child	2.61 ± 1.837
Lack of knowledge in brushing	2.52 ± 1.783
Stress from works	2.05 ± 1.760
Not raise their child by themselves	1.90 ± 1.932
Economics problems	1.93 ± 1.761
Being a single parent	1.49 ± 1.808

to least were lack of time, lack of knowledge about brushing, stress from work, not raising the child themselves, economic problem and being a single parent (Table 2).

DISCUSSION

Children learn behavior from their parents (Poutanen *et al*, 2006). Parental factors, such as knowledge, attitude and behavior strongly influence their children's behavior. Behavior is likely to reflect knowledge, attitudes, and beliefs rather than enforced behavior (Norton *et al*, 2003). Parents influence their children's lifestyle, health beliefs and behavior but parental influences vary according to socio-economic factors and sex (Norton *et al*, 2003). In this study, we assessed the effect of parental behavior on their child's oral health care. There were no differences in socio-demographic characteristics between the 2 study sites. The study shows parental occupation, knowledge and behavior affected their child's health care. Parental attitudes about importance of baby teeth, intend to brush their child's teeth twice daily and the feeling it is a waste of time and tiresome to force their child to brush their teeth twice daily were strongly associated with parental education levels, monthly income and careers. There was an association between careers and attitudes in regarding to the following questions: "It is a waste of time or tiresome to force your child to brush his/her teeth twice daily? "In our family, is it unfair not to give sweets to our child?, and "is it stressful to say no when your child asks for sweets?. Their answers imply parents with "busy" careers influence parental abilities in giving their child oral health care, no matter how much money they made. Parental education levels were associated with attitudes and behavior, but career was associated with behavior only. There is a possibility children from families with a higher income, may have hired caretakers and the possibility to have regular dental visits. When parents are busy, they may try to spoil their children. Giving their child sweets is a way they show affection, therefore parental behavior needs to be understood not just from an oral perspective. Several studies have found good knowledge and attitudes about dental health does not directly produced good behavior (Schroth *et al*, 2007; Gussy *et al*, 2008; Vanagas *et al*, 2009; Muhammad *et al*, 2011). Several studies have found there is a strong association between parental and child behavior regarding oral health care, but not parental

Table 3
Distribution and association in each question between parental education levels, careers, monthly income and their attitude and behavior in child's oral health care.

Questions	Education levels *p*-value[a]	Monthly income *p*-value[a]	Careers *p*-value[a]
Baby teeth are not important and will eventually fall out (A3)	<0.001	<0.003	<0.002
We intend to brush our child's teeth for him/her twice a day (A7)	<0.001	<0.001	<0.027
It is a waste of time and tiresome in forcing our child to brush twice a day (A8)	<0.001	<0.001	<0.035
It is worthwhile to give our child sweets/biscuits to behave well (A11)	<0.001	NA	NA
In our family, it would be unfair not to give sweets to our child (A12)	<0.015	NA	<0.001
It is often too stressful to say "no" to my child when he/she wants sweets (A13)	<0.001	No	<0.021
We have time to help brushing our child's teeth twice a day, (B1)	<0.001	<0.001	No
We cannot make our child to brush his/her teeth twice a day (B2)	<0.001	<0.001	No

[a] Pearson chi-square test showing significant differences ($p<0.005$)

attitudes (Poutanen *et al,* 2006; Vanagas *et al,* 2009; Vermaire *et al*, 2010).

In this study, we developed a questionnaire to determine parent attitudes and behavior based on perceived daily responsibilities. More information was obtained compared to assessing only attitudes and behavior. The Likert scales were grouped into an overall-score. These information is useful in determining the parental type (easy, hard) but it does not tell the reason for a parent's attitude and therefore, does not assist in developing individualized oral health education that will help parents alter their attitudes and adopt an effective preventive regime. This is especially relevant in the case of children at risk for developing caries. This type of questionnaire is a prerequisite for gaining other information and is useful as a baseline. A limitation of this study was the sampling method which was selected based on a convenience sampling so that it does not represent the general population of Bangkok. This study provided useful information to be used as a baseline for developing future studies. This questionnaire should be tested in other situations. A repeat cross-sectional survey, with the same target population and sampling frame should be carried out to monitor changing in factors over time (Poutanen *et al,* 2006).

In conclusion this study, parental attitudes and behavior regarding a child's oral health associated with parental education level and monthly income. Factors that affected parental ability to care for their child's oral health were parental education level and careers. Social factors such as parental education level, monthly income and careers must be considered when

giving oral hygiene education to improve child oral care by parents.

ACKNOWLEDGEMENTS

The authors acknowledge Assist Prof Lily Ingsrisawang for a statistic analysis advise. This study was supported by the Faculty of Dentistry, Mahidol University.

REFERENCES

Acevedo AM, Ray MV, Socorro M, Rojas-Sanchez F. Frequency and distribution of mutans streptococci in dental plaque from caries-free and caries-affected Venezuelan children. *Acta Odontol Latinoam* 2009; 22: 15-20.

Al-Omiri MK, Al-Wahadni AM, Saeed KN. Oral health attitudes, knowledge, and behavior among school children in North Jordan. *J Dent Educ* 2006; 70: 179-87.

Baelett JE, II Kotrlik JW, Higgins CC. Organizational research: determining appropriate sample size in survey research. *Inform Techno, Learning Perform J* 2001; 19: 43-8.

Dental Health Devision, Ministry of Public Health, Thailand. The 6th national dental health status survey, 2006-2007. Nonthaburi: Dental Health Division 2007.

Department of Mental Health, Ministry of Public Health, Thailand. An amount and rates of mental health patients per population in Thailand. Nonthaburi: Department of Mental Health, 2010a. [Cited 2011 Jul 20]. Available from: URL: http://www.dmh.go.th/report/ population/provsearch

Department of Mental Health, Ministry of Public Health. Rates of marriage and divorce in Thailand. Nonthaburi: Department of Mental Health, 2010b. [Cited 2011 Jul 20]. Available from: URL: http://www.dmh.go.th/report/status/status.asp

Gussy MG, Waters EB, Riggs EM, Lo SK, Kilpatrick NM. Parental knowledge, beliefs and behaviours for oral health of toddlers residing in rural Victoria. *Aust Dent J* 2008; 53: 52-60.

Muhammad S, Shyama M, Al-Mutawa SA. Parental attitude toward behavioral management techniques in dental practice with schoolchildren in Kuwait. *Med Princ Pract* 2011; 20: 350-5.

Norton D, Froelicher E, Waters C, Carrieri-Kohlman V. Parental influence on models of primary prevention of cardiovascular disease in children. *Eur J Cardiovasc Nurs* 2003; 2: 311-22.

Oueis HS, Ralstrom E, Miriyala V, Molinari GE, Casamassimo P. Alternatives for hand over mouth exercise after its elimination from the clinical guidelines of the American Academy of Pediatric Dentistry. *Pediatr Dent* 2010; 32: 223-8.

Poutanen R, Lahti S, Tolvanen M, Hausen H. Parental influence on children's oral health-related behavior. *Acta Odontol Scand* 2006; 64: 286-92.

Schroth RJ, Brothwell DJ, Moffatt ME. Caregiver knowledge and attitudes of preschool oral health and early childhood caries (ECC). *Int J Circumpolar Health* 2007; 66: 153-67.

Skeie MS, Riordan PJ, Klock KS, Espelid I. Parental risk attitudes and caries-related behaviours among immigrant and western native children in Oslo. *Community Dent Oral Epidemiol* 2006; 34: 103-13.

Skeie MS, Klock KS, Haugejorden O, Riordan PJ, Espelid I. Tracking of parents' attitudes to their children's oral health-related behavior-Oslo, Norway, 2002-04. *Acta Odontol Scand* 2010; 68: 49-56.

Vanagas G, Milasauskiene Z, Grabauskas V, Mickeviciene A. Associations between parental skills and their attitudes toward importance to develop good oral hygiene skills in their children. *Medicina (Kaunas)* 2009; 45: 718-23.

Vermaire JH, Hoogstraten J, van Loveren C, Poorterman JH, van Exel NJ. Attitudes towards oral health among parents of 6-year-old children at risk of developing caries. *Community Dent Oral Epidemiol* 2010; 38: 507-20.