



Original Article

Caregivers' oral health knowledge, attitude and behavior toward their children with disabilities



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KEYWORDS

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Abstract *Background/purpose:* This study was undertaken to document the knowledge, attitude and behavior among family caregivers, and to identify the related factors influencing their behavior in promoting their and children's oral health.

Materials and methods: A cross-sectional study was conducted to collect self-administered questionnaires from 503 family caregivers, who cared for 6–12 year-old children with disabilities in 10 special schools. Multiple regression models were used to analyze the association between caregiver's oral health behaviors and related factors.

Results: Most caregivers were female (74.8%). The top three sources of oral health knowledge among caregivers were dentists (66.60%), books (34.59%) and television (31.21%). Comparison of oral health knowledge and attitude scores among different education levels of caregivers yielded statistically significant differences ($p < 0.05$). Eighty-four percent of caregivers cleaned their teeth twice a day and 46.12% used dental floss. More than half of caregivers (60.44%) assisted their children to brush teeth. Only 12.65% took their children to receive fluoride varnish services. Caregivers' favorable oral health behavior was found to be significantly associated with a higher education level, better knowledge and positive attitude. The determining factor of caregivers' preventive behavior was attitude. Education level influenced the caregiver's knowledge. Knowledge is positively associated with attitude.

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Conclusion: Inadequate knowledge is the major factor preventing caregivers from favorable oral health behavior. Oral health related educational programs aimed at promoting caregivers' behavior must take into consideration the caregivers' knowledge level first. Education programs should be recommended to caregivers with a lower education level.

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Introduction

Oral health is a fundamental component of overall health. Poor oral health can have serious consequences for a child's nutrition, general health, future oral health, and quality of life. Numerous studies have reported a poor state of oral health among high risk groups of children with disabilities.^{1–3} When compared with ordinary children of similar ages, children with disabilities have a higher prevalence of caries, more untreated and extracted teeth, lower levels of oral hygiene, elevated gingival bleeding, calculus, and diminished levels of periodontal health.^{4–6} In addition, oral health deteriorates with increased age.^{3,7} There is evidence that children with caries in the primary dentition are more likely to develop caries in the mixed and permanent dentition.^{8,9}

Children's oral health behavior originates mainly from the family.¹⁰ Parents and/or caregivers play a crucial role in promoting oral health and are primarily responsible for teaching their children proper hygiene skills and developing effective oral hygiene habits.^{11–13} It has been reported that good oral health among children is more likely to occur among children whose caregivers demonstrate better knowledge of oral health, attitude and behavior.^{13–15}

Children with disabilities generally do not make independent decisions and need to rely on their parents and/or caregivers to assist and monitor their daily activities, health care, and oral health care due to mental and/or physical limitations. These limitations include insufficient manual dexterity, coordination, and ability to comprehend complex tasks. In Taiwan, respectively, 25.79% and 35.16% of children with disabilities are either totally or extensively dependent on their caregivers to maintain their oral health.¹ Oral health routine care among children is less likely to happen when caregivers have inadequate knowledge or inappropriate attitude, or poor oral hygiene behavior.^{15–17}

Caregiver–child relations and related characteristics could either facilitate or hinder children's oral health and oral health-promoting behavior.^{18,19} Better understanding of the caregiver's knowledge, attitude and behavior (KAB) status will be valuable in planning effective preventive oral health strategies. Moreover, there is a paucity of research data in the literature regarding the association between oral health related KAB among family caregivers of children with disabilities. Therefore, the present study was undertaken to document KAB among family caregivers, and to identify the related factors influencing their behavior in promoting their and their children's oral health.

Materials and methods

Study design and participants

A cross-sectional study was conducted during the period from September to October 2006. Ethical approval was obtained from the Human Experiment and Ethics Committees of Kaohsiung Medical University (Protocol number: KMUH-IRB-950125). We invited all special primary schools in Taiwan to participate in this study. Ten out of 18 schools agreed to participate in this research. Family caregivers who manage the daily activities of children with disabilities at home served as the samples. The procedure, content of the survey and a questionnaire were explained to the caregivers, and informed consent was obtained from those caregivers who agreed to participate. Five hundred and three caregivers completed the questionnaire (a response rate of 94.02%).

Questionnaire

The standardized self-administered survey questionnaire used in a previous national survey entitled "Oral health survey and oral hygiene education for the disabled in Taiwan"²⁰ was modified by a panel of experts and reviewed by special school teachers and parents for assessment of its validity. The modified self-administered survey questionnaire was given to and completed by caregivers. This questionnaire was constructed of the following parts: demographic characteristics of caregivers and their children with disabilities and the oral health KAB. The questionnaire consisted of closed-ended questions with dichotomous, ordinal and multiple level response choices to determine the above relevant variables. The questionnaire was pre-tested on 32 caregivers in the same group. Based on the results of the pilot testing, questions were revised to enhance clarification and appropriateness. Kuder-Richardson reliability for oral health knowledge and Cronbach's α for caregivers' oral health attitude factors were 0.80 and 0.86, respectively. The test–retest reliability of oral health KAB was 0.88, 0.85, and 0.83, respectively, indicating an acceptable reliability.

Participants and children demographics

Demographic characteristics of caregivers consisted of their age, gender, education level, and relationship with the child. Children's demographic information included age, gender, severity and classification of disability. Five

hundred and three eligible children aged 6–12 years old were classified into mild to profound disabilities according to the definition of Physically and Mentally Disabled Citizens Protection Act.²¹ The children with disabilities adapting their disability identification in our study included sensory disabilities (vision, hearing, language, and caused by infrequent disease), intellectual disability, and multiple disabilities evaluated and certified by the central competent authority in charge of health.

Caregivers' oral health KAB

There were ten multiple choice questions in the knowledge category. Each question had 4 possible answers. The caregivers' choices revealed their knowledge of the question asked. A correct answer to a question on knowledge was coded as 1 and incorrect as 0. A sum knowledge score was constructed from all knowledge items with a range from 0 to 10. Higher scores indicated higher levels of oral health knowledge.

In the attitude category, 10 statements were measured on a 5-point Likert-type attitudinal scale with ratings from 1 (completely disagree) to 5 (completely agree). An answer with completely agree/agree was classified as a positive attitude statement on attitude. No comment and disagree/completely disagree were assigned a negative attitude. Cumulative scores were summed up for each attitudinal scale. A sum attitude score was constructed after negatively worded items had been reversed with a range from 10 to 50. Higher scores indicated a more positive oral health related attitude.

The caregivers' behavior items were used to reflect their own behavior (six items) and children's behavior (eight items). The oral health related behavior of caregivers were assessed based on their answers to the questions including tooth-brushing frequency, dental floss use, frequency of toothbrush replacement, visit a dentist before or not, visit a dentist for regular dental check-ups and visit a dentist for regular dental treatment or not.

The children's behavior items were assessed based on the status of their oral health care by caregiver's daily activities. The questions include tooth-brushing frequency, assistance for tooth-brushing, frequency of toothbrush replacement, sweets as a reward in behavior control, regular dental check-up or not, visit a dentist for regular dental check-up, visit a dentist for regular dental treatment or not, and utilization of fluoride varnish services.

Statistical analysis

Statistical computations were analyzed with JMP version 12 statistical software (SAS Institute, Cary, NC, USA). The two sample *t* test and ANOVA were used to compare the means of caregivers' knowledge and attitude (KA) of independent groups. The *p* value was set at 0.05 to analyze the level of significance. Both univariate and multivariate regression models were estimated to assess the unadjusted and adjusted association. Only the caregivers' behavior that was found to be significantly associated with demographic characteristics, knowledge or attitude scores in the univariate regression was included in the multiple regression

models. Backward stepwise multiple regressions were performed to determine the most effective factor of the KA.

Results

Demographic characteristics of caregivers and their children

Three quarters of the caregivers were female (74.75%), aged over 36 years old (58.85%), and had senior high school level education (63.42%). Nearly two thirds (63.02%) of the major caregivers were the children's parents. The caregivers with college or above education levels had significantly higher oral health KA scores than those caregivers with senior high school or lower education levels ($p < 0.001$ and $p = 0.005$, respectively) (Table 1).

Oral health KAB among caregivers

The frequency of correct knowledge responses from the highest of 80.91% to the lowest of 47.32% and showed that the dentist (66.60%) was the most frequently cited main source of oral health information by respondents. The percentage of positive attitude responses from the highest of 93.64% to the lowest of 60.46%. The higher knowledge and attitude scores the caregivers had, the better behaviors they have to care the oral health of themselves and their children (Table 2).

Factors associated with caregivers' KAB

Multivariate logistic regression analysis of caregivers' demographic characteristics related to their oral health behavior showed that caregivers who had a higher knowledge were more likely to assist children brushing their teeth (AOR = 2.18, 95% CI 1.02–4.69) and more likely to take children to visit a dentist for dental treatment (AOR = 2.42, 95% CI 1.14–5.19). The results also revealed that caregivers who had a more positive attitude were more likely to take their children to receive the fluoride varnish service (AOR = 22.50, 95% CI 4.96–108.27) (Tables 3 and 4). Finally, the linear regression model revealed that education level and attitude were the factors associated with their oral health related knowledge. The factor associated with caregivers' attitude was their knowledge (Table 5).

Discussion

A greater level of knowledge and a more positive attitude towards oral health among caregivers are prerequisite for favorable behavior for the oral health of their children and themselves. Especially regarding the preventive oral health related behavior, a decisive factor is the caregivers' attitude. If the caregiver has a more positive attitude, they will reveal more and better oral health related preventive behavior (such as more frequent visits to a dentist for dental check-ups and use of fluoride varnish services) to the child they care for. This positive attitude originates from participants' knowledge. Adequate knowledge of oral health is the promoting factor for positive attitude of a

Table 1 Oral health related knowledge and attitude of caregivers.

Variables	N (%)	Knowledge	p	Attitude	p
		Mean (SD)		Mean (SD)	
<i>Caregivers</i>					
Relationship with child					
Siblings	12 (2.38)	3.83 (3.49)	<0.001	34.17 (3.74)	0.156
Relatives	174 (34.59)	6.75 (3.01)		36.01 (4.22)	
Parents	317 (63.02)	7.32 (2.67)		36.35 (4.07)	
Gender					
Male	127 (25.25)	6.69 (2.77)	0.115	38.57 (3.96)	0.097
Female	376 (74.75)	7.16 (2.89)		39.31 (4.40)	
Age					
≤20 years	12 (2.38)	3.83 (3.49)	<0.001	37.00 (3.74)	0.216
21–35 years	195 (38.77)	6.98 (2.87)		39.11 (4.41)	
≥36 years	296 (58.85)	7.21 (2.76)		39.22 (4.25)	
Education level					
Less than senior high school	184 (36.58)	5.70 (3.18)	<0.001	38.36 (4.45)	0.005
Senior high school	200 (39.76)	7.32 (2.45)		39.33 (4.16)	
College or above	119 (23.66)	8.66 (1.88)		39.96 (4.15)	
<i>Children</i>					
Gender					
Male	304 (60.44)	7.15 (2.85)	0.295	39.28 (4.22)	0.314
Female	199 (39.56)	6.87 (2.89)		38.88 (4.42)	
Severity of disability					
Mild/moderate	120 (23.86)	6.93 (2.83)	0.188	38.92 (4.52)	0.623
Severe	287 (57.06)	6.92 (2.95)		39.09 (4.24)	
Profound	96 (19.08)	7.52 (2.60)		39.48 (4.25)	
Classification of disability					
Sensory disabilities	195 (38.77)	6.82 (3.09)	0.304	35.95 (4.27)	0.354
Intellectual disability	108 (21.47)	7.02 (2.82)		36.66 (4.25)	
Multiple disabilities	200 (39.76)	7.27 (2.65)		36.15 (3.89)	

caregiver. To improve caregiver's knowledge through education would be helpful to increase their positive attitude and encourage more favorable behavior to maintain and promote their children' and their own oral health.

The majority of family caregivers were female. They were found to have better oral health related KAB than males in the present and previous studies.^{12,17,22–24} In Taiwan, the percentage of female caregivers amounted to 78.83% and they are usually the mothers or wives of people with disability.²⁵ The percentage of female caregivers in our study (74.75%) is consistent with the current status of our country. Gender differences in oral health related behavior have been observed in this study. Several studies presented that women's oral health KAB were more favorable than those of men.^{18,26} Our results confirmed that female caregivers brush their teeth and visit a dentist more frequently than males do.^{19,27} Among caregivers, favorable oral knowledge and related experiences culminate in proper behavior. With proper oral health behavior, caregivers will act as crucial role models for their children.¹⁰

Education level plays an essential role in shaping a caregiver's knowledge. Caregivers with higher education levels demonstrate a greater oral health knowledge, positive attitude, and optimal behavior. In agreement with most studies,^{10–14} our results showed that the level of oral health KAB among caregivers are significantly associated

with their education level.^{10–14} There were 12 caregivers who were 20 years-old or below in the present study. We infer that the young participants were the siblings and caregivers of the children with disabilities in this study. It is disturbing to note that this group of caregivers had limited knowledge that they could be confused and therefore unable to properly achieve good oral health. This is a consequence of their low education level and of oral health care related experiences as seen in previous studies.^{11,23}

The sources of oral health knowledge among caregivers paralleled with their daily lifestyle. Our results agree with the study that indicated caregivers receive most knowledge from their dentists (67%), books (55%), and television (41%).²⁸ Another study reported that mothers receive most information from television (62.4%), books (51.5%) and their dentist (49.6%).²⁹ Differences observed in source of information in different studies could be due to differences in oral health service availability and education facilities. The oral health information could be more effective and easier for caregivers to access through dentists, books, and television.

Apart from the attitude regarding dental treatment, the majority of participants exhibited a positive attitude. Our study presented 47.91% of caregivers and 57.46% of children who visited a dentist for dental treatment. Studies indicated toothache or dental pain as the main factors for

Table 2 Association among oral health related knowledge, attitude and behaviors of caregivers and their children with disabilities.

Variables	N (%)	Knowledge Mean (SD)	p	Attitude Mean (SD)	p
Total	503	7.04 (2.86)		39.12 (4.30)	
<i>Caregivers</i>					
Frequency of tooth-brushing each day					
Once, before going to bed at night	81 (16.10)	5.41 (3.19)	<0.001	36.89 (4.33)	<0.001
2 times, after getting up and before going to bed	281 (55.87)	7.01 (2.74)		39.15 (4.10)	
≥3 times, after meals	141 (28.03)	8.03 (2.46)		40.36 (4.19)	
Flossing teeth at least once a day					
No	271 (53.88)	6.18 (3.14)	<0.001	38.29 (4.57)	<0.001
Yes	232 (46.12)	8.05 (2.10)		40.10 (3.76)	
Replacement of toothbrush					
≤3 months	178 (35.39)	7.08 (2.68)	0.822	39.52 (4.51)	0.124
>3 months/when the bristles become frayed with use	325 (64.61)	7.02 (2.97)		38.90 (4.18)	
Visited a dentist before					
Yes	345 (68.59)	7.57 (2.59)	<0.001	39.80 (4.04)	<0.001
No	158 (31.41)	5.89 (3.09)		37.65 (4.50)	
Visited a dentist for regular dental check-ups					
No	357 (70.97)	6.70 (2.92)	<0.001	35.54 (4.20)	<0.001
Yes	146 (29.03)	7.86 (2.56)		37.74 (3.45)	
Visited a dentist for dental treatments					
No	262 (52.09)	6.58 (3.04)	<0.001	35.79 (4.30)	0.028
Yes	241 (47.91)	7.54 (2.58)		36.60 (3.88)	
<i>Children</i>					
Frequency of tooth-brushing each day					
Once, before going to bed at night	196 (38.97)	6.89 (2.94)	0.017	38.51 (4.18)	0.036
2 times, after getting up and before going to bed	209 (41.55)	6.83 (2.86)		39.45 (4.41)	
≥3 times, after meals	98 (19.48)	7.78 (2.61)		39.64 (4.20)	
Assisted child for tooth-brushing					
No	199 (39.56)	6.60 (3.02)	0.007	35.95 (4.17)	0.324
Yes	304 (60.44)	7.33 (2.73)		36.33 (4.09)	
Replacement toothbrush					
When the bristles become frayed with use	342 (67.99)	7.23 (2.74)	0.040	39.40 (4.12)	0.033
>3 months	161 (32.01)	6.64 (3.08)		38.53 (4.62)	
Sweets as a reward in behavioral control					
No	305 (60.64)	7.02 (2.87)	0.870	39.26 (4.28)	0.392
Yes	198 (39.36)	7.07 (2.86)		38.92 (4.34)	
Visited a dentist for regular dental check-up					
No	316 (62.82)	6.72 (3.05)	0.001	35.61 (4.30)	<0.001
Yes	187 (37.18)	7.58 (2.43)		37.14 (3.62)	
Visited a dentist for dental treatments					
No	214 (42.54)	6.72 (3.05)	0.037	36.18 (4.25)	0.988
Yes	289 (57.46)	7.27 (2.70)		36.18 (4.03)	
Utilization of fluoride varnish services					
No	438 (87.08)	6.90 (2.96)	<0.001	38.77 (4.27)	<0.001
Yes	65 (12.92)	7.98 (1.89)		41.49 (3.76)	

dental visit.^{30,31} Although 93.64% of the caregivers thought that a child's primary dental caries needs to be treated in this study, more of them think dental treatment is very time-consuming, costly and troublesome (30.02%) and think tooth extraction is debilitating or harmful to their health (39.96%). The negative attitude reflected on the low filling rate (32.37%) of the 6–12 year-old children with disabilities.¹

The more knowledge the caregiver has about oral health, the more positive attitude can be portrayed, and this will foster healthier habits. The traditional approach to the KAB model was that the knowledge acquired by the subject generates, as a direct result, in attitude, that in turn gives rise to changes in behavior.^{32,33} In this study, caregivers who have a higher level of knowledge will actively assist their children brushing their teeth and

Table 3 Multivariate logistic regression analysis of factors related to caregivers' oral health related behaviors.

Variables	Model A		Model B		Model C		Model D		Model E	
	AOR	(95% CI)	AOR	(95% CI)	AOR	(95% CI)	AOR	(95% CI)	AOR	(95% CI)
Gender										
Male	1		1		1		1		1	
Female	1.27	(0.72, 2.20)	1.10	(0.71, 1.70)	1.43	(0.91, 2.23)	0.89	(0.56, 1.43)	1.73	(1.14, 2.65)
Age										
≤20 years	1		1		1		1		1	
21–35 years	0.51	(0.07, 2.30)	0.81	(0.20, 4.08)	1.35	(0.37, 5.18)	1.68	(0.29, 32.01)	1.08	(0.31, 4.40)
≥36 years	0.60	(0.08, 2.65)	1.05	(0.27, 5.23)	2.17	(0.61, 8.21)	2.99	(0.53, 56.40)	1.37	(0.39, 5.48)
Education level										
Less than senior high school	1		1		1		1		1	
Senior high school	0.66	(0.37, 1.18)	1.59*	(1.01, 2.50)	1.02	(0.63, 1.65)	1.26	(0.76, 2.09)	1.06	(0.69, 1.64)
College or above	1.54	(0.67, 3.78)	1.84*	(1.08, 3.15)	1.00	(0.56, 1.81)	1.96*	(1.11, 3.50)	0.93	(0.55, 1.56)
Knowledge	4.38*	(1.69, 11.44)	7.57**	(3.24, 18.50)	4.15*	(1.86, 9.38)	1.66	(0.66, 4.34)	2.97*	(1.38, 6.50)
Attitude	7.78*	(2.06, 30.69)	2.75	(0.99, 7.77)	5.05*	(1.73, 15.09)	11.80**	(3.80, 38.01)	1.29	(0.49, 3.40)

*Significant difference ($p < 0.05$).

**significant difference ($p < 0.001$).

AOR was adjusted caregivers' gender, age, and education level; Model A: frequency of tooth-brushing each day among caregivers (twice or more vs. once or less); Model B: caregivers' dental floss use (yes vs. no); Model C: caregivers visited a dentist before (yes vs. no); Model D: caregivers visited a dentist for regular dental check-ups (yes vs. no); Model E: caregivers visited a dentist for dental treatments (yes vs. no).

upgrade their attitude, and then their positive attitude promotes the frequency of them brushing a child's teeth in this study. It was observed that caregivers' behavior is significantly correlated with their KA. We propose that attitude was the key factor, more important than knowledge, which dominates caregivers' oral health behavior in line with previous reports.^{11,34,35} Caregivers who have a positive attitude are more likely to bring their children to receive fluoride varnish services which are free of charge provided by government budget (tobacco tax) in Taiwan.

There were limitations in the present study. First, the data in this study was collected from self-reported questionnaires and namely recorded. Caregivers may not have presented the actual situation due to social desirability considerations. Therefore, it was hard to avoid the doubt regarding answer errors. Second, this study was based on a cross-sectional analyses, our study results provide only a profile of oral health-related KAP for the caregivers of special school children. The data of this study may not be inferred to home-bound groups.

Table 4 Multivariate logistic regression analysis of factors related to caregivers' oral health behaviors of caring their children.

Variables	Model F		Model G		Model H		Model I		Model J	
	AOR	(95% CI)	AOR	(95% CI)	AOR	(95% CI)	AOR	(95% CI)	AOR	(95% CI)
Gender										
Male	1		1		1		1		1	
Female	0.84	(0.55, 1.29)	1.17	(0.77, 1.77)	0.80	(0.52, 1.23)	0.92	(0.60, 1.38)	2.69	(1.25, 6.70)
Age										
≤20 years	1		1		1		1		1	
21–35 years	0.91	(0.25, 3.09)	1.07	(0.31, 3.68)	0.52	(0.15, 2.11)	0.49	(0.12, 1.68)	1.04	(0.16, 20.63)
≥36 years	1.11	(0.31, 3.68)	1.32	(0.39, 4.49)	0.91	(0.26, 3.64)	0.48	(0.12, 1.63)	0.79	(0.12, 15.61)
Education level										
Less than senior high school	1		1		1		1		1	
Senior high school	0.89	(0.57, 1.37)	1.29	(0.83, 2.01)	1.28	(0.81, 2.02)	1.24	(0.80, 1.91)	1.21	(0.62, 2.41)
College or above	1.95*	(1.13, 3.40)	0.74	(0.44, 1.24)	1.14	(0.66, 1.95)	1.00	(0.60, 1.67)	1.02	(0.46, 2.27)
Knowledge	0.68	(0.31, 1.45)	2.18*	(1.02, 4.69)	1.84	(0.82, 4.25)	2.42*	(1.14, 5.19)	2.05	(0.57, 8.17)
Attitude	3.77*	(1.40, 10.39)	0.86	(0.32, 2.29)	4.79*	(1.72, 13.62)	0.59	(0.22, 1.55)	22.50**	(4.96, 108.27)

*Significant difference ($p < 0.05$).

**significant difference ($p < 0.001$).

AOR was adjusted caregivers' gender, age, and education level. Model F: frequency of tooth-brushing each day among children (twice or more vs. once or less); Model G: assistance of tooth-brushing by caregivers (yes vs. no); Model H: children visited a dentist for regular dental check-ups (yes vs. no); Model I: children visited a dentist for dental treatments (yes vs. no); Model J: taking children for utilization of fluoride varnish services (yes vs. no).

Table 5 Linear regression models for the association between knowledge, attitude and caregivers' demographic characteristics.

Variables	Term	Unadjusted model			Adjusted model			R^2
		β coefficient	95% CI	p	β coefficient	95% CI	p	
<i>Knowledge</i>								
Relation to the child	Siblings	Reference						
	Relatives	-0.45	(-0.97, 0.08)	0.058				
	Parents	0.76	(0.25, 1.28)	0.002				
Gender	Male	Reference						
	Female	0.46	(-0.11, 1.04)	0.065				
Age	≤20 years	Reference						
	21–35 years	-0.10	(-0.61, 0.42)	0.720				
	≥36 years	0.41	(-0.10, 0.92)	0.121				
Education level	Less than senior high school	Reference			Reference			
	Senior high school	0.46	(-0.05, 0.97)	0.103	1.34	(0.86, 1.83)	<0.001	0.305
	College or above	2.12	(1.56, 2.68)	<0.001	2.53	(1.97, 3.09)	<0.001	
Attitude		0.30	(0.25, 0.36)	<0.001	0.27	(0.22, 0.32)	<0.001	
<i>Attitude</i>								
Gender	Male	Reference						
	Female	0.60	(-0.23, 1.43)	0.158				
Age	≤20 years	Reference						
	21–35 years	-0.04	(-0.78, 0.70)	0.914				
	≥36 years	0.24	(-0.49, 0.97)	0.524				
Education level	Less than senior high school	Reference						
	Senior high school	0.39	(-0.34, 1.13)	0.297				
	College or above	1.08	(0.23, 1.92)	0.013				
Knowledge		0.65	(0.54, 0.77)	<0.001	2.55	(1.02, 4.08)	0.001	0.207

In conclusion, caregivers' KA is highly associated with their oral health behavior. The more adequate knowledge the caregiver has about oral health, the more likely they are to drive a positive attitude, and this will foster healthier behavior. Education programs addressing the importance of preventive oral health services and dental treatment should be recommended to caregivers who are less well educated to improve the behavior of their child and themselves.

Conflicts of interest

The authors have no conflicts of interest relevant to this article.

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