

Parental knowledge, attitudes, and practices about caring for primary teeth in Vietnam

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Objective: The aim of this study was to evaluate parents' knowledge, attitudes, and practices (KAP) about the health care of primary teeth of children whose primary teeth had pulp diseases and explore the factors associated with the KAP of parents in Vietnam.

Materials and methods: This was a cross-sectional study. 421 parents were recruited from the School of Odonto-Stomatology, Hanoi Medical University and Department of Dentistry, National Children's Hospital from December 2018 to June 2020. Data was collected using a questionnaire. Hidden class analysis was performed to classify the participants, and logistic regression analyses were used to determine the factors that affected the parents' KAP.

Results: The proportion of parents with an appropriate knowledge, attitudes, and practices was 54.63%, 62.95%, and 42.28%, respectively. Financial barriers to dental/oral care prices (aOR = 4.46, 95% CI: 1.46–13.62), having a stable job (aOR = 2.26, 95% CI: 1.19–4.31), and multiple-child families (aOR = 2.06, 95% CI: 1.07–3.99) were associated with the parents' KAP concerning taking care of their children's primary dentition.

Conclusion: More than half of the parents participating in the study had the appropriate knowledge and attitudes and nearly half of them used the appropriate practices for taking care of their children's primary teeth. The factors associated with parental KAP are income, job, and the number of children.

Keywords: attitude, knowledge, parents, practice, primary teeth.

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Introduction

Dental caries is a common oral disease that affects 486 million children worldwide [1]. Its complications significantly affect peoples' quality of life due to pain, difficulty in eating, and sleep disturbances [2]. Parents are directly involved in their children's oral health and play an important role in preventing oral diseases in children [3]. Insufficient oral health knowledge, wrong attitudes towards dental habits, and improper oral hygiene practices of parents can

increase the incidence of cavities [4,5]. Several reviews have shown a strong relationship between parents' oral health care behavior and their children's dental caries [6,7]. The parents' lifestyle, knowledge, and attitudes towards oral health, financial capacity, education, occupation, and experience are the most important factors to form good oral hygiene habits for children in the first years of life [8]. In Vietnam, there are few studies on how parental knowledge, attitudes, and practices (KAP) affects the oral health status of children, especially in children with primary

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teeth that need root canal treatment. Therefore, the aim of this study was to evaluate the KAP of parents whose children received pulpal treatment in their primary teeth in Vietnam.

Materials and Methods

This was a cross-sectional study. The study was conducted in the waiting room of the Pediatric Dental Department at the School of Odonto-Stomatology, Hanoi Medical University and Department of Dentistry, National Children's Hospital, from December 2018 to June 2020. The parents included in the study had to meet 2 criteria: (1) parents of children who had an indication of pulpotomy or pulpectomy in a primary tooth and (2) the parents must directly take care of the children. Parents who could not hear or had a mental illness that could affect their cognitive ability were excluded from the study. The parents were informed about the study and the study objectives. The sample size was calculated according to the formula:

$$n = Z_{1-\alpha/2}^2 \frac{p(1-p)}{d^2}$$

In which: p: The percentage of parents with a positive attitude in the study by Mubeen N. *et al.* is 55.5% [17]; d: Absolute accuracy (= 5%); $Z_{(1-\alpha/2)}$: confidence coefficient, statistical significance $\alpha = 0.05$, corresponding to 95% confidence was $Z_{(1-\alpha/2)} = 1.96$. Thus, the required sample size was 380 parents. However, based on using purposive sampling, 421 parents consented to participate the interview in our study.

Questionnaire

The KAP of parents about the primary teeth were assessed through a questionnaire that was

developed and modified based on two previous questionnaires [9,10]. Our questionnaire was designed in English, then translated into Vietnamese. The Vietnamese questionnaire was translated into English by a translator who is fluent in both English and Vietnamese. The original questionnaire and the backtranslated version have no difference of more than 20%. We validated the questionnaire by asking for revisions from three pediatric dentistry specialists. These dentists had extensive knowledge and experience in pediatric dentistry and research methods, especially in designing and constructing data collection tools. Differing opinions were discussed among the three experts until a consensus was reached. We used the Vietnamese version that was validated by the experts to test more than forty parents. After analyzing the pilot survey results, we revised the final questionnaire to use for this study. The interviewers were two pediatric dentists who understood the research purpose, content and questionnaires in this study. They were trained, standardized, and strictly followed the study's protocol; Reliability was adjusted by Kappa index of 0.85 before data collection.

The questionnaire consisted of 27 questions (20 closed questions, 7 open questions) and was divided into four parts. All of the questions were multiple-choice questions. The first part was to collect information about the jobs and education of the parents, the age and position of their children among siblings, and the diagnoses of the children. The second part comprised six questions on the knowledge of the parents about the primary dentition. The third part of the questionnaire contained five questions about the attitudes of the parents in taking care of the primary dentition. The fourth part had eleven questions regarding the daily practices of the parents in taking care of their children's primary dentition. Appropriate parent's

knowledge, attitudes, and practices assessment was defined as ≥ 4 , ≥ 3 , and ≥ 5 correct answers, respectively

The interviews were performed by a single pediatric dentist. We did one interview for either the father or mother or parent per child. The study protocol was approved by the Ethics Committee for Biomedical Research - Hanoi Medical University, number 13NCS17/HMU IRB.

Data analysis

The data were analyzed using Stata/MP 14.0 and Mplus 7.31. Latent Class Analysis (LCA) was performed to classify the participants into two groups with respect to their KAP about the dental and oral care for their children. Akaike Information Criteria (AIC), Bayesian Information Criteria (BIC), Entropy, and Lo-Mendell-Rubin Likelihood Ratio Tests (LMR) were used to evaluate which latent class model was optimal. A lower AIC and/or (the lower AIC, lower BIC, or both of them is enough to indicate the optimal model) BIC value and a higher entropy indicated the optimal model. The p-value of LMR using the Lo Mendell Rubin

Likelihood ratio test, with $p < 0.05$ indicates a difference between two class models (i.e., between n-class model and n+1-class model). After classifying the participants by LCA, a logistic regression model was performed to identify the factors associated with the likelihood of being in a positive group where the participants demonstrated a greater KAP level compared with the remaining group.

Results

Most parents had their highest education level as college or university (63.18%) (Table 1). Approximately one-third had a stable full-time job (31.59%). Half of the families had two children and ~19% had three children or more. The most common role of the parents in dental/oral health care was observing/supervising their children in brushing their teeth (41.57%). The main reason for not taking children to the dentist was the high price of dental care services (63.90%) (Table 1).

Table 1 Characteristics of the children and parents participating in the study.

Characteristics	n	%
Children' age (median, IQR) ^a	5.3 (3.7– 6.8)	
≤3	57	13.70
>3–≤5	130	31.25
>5–≤10	213	51.20
>10	16	3.85
Child's Sex at birth ^b		
Male	231	55.66
Female	184	44.34

Table 1 Characteristics of the children and parents participating in the study. (Continued)

Characteristics	n	%
Address		
Hanoi	222	52.73
Other provinces	199	47.27
Caregiver's education level		
Secondary school/high school	155	36.82
College/university	266	63.18
Caregiver's occupation		
Housewife	78	18.53
Stable full-time job	133	31.59
Trading/seller	45	10.69
Self-employee	165	39.19
Total number of children in the family ^c		
1	125	29.76
2	214	50.95
3 or more	81	19.29
Order of the child participating in the study ^c		
First	244	58.10
Second	138	32.86
Third or fourth	38	9.05
Role of caregivers in the child's routine dental care		
Brushing their child's teeth	102	24.23
Observing/supervising their child brush their teeth	175	41.57
Encouraging/reminding child to brush their teeth	122	28.98
Others	22	5.23
Reasons for not wanting to take their children to the dentist/oral care		
Afraid of the child being hurt	36	8.55
High price of dentistry/oral care	269	63.90
Waste of time and money because baby teeth will be replaced naturally	116	27.55

^a5 missing; ^b6 missing; ^c1 missing

In knowledge, most parents demonstrated having appropriate knowledge about the food types that contribute to tooth decay and the need for explaining treatment plans and procedures (>90%). However, only 53% of parents understood the role of fluoride in toothpaste. The appropriate attitude was reflected in the opinion that parents and dentists played the most crucial role in dental care for the child (92.87%). Regarding tooth care practice, parents play a key role in using toothpaste in brushing teeth (85.04%), but only 6.65% of children brushed their teeth for more than three minutes. Only 9.50% of parents had taken their children to a dentist when the first primary tooth erupted. The percentages of parents who had good knowledge, attitude, and practice (KAP) were 54.63%, 62.95%, and 42.28%, respectively. The details of the KAP of the participants in dental/oral care for their children is shown in Table 2.

Table 3 summarizes the statistical indexes of latent class models. Among the three latent class models, AIC and entropy indicated that the two-class model had the lowest AIC and highest entropy. Moreover, the p-value of the LMR in the three-class model was >0.05, meaning that the difference between the three-class model and two-class model was not significant. Thus, we chose the two-class model for the final analysis. The latent class analysis divided the participants into two groups with class sizes of 178 (42.3%) and 243 (57.7%). The probability of good KAP in the two classes is illustrated in Figure 1. Class 1 (sufficient KAP) demonstrated higher probabilities of having better knowledge, attitude and practice compared with class 2 (insufficient KAP). In class 1, the probability of parents with the correct knowledge, attitude, and practices was 62.4%, 66.9%, and 100%, respectively while in class 2, the probability of parents with the appropriate knowledge, attitude, and practices was 49.0%, 60.1%, and 0%, respectively.

The logistic regression analysis on the factors associated with good KAP is shown in Table 4 in which class 2 was the reference group. Parents who did not have financial barriers to dental services were more likely to have better KAP (OR = 4.46, 95% CI: 1.46–13.62). Those with a stable job had a higher KAP compared with a househusband and housewife (OR = 2.26, 95% CI: 1.19–4.31). Furthermore, parents with three children or more had better KAP than those who had one child (OR = 2.06, 95% CI: 1.07–3.99).

Discussion

The present study evaluated the knowledge, attitudes, and practices (KAP) of parents whose children received pulpal treatment in primary teeth in Vietnam. The results indicated that finance, parent's jobs, and the number of children in the family are associated with insufficient KAP in parents whose children required pulpal treatment at our clinics. In this study, more than 90% of the parents knew the food types that contribute to dental caries and agreed that dentists need to explain the treatment plan and process. However, only 53% of parents understood the role of fluoride in toothpaste, and only 45.37% of parents understood the consequences of dental caries in primary teeth on permanent teeth. These results indicate that the parents' concern about their children's primary teeth was at the shallow level. This finding was also reported in studies in Sudan [11], Kuwait [12], Saudi Arabia [13], India [14], Kosovo [15], China [16], and Pakistan [17]. In six knowledge questions, parents who correctly answered at least four questions were considered to have good knowledge. According to this criterion, 54.63% of parents had sufficient knowledge toward taking care of the primary dentition. This result is similar to Ashkanani F *et al.* [12], but was higher than in Garg S *et al.* [18] where only 15.4% of mothers had good knowledge.

Table 2 Characteristics of the parents' KAP about the health of their children's primary teeth.

Characteristics	Appropriate	
	n	%
Knowledge (K)		
Total number of baby teeth	157	37.29
Most common dental disease	162	38.48
Role of fluoride in toothpaste	223	52.97
Which food contributes as the main reason for tooth decay	393	93.35
Impact of baby tooth decay on permanent teeth	191	45.37
Is it necessary for a dentist to explain the treatment plan and procedure	398	94.54
Cut-off point suggested: 4 appropriate items or more	230	54.63
Attitude (A)		
Necessity to take the child for dental/oral check ups regularly	374	88.84
Treatment method when the child had tooth decay	310	73.63
Parents and dentists play the most important role in dental care for the child	391	92.87
Cut-off point suggested: 3 appropriate items	265	62.95
Practice (P)		
Milestone of the first time to take the child for dental/oral care	40	9.50
Had the child ever received dental/oral treatment	301	71.50
Number of times brushing teeth per day	240	57.01
Guiding the child how to brush their teeth	118	28.03
How the child brushed their teeth	75	17.81
Number of minutes per time of brushing their teeth	28	6.65
Using toothpaste in brushing their teeth	358	85.04
How to prevent tooth decay in children	307	72.92
In case the child has dental problems, where to take the child for a check up	287	68.17
Cut-off point suggested: 5 appropriate items or more	178	42.28

Table 3 Model fit statistics and class size of latent class models.

	AIC	BIC	Entropy	<i>p</i> -value	Class size
1 class	1714.65	1726.78	-	-	100%
2-class	1713.15	1741.44	1.0	0.001	42.3%; 57.7%
3-class	1719.59	1764.06	0.42	0.46	23.0%; 42.8%; 34.2%

AIC: Akaike Information Criteria, BIC: Bayesian Information Criteria, LMR: Lo-Mendell-Rubin Likelihood Ratio Tests

Table 4 Multivariable logistic regression analysis on associated factors associated with KAP of the parents about the health care of primary teeth of their children.

	aOR (95% CI)
Age of the child	1.06 (0.96–1.18)
Sex at birth of the child	1.25 (0.81–1.92)
Parent's occupation	
Housewife or househusband	1
Stable full-time job	2.26 (1.19–4.31)
Trading/seller	1.71 (0.75–3.90)
Self-employee	1.23 (0.65–2.30)
Total number of children in the family	
1	1
2	1.51 (0.90–2.51)
3 or more	2.06 (1.07–3.99)
Role of parents in a child's routine dental care	
Brushing their child's teeth	1
Observing/supervising their child brushing their teeth	2.20 (1.24–3.90)
Encouraging/reminding child to brush their teeth	1.95 (1.04–3.63)
Others	0.10 (0.01–0.83)
Perception of high price as a barrier to oral care	
Yes	1
No	4.46 (1.46–13.62)



Figure 1 Probability of good KAP in two classes

In our study, 88.84% of parents thought that regular oral health checkups are necessary. This result is lower than the studies of Hiba S. Abduljalil (99%) [12] and Akpabio A (90.5%) [19], but higher than the results of Anjana Mounissamy (55.7%) [20]. This may be because in Hiba S. Abduljalil, the mothers of children attending kindergarten were randomly selected to participate in the study and their children may or may not have had dental disease. However, in the present study, we investigated a group of parents of children with pulp disease and seeking pulpal treatment. Thus, the parents in our study may have been less concerned about their children's oral health than in the mothers in Hiba S. Abduljalil. Corresponding to another study [20], 92.87% of parents in our study believed that parents and dentists play the most important role in dental care for children. The parents who answered all three questions correctly were defined as having the appropriate attitude. Our results indicated that 63% of parents had the appropriate attitude, similar to Garg S *et al.* [18].

In terms of practice, 85.04% of parents used toothpaste for their children, 72.92% knew how to prevent tooth decay for children, including reducing eating sugary snacks, brushing teeth two times/day, and consulting with dentists. These results were consistent with previous studies [20-22]. 71.50% of children had at least one oral

treatment, however, only 9.50% of children had an oral examination when the first primary tooth erupted. The American Academy of Pediatric Dentistry recommends [23] that children should have a dental check-up when their first primary tooth erupts to prevent rapid demineralization of the tooth [24]. In the present study, only 28.03% of parents instructed their children to brush their teeth correctly. Brushing is the simplest and most effective method of oral hygiene [25]. The study results indicated that the instructions from parents in brushing children's teeth was very poor, similar to studies in developing countries [20,24]. With nine practice questions, correctly answering at least five questions was considered good. The results demonstrated that only 42.3% of parents had good practices, which is similar to the results of previous studies [12,18].

Using the method of analyzing the hidden layer, we divided the parents into two classes in which class 1 had a higher probability of having good KAP compared with class 2. The multivariate regression analysis with class 2 as the reference group revealed several factors related to the parents' KAP. Parents without a high barrier to dental care had a better KAP than those with a high price barrier (aOR = 4.46, 95% CI: 1.46–13.62). Indeed, parents with a better financial situation can access more information sources, better dental experiences, especially current knowledge. Many studies have shown that low-income mothers have less knowledge and that reduced the use of health care services for their children [26-28]. Likewise, parents with stable jobs have a higher KAP compared with housewives/househusbands (aOR = 2.26, 95% CI: 1.19–4.31). People with stable jobs have a better income and more current knowledge than those who only do housework. Moreover, those who have three or more children had a better KAP than those with only 1 child (aOR = 2.06, 95% CI: 1.07–3.99).

The findings in Akpabio A *et al.* [19] support those in our study. Possibly, parents in multi-child families have more experience in oral care from previous dental visits of their other children.

Using a convenient sample and the low number of interview questions are shortcomings of our study. Random subject selection based on selection criteria may result in more diversity in the economic, social, and educational background of the study population. Therefore, the results in this study can be considered initial findings on the knowledge, attitudes and behaviors of parents with children who have primary tooth pulp diseases. Additional studies with a larger sample size and an objectively validated questionnaire are needed to confirm the results of this study.

Conclusions

This study revealed that approximately half of the parents participating in the study have the right knowledge, attitudes, and practice for taking care of their children's primary teeth in Vietnam. Low-income parents, parents who do only housework, and those with one or two children have lower KAP.

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