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ORIGINAL ARTICLE

Parents' perceptions of factors influencing the oral health of their preschool children in Vadodara city, Gujarat: A descriptive study

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ABSTRACT

Objectives: To assess parents' perceptions about the factors influencing the oral health of preschool children. **Materials and Methods:** A cross-sectional questionnaire survey was carried out among the parents of the preschool children in Vadodara City, India. A list of preschools was obtained from the Social Science Department of the MS University, Vadodara, India. The study included 828 parents, out of whom 597 responded, with the response rate of 72.10%. Twenty-seven questionnaires were incompletely filled and were excluded from the analysis. The remaining 570 forms were analyzed for the results. **Results**: The study included 828 parents, with a response rate of 72.10%. A majority of the parents were aware of the importance of primary teeth (85.33%), need for treating decayed primary teeth (100%), harmful effects of bottle feeding at night (99.64%), appropriate oral hygiene aid (84,56%), appropriate size of a toothbrush for a child (99.12%), and supervision and guidance of a parent, while cleaning the child's teeth (96.49%)**.** The parents' understanding, however, was found to be poor with respect to certain factors. Very few of the parents had adequate knowledge about the appropriate time to start cleaning, correct position of the parent during supervised brushing, proper quantity of toothpaste to be used, and proper time for the first dental visit of the child; 29.12% felt that the child's teeth should be cleaned when the first tooth erupts. A majority of parents identified the importance of fluoridated toothpaste (62.10%) and preferred to visit the dentist only when there was pain (58.07%). **Conclusions:** Parents' knowledge with respect to the first dental visit of a child, correct time to start cleaning the child's teeth, quantity of toothpaste to be used, position of parent during supervised brushing, the best time to give sugary drinks and snacks to the child, cariogenic effects of foods like cakes and pastries, and so on, needs to be improved.

Key words
Dental health, parents' perceptions, preschool children

INTRODUCTION

Children under the age of five years generally spend much of their time with parents and guardians even though they attend preschools or nurseries. These early years involve primary socialization, during which, early childhood routines and habits are acquired. These routines include dietary habits and health behaviors established as norms in the home, and are dependent on the knowledge and behaviors of the parents and older siblings.[1]

The patterns of behaviors learnt in early childhood are deeply ingrained and are resistant to change. Attempts to change the behavior at a later stage of development may be difficult because of the earlier indoctrination at home.[2]

Dental preventive therapy should start early in a child's life. The need for early intervention to reduce or eliminate oral diseases and the lack of awareness among children about oral health, mandate the involvement of parents in the prevention process.[3] Studies have reported that low parental knowledge and a poor attitude toward oral health are associated with an experience of high caries in young children.[1] It has been found that the more positive the attitude of parents toward dentistry, the better is the dental health of their children.[1]

Parents along with clinicians play a key role in the attempts to achieve the best oral health outcomes in their young children. Parental characteristics and beliefs may be an important consideration in an attempt to improve the preschool children's oral health.[4] Hence, this study was proposed to assess the parents' perceptions of the

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factors influencing their preschool children's oral health in Vadodara city.

MATERIALS AND METHODS

A cross-sectional questionnaire survey was carried out to assess the perceptions of parents about the factors influencing the oral health of preschool children in Vadodara City, in September 2008.

Source of data

A list of preschools was obtained from the Social Science Department of the MS University, Vadodara. This is one of the oldest and most reliable institutions in Vadodara, maintaining this type of information.

Sample design

A stratified random sampling methodology was used to select the sample.

A total of 55 preschools in Vadodara city were divided into four groups, according to the four zones of the city — North, East, South, and West. This division resulted in 18 preschools in the North, 19 preschools in the West, and nine preschools each from the East and South regions. From each group the proportionate number of preschools were selected. Assuming the number of children in each preschool to be 150 and a response rate of 10%, a sample of 828 parents was selected from 10 preschools.

Inclusion criteria

Parents of three- to five-year-old children attending preschools in Vadodara City.
Either of the parents or guardian.

Exclusion criteria

Parents who were not willing to participate in the study
Parents who returned incompletely filled questionnaires
Parents who did not return the filled questionnaire within the specified time period, even after reminders.

Method of collection of data

Permission from authorities

The study purpose and procedures were explained and prior permission was taken from the Principals of the preschools. Mutually feasible dates were decided for the study.

Survey Instrument / Questionnaire

A self-designed printed questionnaire form was used to collect the data. The questionnaire included data related to the demographic information of the parents such as age, sex, and education. Thirteen self-designed, close-ended, multiple-choice questions, related to the perceptions of parents were incorporated. Questions were formatted in both English and Gujarati languages.

Personnel and organization

Data was collected by a single investigator.

Collection of data

Data collection was carried out in September 2008. A requisition note, explaining the purpose of the questionnaire, with instructions to return the completed questionnaire with their wards, within a specified time period of seven days, was attached to the questionnaire. The questionnaire and requisition note were distributed among the children in the presence of their teachers and they were instructed to hand over the same to their parents or guardian. The duly filled questionnaires returned back to the teachers were then collected by making self-visits to the preschools.

Statistical analysis

The collected data was coded, and a descriptive and statistical analysis was carried out by using Microsoft Excel 2003 and Statistical Package of Social Science (SPSS 12). The Chi square test at 5% level of significance was used to find out the association of age, sex, and education, with the perceptions of the parents.

RESULTS

The study included 828 parents of whom 597 responded with a response rate of 72.10%. Among the 597 forms, 27 were incompletely filled, and hence, were excluded from analysis. The remaining 570 forms were analyzed for the results.

The distribution of the study subjects is shown in Table 1. Of the total of 570 study subjects, 385 were males (67.54%) and 185 were females (32.46%). A majority of the participants, that is, 345 (60.53%), were in the age range of 31– 40 years.

Participants of 45.09% (257) were graduates and 36.67% of the study subjects (209) had taken education up to the secondary level, as shown in Table 2.

Importance of milk teeth as perceived by parents [Figure 1] shows that 83.33% of the parents (475) viewed primary teeth as very important and 12.28% of the parents (70) felt primary teeth were somewhat important.

Table 1: Distribution of participants according to age and sex

Age group (Years)	Male (%)	Female (%)	Total (%)
21 – 30	96 (24.94)	93 (50.27)	189 (33.16)
31 – 40	259 (67.27)	86 (46.49)	345 (60.53)
41 – 50	30 (7.79)	6 (3.24)	36 (6.32)
Total	385 (67.54)	185 (32.46)	570 (100)

According to 42.45% of the parents (242), the best time to give sugary drinks and snacks is at mealtime [Figure 1], 38.07% of the parents (217) preferred morning hours, and 16.31% of the parents (93) believed that it can be given at any time. The need for cleaning the teeth was recognized by 29.12% of the parents as being soon after the first primary tooth erupts. A majority of the parents (65.43%) expressed the need for cleaning the teeth after the eruption of all primary teeth [Figure 1]; 84.56% [Figure 1] of the parents knew that the toothbrush was the most appropriate means for cleaning the teeth. Almost all the participants (99.12) knew that a small-headed toothbrush was appropriate for a child [Figure 2]. As for how much toothpaste should be used, 39.61% of the parents were of the view that the toothpaste should cover the entire toothbrush and 30.17% of the parents thought that it should be pea-sized [Figure 1].

Of the parents [Figure 1], 96.49% agreed that the child should be guided and supervised by parents while brushing their teeth; 62.10% of the parents believed that brushing from the front as a correct position, while 5.78% of the parents felt standing behind the child as the correct method. Of the parents, 62.10% were aware that fluoridated toothpaste is good for dental health and 10.87% were of the opinion that fluoridated toothpaste is not good for dental health.

According to 49.64% of the parents, chocolates and sweets were highly responsible for dental caries [Figure 1]. Among the parents, 48.42% were aware that apart from chocolates and sweets, even cakes and pastries were responsible for dental caries. More than half of the parents, that is, 58.07% felt that the first dental visit should be whenever there is pain in the tooth, whereas, 22.1% of the parents thought that the first dental visit should be as soon as the first primary tooth erupts [Figure 1]. All the parents agreed that a decayed primary tooth should be treated [Figure 2]. Of the parents, 99.64% agreed that letting a child sleep with a baby bottle is not a good practice [Figure 2].

Association of variables like age, gender, and education, with the perceptions of parents was tested by applying the Chi square test [Table 3]. No statistically significant difference was found between the parents' age and their knowledge related to the factors affecting oral health of their preschool children (P>0.05). However, more males (58.2%) than females (25.1%) believed that primary teeth were very important (P<0.05). Of the parents, 50.2%, who were graduates preferred giving sugary drinks and snacks to children only at mealtimes, in contrast to 32.7% who had education up to primary school, and 37.8% up to secondary school. Education of the parent was also found to have a significant association with their perceptions related to the size of toothpaste to be placed on the toothbrush and the position of the parent while brushing the child's teeth.

Table 2: Distribution of participants according to the level of education

Level of education	No. of parents	Percentage
Primary	104	18.24
Secondary	209	36.67
Graduation	257	45.09
Total	570	100.00

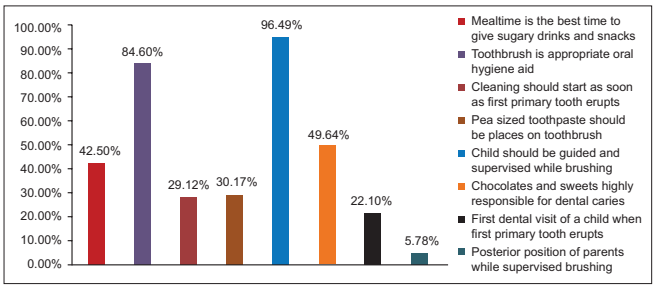

Figure 1: Percentage of parents with positive perceptions for factors like best time to give sugary substances, appropriate oral hygiene aid, time to start cleaning child's teeth, quantity of toothpaste to be placed on a toothbrush, guidance and supervision of parent, food highly responsible for dental caries, first dental visit of a child, and parental

DISCUSSION

Among 570 parents included in the analysis, 83.33% of the parents viewed primary teeth as very important. Similar findings have been reported by Schroth[5] *et al.* and Watson *et al.*[6] In a study conducted by Schroth RJ, caregivers who believed primary teeth are important had children with significantly less decay. There was an agreement among all the respondents about the treatment of decayed primary teeth and all of them responded positively stating that decayed primary teeth required treatment.

This reflects an increasing awareness about the importance of saving a primary tooth and its role in oral and general health, and it might be the result of appropriate efforts taken by dental professionals for the positive reinforcement of primary teeth and their treatment.

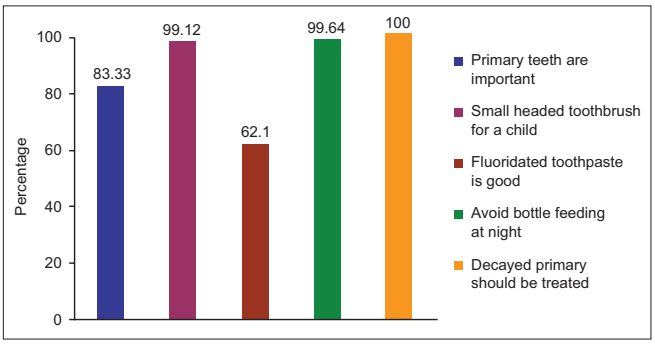

Figure 2: Percentage of parents with positive perceptions for factors like importance of primary teeth, size of a toothbrush, fluoridated toothpaste, bottle feeding at night, treatment of decayed primary tooth

Table 3: Percentage of parents with positive perceptions for factors like importance of primary teeth, size of a toothbrush, fluoridated toothpaste, bottle feeding at night, and treatment of decayed primary tooth

Sr. no. of questions	Age			Gender			Education		
	x^2 value / df	*P* value	Inference	x^2 value / df	*P* value	Inference	x^2 value / df	*P* value	Inference
Q. 1	1.227 / 2	0.541	NS	7.185 / 1	0.007	S	4.950 / 2	0.084	NS
Q. 2	1.992 / 2	0.369	NS	0.01 / 1	0.922	NS	12.213 / 2	0.002	S
Q. 3	0.993 / 2	0.627	NS	1.453 / 1	0.228	NS	2.278 / 2	0.320	NS
Q. 4	2.320 / 2	0.314	NS	1275 / 1	0.259	NS	1.473 / 2	0.479	NS
Q. 5	0.898 / 2	0.638	NS	0.131 / 1	0.717	NS	1.184 / 2	0.553	NS
Q. 6	0.400 / 2	0.819	NS	1.956 / 1	0.162	NS	7.333 / 2	0.026	S
Q. 7	1.679 / 2	0.432	NS	2.881 / 1	0.09	NS	1.911 / 2	0.385	NS
Q. 8	0.849 / 2	0.654	NS	1.078 / 1	0.299	NS	0.126 / 2	0.935	NS
Q. 9	0.952 / 2	0.621	NS	0.027 / 1	0.869	NS	2.168 / 2	0.338	NS
Q. 10	3.918 / 2	0.141	NS	0.672 / 1	0.412	NS	32.035 / 2	0.00	S
Q. 11	1.252	0.535	NS	1.211 / 1	0.271	NS	5.019 / 2	0.081	NS
Q. 12	No statistics could be computed as the response was constant								
Q. 13	1.309 / 2	0.520	NS	0.964 / 1	0.326	NS	0.474 / 2	0.789	NS
Overall	0.830 / 2	0.660	NS	0.122 / 1	0.727	NS	5.201 / 2	0.074	NS

Less than one half of the participants felt that sugary snacks should be limited to mealtime. Parents were often more concerned about the quantity of sweets consumed rather than the time at which they were eaten. This was an important area in which the parents' knowledge could be improved. Naidu RS and Davis[1] reported similar findings in a study in Trinidad.

A majority of parents expressed the need for cleaning primary teeth. This may be because teeth cleaning is related more to social norms than to considerations of the health benefits arising from it.[7] This acceptance of tooth cleaning is positive, but emphasis should be given on commencing tooth cleaning as soon as the first primary tooth erupts, as comparatively less number of parents accepted this.

These findings were in correlation with a study conducted by Akpabio *et al.*,[8] and Gussy *et al.*[9] Vaitkeviciene *et al.*[10] in a study conducted in Kaunas city reported that very few parents started to brush their children's teeth when the first tooth erupted. It was found that children who start brushing at a later age have a higher prevalence of Early Childhood Caries.[11]

Of the parents, 84.56% selected the toothbrush as the most appropriate cleaning aid for teeth and almost all the parents (99.12%) reported that a small-headed toothbrush was appropriate for a child. Similar findings were reported by other studies.[1,3,8]

Television has reached almost every house in the urban areas and it has viewers from almost all the ages and social and educational strata. As a part of commercial advertisements toothbrushes are shown very frequently as tooth cleaning aids, which may be the reason for the positive perceptions of the parents related to toothbrush as a cleaning aid, and also their knowing the appropriate size of a toothbrush for a child.

A low level of awareness was observed among the parents regarding the quantity of toothpaste to be placed on the toothbrush. Awareness among the parents about the appropriate use of toothpaste is very important to avoid excess toothpaste ingestion.[9] Similar findings were observed by Naidu and Davis,[1] in Trinidad. Slightly higher positive perceptions related to the appropriate quantity of toothpaste to be placed on the toothbrush were observed by Gussy MG *et al.*[9]

Uncertainty related to the appropriate toothpaste quantity may be because, in most of the mass communication media, including TV, Posters, Pamphlets, or Billboards, toothpaste covering the entire or half of the toothbrush head is displayed. The quantity of toothpaste needed may be one of the neglected areas of health education messages with more emphasis being given to the frequency of brushing and method, rather than the quantity of toothpaste, and it is the general tendency to think that, the more the toothpaste applied on a toothbrush, the more will be the cleaning efficiency .

A higher percentage of parents, (96.49%), agreed that children should be guided and supervised by parents while brushing their teeth. This may be due to the fact that in a majority of tasks like bathing, dressing, and so on, parents assist their young ones, as they do not believe these activities can be completed by their child independently. However, over half the parents in rural Victoria[9] were of the opinion that children were capable of brushing their own teeth by the age of four years. Vaitkeviciene *et al.*[10] reported that a very low percentage of parents guided and brushed their children's teeth.

A higher prevalence of dental caries was reported among those children who brushed alone than those who were assisted by their parents.[12] Children whose mothers showed an interest in their child's oral health by assisting in brushing, avoiding lots of sweets, or by taking them to dentists regularly, showed a significantly lower prevalence of dental caries than those children, whose mothers did not do any of these things.[2] It was also found that a majority of the children with Early Childhood Caries brushed their teeth alone, and it was almost twice more than that of children who were assisted by parents.[13]

A majority of the parents (62.10%) believed brushing from the front as a correct position, while very few of them (5.78%) selected standing behind the child as the correct one. However, the posterior position of the parents during supervised brushing is considered to be more effective.[14]

Similar findings have been reported by a study in Trinidad,[1] in which supervised brushing from 'the front' was considered to be the most effective by 65% of the parents.

A majority of parents were aware of the positive effect of fluoridated toothpaste on dental health. By the 1990s, fluoride toothpaste accounted for more than 90% of the toothpaste market in the US, Canada, and other developing countries.[15] This together with an increasing globalization might be responsible for the mounting awareness among parents, with respect to the effectiveness of fluoridated toothpastes.

Similar perceptions of parents, about fluoridated toothpaste, have been recorded by Watson M-R *et al.*[6] in the parents of two- to five-year-old Latino children.

A majority of parents viewed chocolates and sweets as highly responsible for dental caries compared to cakes and pastries. Similar findings have been reported by Gussy Mc *et al.*[9] Cakes and pastries, although considered to be highly cariogenic, their sugar content is often not obvious and lower awareness of this fact may be compounded by the common perception among parents that these are healthy snacks for young children.

It is seen that compared to those parents showing a favorable attitude to diet and hygiene, parents with an unfavorable attitude have children with almost five times higher caries experience.[13]

A significantly higher percentage of the parents reported that the first dental visit should be whenever there is a pain in the tooth and only 22.1% of the parents thought that the first dental visit should be as soon as the first primary tooth erupts. Similar findings were observed by Thakib A *et al.*[3] and Banyule Community Health Service Inc.,[16] in Somali parents. These findings were in contradiction to Schroth *et al's* study.,[13] which reported that a majority of the parents agreed that a first dental visit should be made by age one, and in a study by Kalyvas *et al.*,[17] in which 95% of the parents thought that a child should visit the dentist at an early age.

Findings in the present study show lack of sufficient knowledge among the participants related to prevention and early intervention or the parental beliefs that children are unable to cooperate with the dentist if seen earlier.[3] Lack of parents' consideration of oral health problems and unawareness related to the importance of the first dental visit for young children are possibilities that could have contributed to the negative opinions about the first dental visit.

The first dental visit of a child is considered to be one of the major dental caries preventive measures, and hence, the American Academy of Pediatric Dentistry (AAPD) recommends that an infant's first oral health care visit should be within six months of the eruption of the first primary tooth and no later than twelve months of age. Infant oral health care begins with oral health counseling for parents and must include an oral examination of the child as well as some initial health education.[3]

Almost all the participants (99.64%) agreed that making the child sleep with a baby bottle is not a good practice. The findings were in correlation with Akpabio *et al.*,[8] Watson *et al.*,[6] Al-Hussyeen *et al.*,[7] and Naidu *et al.*[3] Consumption of sweet drinks in bed at night was reported as being a dominant caries risk indicator.[13]

Pediatricians nowadays are strictly discouraging bottle feeding, as it is not considered good for the general health of a child. As parents frequently and compulsorily visit pediatricians for the care of their young ones, positive reinforcement by the pediatricians for avoiding bottle feeding may have been secondarily reflected / helped in developing the positive opinions about its harmful effects on the dental health of a child.

CONCLUSIONS

Parents' understanding was good related to many factors affecting oral health, but there still exist definite lacuna, which need to be considered. As prevention is always better than cure, parents' knowledge can be one of the main key factors in preventing oral diseases and promoting the oral health of their children. There is a need to enhance dental health education activities, targeting parents of preschool age, so that preventive strategies start at an early age.

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