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Parents preferences and willingness towards their children's oral health

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Abstract

Background: Childhood caries may result into severe impairment of both general and oral health. One factor which plays an important role in the development of childhood dental caries is the family. Especially for children under the age of 10, parents can be considered the most important factor in caries prevention. Parents play a fundamental role in the initiation and reinforcement of these oral health-related behaviours. This study aims to evaluate the parental willingness to invest (WTI) in the oral health of their child in terms of money and time and to relate this to oral health behaviour (OHB) aspects.

Methods: A sample of 167, six to seven year old children studying in 1st and 2nd standard were recruited from SVET English School, Attibele, Bangalore. Screening was done to examine the DMFT scores of the Children. A structured parental questionnaires was used to collect data on parents WTI and children OHB.

Results: Results showed that 60% parents supervised their child tooth brushing, 44.2% parents were willing to spend a maximum of 50 to 100 rupee per month to keep their child's mouth healthy, 47.9% were willing to spend 1 to 2 brushing minutes per day, 35.8% were not willing to visit dentist even once a year to maintain good oral health for their child.

Conclusion: Results suggest that children are better off when parents are willing to invest in terms of brushing minutes, money and visit to a dentist per year to maintain good oral health of their children.

Keywords: willingness to invest, children, dental caries, oral health behaviour

1. Introduction

Oral health is an important aspect of overall health and oral diseases, lack of oral hygiene can result in reduced general health, this stresses the importance of maintaining good oral health. The basis for this is laid in childhood and children's oral health can be regarded as the best predictor of oral health in adulthood [1]. Childhood caries may result into severe impairment of both general and oral health. Its prevalence in both developing and industrial countries is relatively high and ranges from 17% to 75% in different countries and populations, therefore Dental caries can be viewed as a relevant public health problem. Dental caries is found to be one of the most prevalent infectious diseases among children. Worldwide, 60 to 90% of all schoolchildren experience one or more carious lesions in their primary teeth and it is unequally distributed throughout all socioeconomic classes, in both developed and developing countries. One factor which plays an important role in the development of childhood dental caries is the family. The family provides the child's proximate home environment that promotes certain oral health-related behaviours, expectations, beliefs and social norms. Parental attributes, parenting practices and overall family functioning all capture components of the family system, yet they are distinct constructs that may differentially influence children's caries experience [4]. In children, however, providing a comprehensive oral health education program is not enough to improve dental health status, especially in a low SES-population. Parents play a fundamental role in the initiation and reinforcement of oral health-related behaviours which are conducive for good oral health. They shape children's behaviours, habits, attitudes and norms from an early age, and they make decisions for their children that can either be conducive or unfavourable for children's oral health [1]. Severe forms of childhood caries in

primary dentition represent a symptom of other pediatric disorders and also reflect lack of adequate care for children. In this context, childhood caries should be addressed from the broader paediatric and public health rather than solely clinical dental standpoint, as viewing it as only a problem of dentists restricts the interest of the society to effectively solve it. Young children largely depend on their parents help in maintaining their oral health. Hence, to prevent dental caries in children, parents need to be willing to invest effort, time, and money. Willingness To Pay" (WTP) is a method used in the field of health economics to measure health benefits in monetary terms. It is a survey-based method in which individuals are asked how much money they are hypothetically willing to pay for improved health, or for a health program, this approach is also known as the contingent valuation method, which has commonly been applied in the field of Economics. The literature on parents WTI in children's oral health is very limited, and it remains unclear whether or how parents WTI plays a role in the prevention of childhood dental caries. Therefore, The aim of the present study is to evaluate the parental willingness to invest (WTI) in the oral health of their child in terms of money and time and to relate this to oral health behavioural aspects^[9].

2. Materials and Methods

This cross sectional study was conducted in Sri Venkateshwara Educational Trust (SVET) English School located in Attibele, Bengaluru with the objectives to evaluate the parents WTI in terms of money, visit to dentist and brushing minutes and to assess the association between parents WTI and a) children dental caries experience, b) children oral hygiene behaviour (OHB).

2.1 Study subjects selection

The study population included 165, six to seven year old children studying in 1st and 2nd standard. The study was conducted over a period of one month from September 2018 to October 2018. Written informed consent was obtained from the parents of the subjects after explaining the nature of the study. The proforma consisted of information about the study and about the voluntary participation of the study subjects. The study was conducted among parents of school children aged between 6 to 7 years studying 1st and 2nd standard in SVET SCHOOL. Parents were informed about the study by letter, which was sent to their home through children. The parents were asked to complete and return an enclosed questionnaire and to provide written consent. Parents who did not respond were reminded after a week. Pilot study was done using open ended question among 20 parents to fix the WTI in terms of money (rupee) per month to keep their child's mouth healthy for the local population.

2.2 Data Collection

Dental caries status (dmft): Screening was done to examine the deft and DMFT scores of the participating Children using Gruebbel's def index (1944) and DMFT index given by Henry T Klien, Carrole E Palmer and Knutson J W IN 1938. The decayed, missing and filled (DMFT) score was obtained by calculating the sum of decayed, missing and filled primary teeth, using data of screened students. The structured parental questionnaire included demographic details like name, age, gender, occupation were recorded along with willingness to invest and oral health behavioural aspect.

2.3 Parents' Willingness to Invest

Parents' WTI in terms of money, dental visits, and brushing

minutes to maintain good oral health for their child (the health outcome being valued) was measured using three questions in the parental self-administered questionnaire. The three questions were closed-ended questions, containing predefined response options.

"What is the maximum you are willing to spend to keep your child's mouth healthy. . ."

1. ". . .in terms of Rupee per month (response options: '0 rupee per month', '50 - 100 permonth', '100 - 200 per month', or 'more than 200 per month')?"
2. ". . .in terms of dental visits per year (response options: '0 visits', '1-2 visits', '3-4 visits', or 'more than 5 visits')?"
3. ". . .in terms of tooth brushing minutes per day (response options: '0 minutes', '1-2 minutes', '3-4 minutes', or 'more than 4 minutes')?"

2.4 Oral Health Related Behavior

Oral hygiene-habits and dietary habits of the parents and their children were also investigated. It was asked how many times the parents themselves brush their own teeth and their children's teeth. Parents had to indicate how difficult they perceived brushing their children's teeth to be (on a VAS scale from 0 (not difficult at all) to 10 (extremely difficult)). Furthermore, fluoride-use as well as usual toothpaste type was asked. Concerning dietary behaviour, parents were asked whether they and their child usually ate the common meals of breakfast, lunch and dinner (separately asked) as well as the usual number of in-between-meal snacks.

2.5 Statistical Analysis

Statistical Package for Social Sciences [SPSS] for Windows, Version 22.0 Released 2013 Armonk, NY: IBM Corp., will be used to perform statistical analysis. Chi square Test was used to compare the responses of the study participants to the questionnaire based on their important socio demographic & other study related characteristics like oral hygiene behaviour and willingness to invest. The level of significance set at $P < 0.05$.

3. Results & Discussion

In this present study, WIT was associated with oral health behaviour in terms of money and time to maintain good oral health for their child. Among 165 participants, 51.5% were 6 years and 48.5% were 7 years of age with 64% of boys, about 17% of them belonged to the upper middle class, about 25.5% of them belonged to the upper lower class and about 57.6% of them belonged to the lower middle class according to Kuppuswamy scale. (Table 1)

Many parents reported favourable oral hygiene behaviours: 55.8% children brushed their own teeth atleast once a day, 30% reported that their child's teeth were brushed twice per day, 39% of them are brushed by their parents on a regular basis atleast once a day. 60% parents always supervised their child's teeth brushing, 40.6% were using children fluoridated toothpaste, almost 47% parents felt little easy to brush their child's teeth. It was also found that 42% of children ate 1 to 5 in-between-meal snacks per day, while 1.2% ate more than 5 per day. Parents who were willing to pay a maximum of 50-100 rupee was found to be 44.2% and 20.6% willing to pay 100-200 rupee a month, 48% were willing to brush their child's teeth 1-2 minutes a day and 21% more than 4 minutes. 42% were willing to visit dentist at least 1-2 times per year dental visit per year to maintain good oral health for their child. (Table 2).

The mean DMFT (1.70) was higher in children of parents who were not willing to pay any money, compared to children whose parents were willing to pay atleast 50-100 rupee (DMFT -1.55), which is statistically not significant with p value 0.75. (Table 3)

Childrens with parental WTI in terms of zero brushing minutes had higher mean DMFT (1.97) compared to > 4 brushing minutes (1.33) which is statistically significant with p value 0.008. (Table 4)

A higher parental WTI in terms of dental visits per year was associated with a higher mean deft: children of parents who were willing to visit the dentist at least 1-2 times per year had less dental caries (DMFT - 1.39) than children whose parents were not willing to visit Dentist, which is statistically not significant with p value 0.68 (Table 5)

Most of the parents in this study were willing to invest money and time to maintain good oral health for their child. This may indicate that parents value a healthy dentition for their children, and that there is general acceptance among parents to invest personal effort in the prevention of children's oral diseases. In our study 51.5% of the samples belongs to 6 years and about 48.5% to 7 years. This age group was chosen, first because at this stage parents still play an important role in the oral health of children of this age, and second because enough time had passed for dental caries to potentially develop in the primary teeth, and the permanent teeth had not yet or just been erupted^[2]. Most of the study participants belongs to lower and upper middle class socio economic status and none of them belonged to lower socio economic status as every participant was residing in urban area and this study was conducted in a private educational institute. Oral hygiene behaviour was more favourable among 48% children whose parents were willing to invest more brushing time. 60% parents always supervised their child's tooth brushing, 30% reported that their child's teeth were brushed twice per day, 56% reported that their child's teeth were brushed once per day, almost 40% parents used fluoridated tooth paste for their child as most of the parents visited dentist atleast once annually and were having better oral health knowledge. If parents are willing to brush more minutes a day, they ensure better oral hygiene for their child with a higher tooth brushing frequency, and regular supervision or re-brushing, this result was similar to the study done by Berendsen J *et al.*^[1] 44.2 % parents were willing to pay a maximum of 50-100 rupee a month, 47.9% brush their child's teeth 1-2 minutes a day and 29.1 percent 3-4 minutes, In this study 47.9% parents were willing to visit dentist twice a year to maintaining good oral

health for their child where as the study done by Vermaire J H *et al.*^[4] showed one fifth of the parents were unwilling to spend any money to maintain good oral health for their children which was found similar to our study. In this study a positive relation between the investments in time and money indicates that parents with a higher financial willingness to invest also showed to be more willing to invest time. 35% parents were unwilling to visit the dentist for preventive measures atleast once a year as most of the parents in this study come under lower socioeconomic status and themselves are not aware of oral health and its importance. The children of this group of parents certainly may be at higher risk of developing oral diseases because, besides the fact that their parents are unwilling to invest time and money in their oral health, they may also appeared to have the deleterious oral hygiene habits and dietary habits. When DMFT was considered, an unfavourable outcome (mean DMFT of 1.70) was identified in children of parents with a lower willingness to invest. The mean DMFT (1.97) in children of Parents who were not willing to invest more time in terms of brushing minutes, these children are in higher risk group in developing dental caries. Parents who were willing to invest more brushing minutes showed less mean DMFT score (1.15) compared to those who invested less brushing minutes, 48% were willing to brush their child's teeth 1-2 minutes a day and 21% more than 4 minutes, it shows increase in knowledge and concern about oral health of their children. where as study done by Berendsen J *et al.*^[1] showed a higher parental WTI in terms of money and dental visits was associated with higher levels of dental caries in children. Our results indicate a clear challenge for oral health prevention: to reach those children whose parents are apparently unwilling to invest time, money and effort for their oral health. A possible proposed option would be to improve parental knowledge on dental health and risk factors which, in turn, could improve willingness to invest in oral health of their children.

Major limitation is that the WTI method is prone to response biases; that the measured WTI could systematically deviate from an individuals' true valuation. Parents' WTI was measured using closed-ended questions, where parents had to indicate their maximum WTI from predefined ranges of values. Future studies should control for other important confounders, such as income and parental attitudes which may differ from each socio economic status.

3.1 Tables

Table 1: Distribution of Socio-demographic details among study participants

	Category	n	%
Age of child	6 Years	85	51.5%
	7 Years	80	48.5%
Gender	Males	106	64.2%
	Females	59	35.8%
Socio economic status	Upper	0	0.0%
	Upper Middle	28	17.0%
	Lower Middle	95	57.6%
	Upper Lower	42	25.5%
	Lower	0	0.0%

Table 2: Distribution of parents WTI in terms of money, visit to dentist and brushing minutes

Question	Category	n	%
How much are you willing to pay(in rupee) every month to keep your child’s mouth healthy	0 Rupees	20	12.1%
	50-100 Rupees	73	44.2%
	100-200 Rupees	34	20.6%
	> 200 Rupees	38	23.0%
How many minutes are you willing to brush your child’s teeth yourself everyday	0 min	3	1.8%
	1-2 min	79	47.9%
	3-4 min	48	29.1%
	> 4 min	35	21.2%
How many times are you prepared to visit a dental clinic every year to keep your child’s mouth healthy	0 times	59	35.8%
	1-2 times	69	41.8%
	3-4 times	15	9.1%
	> 5 times	22	13.3%

Table 3: Comparison of mean deft scores with the parents Willingness to Invest in terms of Money

WTI	N	Mean deft	SD	Min	Max	P-Value
0 Rupees	20	1.70	1.87	0	5	0.75
50-100 Rupees	73	1.55	1.68	0	6	
100-200 Rupees	34	1.74	1.31	0	4	
> 200 Rupees	38	1.63	1.44	0	5	

Table 4: Comparison of mean deft scores with parents tooth brushing minutes for their children

Brushing Mins	N	Mean deft	SD	Min	Max	P-Value
0 min	3	1.97	1.609	0	6	0.008*
1-2 min	79	1.51	1.38	0	5	
3-4 min	48	1.15	1.557	0	6	
> 4 min	35	1.33	1.155	0	2	

* - Statistically Significant

Note: Mean deft scores are significantly higher in the group with 0 min brushing time spent as compared to 3-4 mins and > 4 mins groups at P=0.01 & P=0.03 respectively.

Table 5: Comparison of mean deft scores with parents willingness to visit dentist

Visit to dentist	N	Mean deft	SD	Min	Max	P-Value
0 times	59	1.85	1.789	0	6	0.68
1-2 times	69	1.39	1.331	0	4	
3-4 times	15	1.73	1.71	0	5	
> 5 times	22	1.68	1.555	0	6	

4. Conclusions

This study showed that, parents who are willing to spend 3 to 4 minutes per day to brush their child’s teeth showed less caries levels. Information that parents are willing to invest in the oral health of their children can be useful for the dental professional in order to increase the effectiveness of their efforts to improve oral health in their pediatric patients. Since parents are responsible for the oral health of their young children, the results of this study may suggest that children are better off when parents are willing to invest in self-care, rather than in money or dental visits.

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