

영유아 부모의 구강보건관심도 조사

박인숙[‡]

청암대학교 치위생과 조교수

A study on the oral health interest of the parents of babies and children

In-Suk Park[‡]

Assistant professor, Dept. of Dental Hygiene, Cheongam College

ABSTRACT Objective: The purpose of study is to understand the oral health interest and practice of parents of babies and children. In addition, basic data will be collected for planning and evaluating an oral health project which can reduce the rate of dental caries in the Chonnam area. Method: The study subjects were 310 parents, and the researchers visited 4 institutions from April 2 to June 29, 2018. The questionnaires consisted of 7 items of general characteristics, and 8 items of oral health knowledge and practice.

Result: 51.0% of subjects thought that their babies or children's oral condition healthy, most of them brushing their teeth three times a day on average. 63.2% had visited a dentist in the last 6 months. 79.0% said they would participate if oral health education were conducted at the daycare facility, and expressed a wish for training regarding the best brushing method.

Conclusion: There is a need to expand education in order to raise the interest in and the practice of children's oral health. In addition, regular oral examinations and early treatment should be more frequently undertaken.

Keywords Babies and children, Oral health education, Oral health interest, Oral health practice, Tooth brushing instruction

Received on Jul 01, 2019. Revised on Sep 18, 2019. Accepted on Sep 09, 2019.

[‡] Corresponding Author (E-mail: ppp8814@ca.ac.kr)

I. Introduction

In order to use healthy teeth for a lifetime, it is necessary to rationally manage the frequent caries in infants[1]. If a primary teeth were well cared, a permanent teeth will erupt normally and the mind and body will grow healthy. According to the Korean National Oral Health Survey[2], the decayed, missing, and filled teeth rate(DMF rate) was decreased compared to the past, but it was increased with the age. According to the Korean Children's Oral Health Survey in 2015[2], the decayed, missing, and filled primary teeth index(dmft index) was 3.1 and the decayed, missing, and filled primary teeth rate(dmf rate) was 64.4%. The dmft rate of Jeollanam-do was the highest in the nation at 71.9%, and the dmft rate of Jeonbuk and Jeonnam girls were 74.4%. This was significantly higher than that in developed countries(34.7% in Australia, 31.0%

in Canada and 42.6% in the UK). It can be seen that the caries of infants in Jeonnam was especially serious[2].

It is reported that the children with severe caries are more likely to have the caries of permanent tooth[3]. According to the study of Ju[4], only 48% of the dentists responsible for infants responded that oral examinations were performed, and it was very low at 17.8% that was the first dental visits under 1 years of age[4]. Jin et al.[5] reported that there is a need to develop the program which can systematically examine a infants' teeth early and to diversify the gradational oral health care programs which can treat the initial caries lesions. Among the various oral health programs, the oral health education is a program which can be applied to the public. In order to improve the level of oral health, it should be change that was the knowledge, attitudes and behaviors related to those[6].

Because a infants can not expect the voluntary and effective

oral health care, it is important that a parents and teachers play a role in forming the oral hygiene care habits, practicing the skills, and managing the oral hygiene. Kim[7] reported that the child's early dental caries could be prevented through the changes in the characteristics of Streptococcus mutans in children due to the mother's xylitol intake, Lee[8] investigated the factors influencing the use of oral care products in the mother, and Gong[9] reported on the factors affecting the dental utilization behavior in the mother.

For a child's oral health care and education, a mother's oral health knowledge level should be high. Since the enactment of the Oral Health Law in 2000, the various oral health programs have been implemented. These projects cover a pregnant women, infants and toddlers with the periodic oral health examinations. A the oral care methods according to the growth, and the preventive care, but a detailed and educational programs are lacking.

Therefore, this study aims to understand the level of oral health knowledge and practice of parents. If these results were considered, it can be used as a basic data for planning and evaluating of the oral health care program which lower the dental caries of them in Chonnam.

II. Materials and Methods

1. Subjects

The study subjects were the parents of four preschools in Suncheon where the researcher selected randomly. The researchers directly visited them from April 2, 2018 to June 29, and distributed the questionnaire to the parents who explained and agreed the research. A total of 310 copies were used for the final analysis except for 27 copies of the insufficient questionnaire of 327 copies. The minimum number of study samples was calculated as 202 using G Power 3.0[10][11] by chi-square test, predicting rate of target group 85%, reference group rate 63%, 0.05 significance level, 95% power of test. Assuming the elimination by 20%, 310 subjects were suitable for the analysis. The group rate was referenced the results of Ryu[12].

2. Methods

The questionnaire consisted of 15 items in total, 7 items of the general characters of study subjects, 8 items of the oral health knowledge and practice. The items were modified and adapted according to the study purpose by referring to the survey questionnaire of Ryu[12].

3. Analysis method

The collected data were analyzed using IBM SPSS Statistics for windows(ver 18.0; IBM Co., Armonk, NY, USA). The general characteristics of study subjects were calculated the frequency, percentage. The oral health knowledge and practice were the frequency and chi-square test.

III. Results

1. The general characters of study subjects

The general characters of study subjects were shown in <Table 1>. The study subjects were 310 parents, the female were 85.5%. Most of them were in the 30s with 77.4%, 40s with 10.3%, 20s with 8.1%, and 50s with 4.2%. The age of toddler was 31.0% in 5 years old, followed by 30.3% in 3 years old, 24.5% in 4 years old and 14.2% in 2 years old. The number of toddler was 64.5% in two, followed by 18.1% in one, 16.5% in three, and 1.0% in four or more. The most common jobs were housewives(50.6%), 22.6% was the office workers, and other were 17.1%, self-employment were 9.7%. According to the monthly income, 3.5 million or more Korea Won(KRW) were 38.1 percent, followed by 31.6% with 2.5 ~ 3.5 million KRW, 23.9% with 1.5 ~ 2.5 million KWN, and 6.5% with less than 1.5 million KRW.

2. The assessment of toddler's oral health

It was shown <Table 2> that was the assessment of toddler's oral health. 51.0% parents perceived that my child is healthy, 30.6% of them did not recognize that they were not, and 15.2% responded "I don't know".

<Table 1> The general characters of study subjects (n=310)

Variable	N(%)	
Gender	Male	45 (14.5)
	Female	265 (85.5)
Age	Under 30	25 (8.1)
	30~39	240 (77.4)
	40~49	32 (10.3)
	More than 50	13 (4.2)
Toddle age	2	44 (14.2)
	3	94 (30.3)
	4	76 (24.5)
	5	96 (31.0)
Number of toddle	1	56 (18.1)
	2	200 (64.5)
	3	51 (16.5)
	More than 4	3 (1.0)
Job	Housework	157 (50.6)
	Self-empolymnt	30 (9.7)
	Employee	70 (22.6)
	Etc	53 (17.1)
Monthly income	(million KRW)Under 1.5	20 (6.5)
	1.5~2.5	74 (23.9)
	2.5~3.5	98 (31.6)
	Over 3.5	118 (38.1)

The number of toddler were statistically significant differences in the oral health perception of the toddler($p<0.05$). The smaller the number of children, the more perceived their toddler was healthy. Also, the monthly income were statistically significant differences in the perception($p<0.05$). The parents who monthly income was between 2.5 and 3.5 perceived their children were healthier than other respondents. But there was no statistically significant difference in the parents' age, the toddler's age, and the job.

3. The average number of toddler's brushing

It was shown in <Table 3> that was the average number of toddler's brushing a day. The most frequent brushing number was three times(45.2%). 32.6% were twice, 16.1% were once, and 6.1% were four times. But there were no statistically significant difference according to the general characteristics of the subjects.

4. The tools for toothbrushing

The tool to use when brushing was the same as the <Table

<Table 2> The assessment of toddler's oral health

Variable	Yes	No	Don't know	etc.	Total	χ^2 (df)	p -value	
Age	Under 40	136 (51.3)	83 (31.3)	37 (14.0)	9 (3.4)	265 (85.5)	2.21(3)	0.530
	Over 40	22 (48.9)	12 (26.7)	10 (22.2)	1 (2.2)	45 (14.5)		
Toddle age	2	24 (54.5)	8 (18.2)	9 (20.5)	3 (6.8)	44 (14.2)	12.24(9)	0.200
	3	44 (46.8)	29 (30.9)	16 (17.0)	5 (5.3)	94 (30.3)		
	4	36 (47.4)	28 (36.8)	10 (13.2)	2 (2.6)	76 (24.5)		
	5	54 (56.3)	30 (31.3)	12 (12.5)	-	96 (31.0)		
Number of toddle	1	30 (53.6)	10 (17.9)	15 (26.8)	1 (1.8)	56 (18.1)	13.70(6)	0.033*
	2	101 (50.5)	64 (32.0)	26 (13.0)	9 (4.5)	200 (64.5)		
	More than 3	27 (50.0)	21 (38.9)	6 (11.1)	-	54 (17.4)		
Job	Housework	82 (52.2)	52 (33.1)	17 (10.8)	6 (3.8)	157 (50.6)	10.43(9)	0.317
	Self-empolymnt	13 (43.3)	10 (33.3)	7 (23.3)	-	30 (9.7)		
	Employee	35 (50.0)	18 (25.7)	16 (22.9)	1 (1.4)	70 (22.6)		
	Etc	28 (52.8)	15 (28.3)	7 (13.2)	3 (5.7)	53 (17.1)		
Monthly income	(million KRW)Under 2.5	47 (50.0)	25 (26.6)	20 (21.3)	2 (2.1)	94 (30.3)	13.38(6)	0.037*
	2.5~3.5	53 (54.1)	23 (23.5)	17 (17.3)	5 (5.1)	98 (31.6)		
	Over 3.5	58 (49.2)	47 (39.8)	10 (8.5)	3 (2.5)	118 (38.1)		
Total	158 (51.0)	95 (30.6)	47 (15.2)	10 (3.2)	310 (100.0)			

* $p<0.05$

4>. Most subjects used the toothbrush for the toddlers(89.7%), the electrical toothbrush was 4.5%, the adult toothbrush was

4.2%, the gauze or cloth was 1.6%.

There was a significant difference in the use of oral care

<Table 3> The average number of toddler's brushing a day

N(%)

Variable		1	2	3	4	Total	χ^2 (df)	p-value
Age	Under 40	45 (17.0)	85 (32.1)	120 (45.3)	15 (5.7)	265 (85.5)	1.63(3)	0.654
	Over 40	5 (11.1)	16 (35.6)	20 (44.4)	4 (8.9)	45 (14.5)		
Toddler age	2	12 (27.3)	13 (29.5)	18 (40.9)	1 (2.3)	44 (14.2)	11.88(9)	0.221
	3	16 (17.0)	37 (39.4)	34 (36.2)	7 (7.4)	94 (30.3)		
	4	11 (14.5)	21 (27.6)	40 (52.6)	4 (5.3)	76 (24.5)		
	5	11 (11.5)	30 (31.3)	48 (50.0)	7 (7.3)	96 (31.0)		
Number of toddler	1	8 (14.3)	17 (30.4)	28 (50.0)	3 (5.4)	56 (18.1)	6.02(6)	0.421
	2	32 (16.0)	63 (31.5)	89 (44.5)	16 (8.0)	200 (64.5)		
	More than 3	10 (18.5)	21 (38.9)	23 (42.6)	-	54 (17.4)		
Job	Housework	23 (14.6)	43 (27.4)	79 (50.3)	12 (7.6)	157 (50.6)	8.70(9)	0.466
	Self-employment	5 (16.7)	11 (36.7)	11 (36.7)	3 (10.0)	30 (9.7)		
	Employee	14 (20.0)	27 (38.6)	27 (38.6)	2 (2.9)	70 (22.6)		
	Etc	8 (15.1)	20 (37.7)	23 (43.4)	2 (3.8)	53 (17.1)		
Monthly income (million KRW)	Under 2.5	15 (16.0)	35 (37.2)	39 (41.5)	5 (5.3)	94 (30.3)	4.34(6)	0.630
	2.5~3.5	20 (20.4)	26 (26.5)	46 (46.9)	6 (6.1)	98 (31.6)		
	Over 3.5	15 (12.7)	40 (33.9)	55 (46.6)	8 (6.8)	118 (38.1)		
Total		50 (16.1)	101 (32.6)	140 (45.2)	19 (6.1)	310 (100.0)		

<Table 4> The tools for toothbrushing

N(%)

Variable		Children toothbrush	Gauze or cloth	Adult toothbrush	Electrical toothbrush	Total	χ^2 (df)	p-value
Age	Under 40	245 (92.5)	4 (1.5)	6 (2.3)	10 (3.8)	265 (85.5)	20.12(3)	<0.001***
	Over 40	33 (73.3)	1 (2.2)	7 (15.6)	4 (8.9)	45 (14.5)		
Toddler age	2	35 (79.5)	4 (9.1)	2 (4.5)	3 (6.8)	44 (14.2)	21.27(9)	0.012*
	3	88 (93.6)	1 (1.1)	3 (3.2)	2 (2.1)	94 (30.3)		
	4	69 (90.8)	-	3 (3.9)	4 (5.3)	76 (24.5)		
	5	86 (89.6)	-	5 (5.2)	5 (5.2)	96 (31.0)		
Number of toddler	1	51 (91.1)	1 (1.8)	3 (5.4)	1 (1.8)	56 (18.1)	7.31(6)	0.293
	2	183 (91.5)	3 (1.5)	5 (2.5)	9 (4.5)	200 (64.5)		
	More than 3	44 (81.5)	1 (1.9)	5 (9.3)	4 (7.4)	54 (17.4)		
Job	Housework	144 (91.7)	1 (0.6)	3 (1.9)	9 (5.7)	157 (50.6)	13.14(9)	0.156
	Self-employment	24 (80.0)	1 (3.3)	4 (13.3)	1 (3.3)	30 (9.7)		
	Employee	63 (90.0)	2 (2.9)	4 (5.7)	1 (1.4)	70 (22.6)		
	Etc	47 (88.7)	1 (1.9)	2 (3.8)	3 (5.7)	53 (17.1)		
Monthly income (million KRW)	Under 2.5	83 (88.3)	3 (3.2)	5 (5.3)	3	94 (30.3)	8.37(6)	0.213
	2.5~3.5	85 (86.7)	1 (1.0)	7 (7.1)	5 (5.1)	98 (31.6)		
	Over 3.5	110 (93.2)	1 (0.8)	1 (0.8)	6 (5.1)	118 (38.1)		
Total		278 (89.7)	5 (1.6)	13 (4.2)	14 (4.5)	310 (100.0)		

* p<0.05, *** p<0.001

products according to age($p<0.01$). It was more high under 40 than those of over 40 that was the use rate of children

toothbrush, the use rate of adult toothbrush were higher in the group of over 40 age. Also there were showed the significant

<Table 5> The dental visit experience in the last 6 months

N(%)

Variable		Experience	Non-experience	Total	χ^2 (df)	p -value
Age	Under 40	179 (67.5)	86 (32.5)	265 (85.5)	14.66(1)	<0.001***
	Over 40	17 (37.8)	28 (62.2)	45 (14.5)		
Toddle age	2	27 (61.4)	17 (38.6)	44 (14.2)	3.28(3)	0.350
	3	53 (56.4)	41 (43.6)	94 (30.3)		
	4	51 (67.1)	25 (32.9)	76 (24.5)		
	5	65 (67.7)	31 (32.3)	96 (31.0)		
Number of toddle	1	32 (57.1)	24 (42.9)	56 (18.1)	2.60(2)	0.273
	2	133 (66.5)	67 (33.5)	200 (64.5)		
	More than 3	31 (57.4)	23 (42.6)	54 (17.4)		
Job	Housework	105 (66.9)	52 (33.1)	157 (50.6)	4.56(3)	0.207
	Self-empolymnt	14 (46.7)	16 (53.3)	30 (9.7)		
	Employee	43 (61.4)	27 (38.6)	70 (22.6)		
	Etc	34 (64.2)	19 (35.8)	53 (17.1)		
Monthly income (million KRW)	Under 2.5	53 (56.4)	41 (43.6)	94 (30.3)	6.52(2)	0.038*
	2.5~3.5	58 (59.2)	40 (40.8)	98 (31.6)		
	Over 3.5	85 (72.0)	33 (28.0)	118 (38.1)		
Total		196 (63.2)	114 (36.8)	310 (100.0)		

* $p<0.05$, *** $p<0.001$

<Table 6> The participatory intention of oral health education

N(%)

Variable		Participation	Non-participation	Total	χ^2 (df)	p -value
Age	Under 40	210 (79.2)	55 (20.8)	265 (85.5)	0.05(1)	0.823
	Over 40	35 (77.8)	10 (22.2)	45 (14.5)		
Toddle age	2	38 (86.4)	6 (13.6)	44 (14.2)	8.34(3)	0.039*
	3	75 (79.8)	19 (20.2)	94 (30.3)		
	4	65 (85.5)	11 (14.5)	76 (24.5)		
	5	67 (69.8)	29 (30.2)	96 (31.0)		
Number of toddle	1	50 (89.3)	6 (10.7)	56 (18.1)	7.16(2)	0.028*
	2	158 (79.0)	42 (21.0)	200 (64.5)		
	More than 3	37 (68.5)	17 (31.5)	54 (17.4)		
Job	Housework	131 (83.4)	26 (16.6)	157 (50.6)	6.48(3)	0.090
	Self-empolymnt	24 (80.0)	6 (20.0)	30 (9.7)		
	Employee	48 (68.6)	22 (31.4)	70 (22.6)		
	Etc	42 (79.2)	11 (20.8)	53 (17.1)		
Monthly income (million KRW)	Under 2.5	77 (81.9)	17 (18.1)	94 (30.3)	3.25(2)	0.197
	2.5~3.5	81 (82.7)	17 (17.3)	98 (31.6)		
	Over 3.5	87 (73.7)	31 (26.3)	118 (38.1)		
Total		245 (79.0)	65 (21.0)	310 (100.0)		

* $p<0.05$

differences according to their toddler's age($p<0.05$). The parents of 2 year old toddler used more the gauze or cloth than the other parents, the parents of 3 year old toddler more used toothbrushes for children.

5. The dental visit experience in the last 6 months

It was shown in <Table 5> that the experience of visiting dental clinic for the toddler during the last 6 months. 63.2% of the subjects had visited the dentist. The parents under the age of 40 had more visit a dental clinic than those over 40 years old($p<0.001$). The parents with more income had higher visits to the dentistry($p<0.05$).

6. The participatory intention of oral health education

It was shown <Table 6> that was the intention of participate in the oral health education. Most(79.0%) parents hoped to participate in the education at a daycare center. There was a significant difference according to the age of toddler($p<0.05$). The parents of 2(86.4%) and 4(85.5%) year old toddler were more likely to participate in an education than other parents, while the parents of 5 year old toddler were less likely to

participate(69.8%). Also, the parents who had fewer children wanted to participate in the education($p<0.05$).

7. The hoped contents of oral health education

The hoped contents of oral health education was shown in <Table 7>. The parents hoped a tooth brushing education (37.6%), a regular oral exam(35.9%), and an oral health information(26.5%).

IV. Discussion

It is greater for infants than for adults that is the effect of oral health program for caries prevention. In addition, oral health of infants is very important because it is the basis of student oral health[13]. The completion of a health permanent teeth is possible through regular and continuous oral health care based on caries prevention. In particular, it is important to remove the dental plaque which is the cause of the caries. And the mothers' oral care habits can have a great impact on infants[14].

<Table 7> The hoped contents of oral health education

Variable		Tooth brushing	Oral exam	Information of oral health	Total	χ^2 (df)	p-value
Age	Under 40	81 (38.6)	74 (35.2)	55 (26.2)	210 (85.7)	0.66(2)	0.719
	Over 40	11 (31.4)	14 (40.0)	10 (28.6)	35 (14.3)		
Toddle age	2	17 (44.7)	15 (39.5)	6 (15.8)	38 (15.5)	7.46(6)	0.280
	3	25 (33.3)	32 (42.7)	18 (24.0)	75 (30.6)		
	4	25 (38.5)	17 (26.2)	23 (35.4)	65 (26.5)		
	5	25 (37.3)	24 (35.8)	18 (26.9)	67 (27.3)		
Number of toddle	1	17 (34.0)	17 (34.0)	16 (32.0)	50 (20.4)	3.41(4)	0.492
	2	62 (39.2)	60 (38.0)	36 (22.8)	158 (64.5)		
	More than 3	13 (35.1)	11 (29.7)	13 (35.1)	37 (15.1)		
Job	Housework	48 (36.6)	46 (35.1)	37 (28.2)	131 (53.5)	1.37(6)	0.968
	Self-empolment	10 (41.7)	9 (37.5)	5 (20.8)	24 (9.8)		
	Employee	17 (35.4)	17 (35.4)	14 (29.2)	48 (19.6)		
	Etc	17 (40.5)	16 (38.1)	9 (21.4)	42 (17.1)		
Monthly income (million KRW)	Under 2.5	31 (40.3)	31 (40.3)	15 (19.5)	77 (31.4)	3.67(4)	0.453
	2.5~3.5	30 (37.0)	25 (30.9)	26 (32.1)	81 (33.1)		
	Over 3.5	31 (35.6)	32 (36.8)	24 (27.6)	87 (35.5)		
Total		92 (37.6)	88 (35.9)	65 (26.5)	245 (100.0)		

This study was conducted to investigate the oral health interest of parents and to provide a basic data for oral health program development and a education direction.

In the assessment of toddler's oral health, about half of them recognized that their children were healthy, the smaller the number of children, the more perceived their toddler was healthy. The parents who monthly income was between 2.5 and 3.5 perceived their children were healthier than other respondents. These results were similar to those of Lee[8] that the parents with the high numbers of children have low interest in oral health. Because parents' attention affects their children[8], it is necessary to develop a program to raise parental attention and to prevent a dental caries and an early treatment.

The average number of brushing per day was 3 times(45.2%), but there was no difference according to the characteristics of the subjects. This was similar to the study of Ahn et al. [15]. DMF index increases with age, and children's favorite foods are high-sugar ice cream [16], so a correct brushing is necessary after a meal or snack. Also, since wrong feeding habits lead to caries [4], a cups should be used after 12 months of age. Since the parents' eating habits have many effects on their children [15], it is necessary to avoid the cariogenic foods and recommend the clean foods. The importance of regular oral examinations and early treatment should also be emphasized.

Most parents used a pediatric toothbrush(89.7%) to clean their children's teeth, they also used a electric toothbrushes, adult toothbrushes, gauze or cloth. The parents under 40 year old more used a toothbrush for children than the other. According to the report of Ju et al [4], the use of gauze or cloth was more frequent. The difference is thought to be due to the age of the subjects. The parents should be able to use and to care a oral hygiene products for each age.

The parents visited the dentist for their child during the last 6 months (63.2%). The more the monthly income, the higher the experience of visiting the dentist. According to the previous study [8], the higher the income, the higher the interest in health. The first visit to the dentist at 1 year old, regular oral examinations, and the higher the oral health knowledge, the higher the attitude and practice of oral health care of the child [17]. However, according to the previous study [4], only

17.8% visited the dentist at the age of 1 year, and 48% received a regular checkup. Parents need to be educated and promoted about the importance and timing of regular dental screenings.

79.0% were willing to participate in oral health education. The smaller the number of children, the more hope being educated. According to previous studies [18], it increased that was the average number of brushing per day after oral health education, and the oral health behavior was also improved. Moon et al. [19] reported that 89.5% of parents wanted oral health education, and Kim et al. [1] reported that the parents need a continuing education for oral health care.

The hoped education contents were brushing method (37.6%) and regular oral examination (35.9%). Moon et al. [19] reported that the oral health education change the dental caries, the knowledge of dentistry, brushing, and eating habits. To this end, it was said that the target of education should be expanded, the contents should be diversified, and they should be provided on a regular basis.

If the results of this study were referred, those will be a useful basis for planning and evaluating oral health programs for infant. A publicity is also needed to educate for improve their oral health and to participate in public oral health program. However, this study has the limitations as some of the survey area and subject. These are difficult to generalize. In a follow-up studies, it is necessary to expand the subjects and add objective indexes such as oral examinations.

V. Conclusions

This study was conducted to understand the oral health interest and practice of parents and to collect a basic data for oral health education.

Total 310 parents of 4 preschool were surveyed, and the results are as follows.

1. 51% of the parents perceived that their children 's oral health were healthy, and the smaller the number of children, the healthier they thought($p<0.05$).
2. 45.2% were brushing three times a day, and there was no significant difference depending on the characteristics

of the study subjects.

3. Most subjects used the toothbrush for the toddlers(89.7%), and under 40's used it more($p<0.01$). Also, oral care products were used differently depending on the age of the child($p<0.05$).
4. 63.2% visited the dentist for the last 6 months. over 40's it more($p<0.001$). Also, the more the income is high, the more they visited.
5. Most wanted the oral health education(79%), and the smaller the number of children, the more they hoped($p<0.05$). And the hoped contents were a tooth brushing education, a regular oral examination, and an oral health information.

Based on these results, it is necessary to develop and expand the oral health education program for infants and toddlers. We also need to promote parents to participate in programs that improve child's oral health.

REFERENCES

1. Kim NH, Kim HD, Kim JB: A study of the consciousness of the young children's parents on the incremental dental care program. *Journal of Korean Academy Oral Health* 28(3):372-386, 2004.
2. http://www.mohw.go.kr/react/gm/sgm0601vw.jsp?PAR_MENU_ID=13&MENU_ID=1304020501&page=1&CONT_SEQ=293273
3. O'Sullivan DM, Tinanoff N: The association of early dental caries patterns with caries incidence in preschool children. *Journal of Public Health Dentistry* 56(2):81-83, 1996. <https://doi.org/10.1111/j.1752-7325.1996.tb02401.x>
4. Ju TJ, Park HW, Ma DS, Lee JH, Seo HW: Survey of dentists on infant oral health care in Seoul, Gyeonggi-do, Gangwon-do, Korea. *Journal of Korean Academy of Oral Health* 24(1):117-125, 2010.
5. Jin BH, Lee BJ, Paik DI: Prevalence of incipient lesions in surveyed preschool children, Kuro-gu, Seoul: a pilot study. *Journal of Korean Academy of Oral Health* 28(4):548-558, 2004.
6. Jang GW, Hwang YS, Kim JB, Paik DI, Kim JB: Oral health education. 4th. Komoonsa Pub, pp.19-23, 2007.
7. Kim JH, Lee YE, Park DO, Ahn SH, Choi YH, Song KB: Effect of maternal use of gums containing xylitol on the characteristics of *Streptococcus mutans* in children. *Journal of Korean Academy of Oral Health* 34(4):465-472, 2010.
8. Lee HS: Factors affecting mothers' utilization of dental service: an application of the health belief model. *Journal of Korean Academy of Oral Health* 27(3):399-413, 2003.
9. Gong MS: Influencing factors on mothers' oral health behaviors. doctoral dissertation, Wonkwang University, Iksan, 1995.
10. Faul F, Erdfelder E, Lang AG, Buchner A: G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical science. *Behav Res Methods* 39(2):175-191, 2007. <https://doi.org/10.3758/bf03193146>
11. Cohen J: *Statistical power analysis for behavioral sciences*. 2nd ed. Elsevier Pub, pp.553-558, 1977.
12. Ryu EJ: Dental health knowledge of pre-schooler parents, behaviors and relations with their pre-schooler's dental caries treatment. master's thesis, Yonsei University, Seoul, 2015.
13. Kim JB, Choi YJ, Moon HS, et al.: *Public Oral Health*. 4th. Komoonsa Pub, pp.220-6, 2004.
14. Oshima T; *Professional subject pediatric dentistry*. Komoonsa Pub, pp.151-8, 2011
15. Ahn YS, Kim ES, Lim DS, Jung SH, Lee HJ: Behaviour about oral health of child's mothers of child care institutions in Songnam City. *Journal Korean Academy Oral Health Promotion* 1(1):83-94, 2000.
16. Kim JG, Chen CW, Lee DC, Baik BJ: Relationship between dietary habits and dental caries experience in preschool children. *Journal Koean Academy Pediatric Dentistry* 28(2):271-80, 2001.
17. Cho HY: Knowledge and attitudes towards infant oral health, and related health behavior among parents. *Child Health Nursing Research* 20(3):196-204, 2014. <https://doi.org/10.4094/chnr.2014.20.3.196>
18. Kim JH, Kim GU: The Convergence effects of oral health education of kindergarteners. *Journal of the Korea Convergence Society* 6(6):131-7, 2015. <http://dx.doi.org/10.15207/JKCS.2015.6.6.131>
19. Moon SJ, Park JH, Choi YC, Choi SC: The study of changes in oral health care of preschoolers in taebaek city through oral hygiene education. *The Korean Academy of Pediatric Dentistry* 36(1):71-7, 2009.