

PARENTS WILLINGNESS TO INVEST IN THEIR CHILDREN'S ORAL HEALTH IN TERMS OF MONEY, TIME AND ITS ASSOCIATION WITH PARENTAL EDUCATION – A CROSS-SECTIONAL STUDY.

Dentistry

Dr Khechari A Chavan*

Senior Lecturer, Guru Nanak Institution Of Dental Sciences And Research, Kolkata.*Corresponding Author

Dr Radha Prashanth

HOD, V S Dental College And Hospital, Bangalore.

Dr Sudipto Saha

Chief Dentist, Pristine Dental, Kolkata.

ABSTRACT

Oral health in children is basically influenced by parents. Willingness to pay (WTP) is a survey-based method that can be used to evaluate the acceptability of new treatment modality. The aim was to assess the parent's willingness to invest in their children's oral health in terms of money, time and its association with parental education. A cross-sectional study was conducted among 230, five to six-year-old children visiting a dental college and hospital in Bangalore with their parents. A self-administered questionnaire was used among parents and caries status was recorded by def index by Gruebbel AO. The def score was significantly < 5 among children whose parents were willing to pay more than INR 100, visit the dentist more than 3 times a year and spend around 5-6 minutes on brushing. Parental education was significantly associated with willingness to invest in terms of time, money and visits to the dentist.

KEYWORDS

willingness to invest, education, money, time, children, parental

INTRODUCTION:

Oral health is a prime aspect of overall health. The dental health of the children is basically influenced by parents, both in terms of health behaviour activities such as tooth brushing, managing healthy dietary practices and routines, and deciding whether their child regularly visits the dentist (Elison et al. 2014; Vermaire et al. 2012).

Several psychological models showed the importance of parental health habits, attitudes, and lifestyles for the oral health of their children dentist (Elison et al. 2014; Östberg et al. 2014; Vermaire et al. 2012). Hence, to maintain good oral hygiene in children, parents need to be willing to invest, time, and money (Berendsen et al. 2018; Östberg et al. 2014).

Generally, high costs are known to be a barrier to the utilization of dental care. "Willingness To Pay" (WTP) has shown to be a valid approach to measure parents' preferences among dental care programmes (Berendsen et al. 2018; Mubarak et al. 2017; Nair et al. 2016; Tianviwat et al. 2008). Hence, the study aims to assess the parent's willingness to invest in their children's oral health in terms of money, time and association with parental education.

SUBJECTS AND METHODS:

A cross-sectional study was conducted among five to six-year-old children who were visiting a dental college and hospital in Bangalore with their parents. The sample size was estimated to be 230, based on prevalence of previous study. Children who are willing to participate and parents who gave informed consent were included in the study. Specially able children, children with other systemic illness were excluded from the study.

A self-administered questionnaire was used among parents questions were adopted and modified from Berendsen (2018). Willingness to invest questions were adopted and modified from the questionnaire developed by Vermaire (2012). Questions were translated into local language.

Caries status was recorded among 230, five to six-year-old children, by one trained investigator using the def index given by Gruebbel AO (1944). This age group was selected because parents still play an important role in the oral health of children in this age.

Statistical analysis was done using package SPSS version 19.0. Descriptive statistics: Means, Standard deviation and Frequency table. Chi-square test and regression analysis. Statistical significance was determined at $P < 0.05$.

RESULTS:

All children in the study were aged 5 to 6 years, table no. 1 gives us the demographic details of the study subjects 116(50.5%) were girls.

About 26.5% of the mothers among the study subjects had education less than high school, and nearly 30.4% of the fathers among the study subjects had education less than high school.

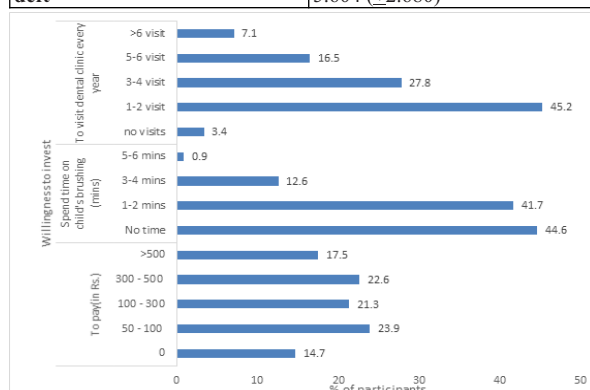
Table 1: Distribution of study subjects based on the demographic data

Category	Number (n)	Percentage (%)
Gender:		
Male	114	49.5
Female	116	50.5
Total	230	100
Mothers' Education:		
Illiterate – High school	61	26.5
Pre-university diploma - Masters	169	73.4
Total	230	100
Fathers' Education:		
Illiterate – High school	70	30.4
Pre-University diploma - Masters	160	69.5
Total	230	100

The mean decay, extraction and filling scores among the study subjects were 3.8 ± 2.20 , 1.7 ± 1.03 and 2.1 ± 1.02 respectively. The mean def score was found to be 5.6 ± 2.68 , this is seen in table 2.

Table 2: Distribution of study subjects based on the mean def score

Criteria:	Mean ($\pm$ SD)
d	3.841 ($\pm$ 2.208)
e	1.794 ($\pm$ 1.032)
f	2.116 ($\pm$ 1.026)
deft	5.604 ($\pm$ 2.680)



Graph 1: Distribution of study subjects based on their willingness to invest

The response to WTI, most study subjects around 196(85.3%) of them were Willingness to pay (in INR) towards their children's oral health. Of which 55(23.9%) and 40(17.5%) of the study subjects were willing to pay INR 50 to INR 100 and INR >500 respectively. Nearly 103(44.6%) of the study subjects were not willing to spend any time on their children's brushing. Around 96(41.7%) and 29(12.6%) of them were willing to spend 1 – 2 minutes and 3 – 4 minutes respectively. Majority of the study subjects 222(96.6%) were willing to visit the dentist of which around 104(45.2%) and 16(7.1%) were willing for 1 – 2 visits and >6 visits respectively in graph 1.

Among study subjects willing to pay INR >500 (n 40) on children's oral health, nearly 32(80%) of mothers and 36(90%) of fathers had education more than pre-university, Diploma, had 35(87.5%) children with def scores <5. Among study subjects not willing to visit the dentist (n 8) nearly, 3(37.5%) of the mothers and 4(50 %) of fathers had education less than high school and all most all the children 8(100%) had def score ≥5. Among study subjects willing to spend 5-6 mins (n 2) on children brushing, almost all the mothers and fathers 2(100%) were educated more than pre-university, degree and had all the children 2(100%) with def score <5, these results were found to be statistically significant seen in table 3.

Table 3: Association of parent's education, def score with willingness to invest

	Mother's education			Father's education			def score		
	Illiterate-high school (n=61)	Pre-university diploma – masters (n=169)	#p value	Illiterate-high school(n=70)	Pre-university diploma – masters(n=160)	p value	<5 (n=125)	≥5 (n=105)	#p value
Willingness to pay (in rupees)									
0 (n=34)	12 (35.3)	22 (64.7)	0.0001*	14 (41.1)	20 (58.9)	0.0001*	7 (20.6)	27 (79.4)	0.0001*
50-100 (n=55)	20 (36.3)	35 (63.7)		23 (41.8)	32 (58.2)		18 (32.7)	37 (67.3)	
100-300 (n=49)	14 (28.6)	35 (71.4)		19 (28.6)	30 (71.4)		30 (61.2)	19 (38.8)	
300-500 (n=52)	7 (40.3)	45 (86.3)		10 (38.8)	42 (61.2)		35 (67.3)	17 (32.7)	
>500 (n=40)	8 (20)	32 (80)		4 (10)	36 (90)		35 (87.5)	5 (12.5)	
Willingness to visit the dentist									
No visit (n=8)	3 (37.5)	5 (62.5)	0.0001*	4 (50)	4 (50)	0.0001*	0	8 (100)	0.0001*
1-2 visit (n=104)	27 (25.9)	77 (74.1)		31 (29.8)	73 (70.2)		43 (41.4)	61 (58.6)	
3-4 visit (n=64)	18 (28.2)	46 (71.8)		18 (28.2)	46 (71.8)		35 (54.7)	29 (45.3)	
5-6 visits (n=38)	10 (26.4)	28 (73.6)		14 (36.8)	24 (63.2)		32 (84.2)	6 (15.8)	
>6 visits (n=16)	3 (18.7)	13 (81.3)		3 (18.7)	13 (81.3)		15 (93.7)	1 (6.3)	
Willingness to Brush (minutes)									
No time (n=103)	33 (32.1)	70 (67.9)	0.0001*	21 (20.4)	82 (79.6)	0.0001*	27 (26.3)	76(73.7)	0.0001*
1-2 minute (n=96)	14 (14.6)	82 (85.4)		25 (26.1)	71 (73.9)		73 (76.1)	23 (23.9)	
3-4 minute (n=29)	14 (48.3)	15 (51.7)		24 (82.8)	5 (17.2)		23 (79.3)	6 (20.7)	
5-6 minute (n=2)	0	2 (100)		0	2 (100)		2 (100)	0	

* chi-square test, † significant at p < 0.05

Matthews (2002), Birch (2004), Augusti (2014).

In the present study parents who were willing to invest more money and time in the children's oral health had the less def score and this result was statistically significant. Which was found to be in contrast with the previous studies conducted by Berendsen (2017) Kesztyus (2014) and Oscarson (2007) who confirmed that those affected with a disease – namely obesity and dental caries, respectively are more likely willing to pay, which can be explained that individuals who have experienced the condition tend to have higher valuations of the condition than those who have not experienced the condition.

The finding of this study has some limitations. An important limitation is that the WTI method is prone to response bias, that is the measured WTI could systematically deviate from an individuals' true valuation

DISCUSSION:

The posed questions aimed to explore the maximum investments parents were willing to make. In the present study we found that nearly all parents were willing to invest in their children's oral health to maintain good oral health, this was found per a previous study conducted by Bendersen (2018), Pradeep (2021) and Van Spreuwel (2021).

In the present study, it was found that more than half of the parents were educated more than pre-university degree and were willing to invest money and time, these results were found to be statistically significant, this was not by the previous studies conducted by Mubarak (2017) where the demographic variables such as parents education did not play a role in willingness to pay.

Whereas other studies conducted by Vernazza (2018) and van Helvoort-Postulart (2009) suggested that parental education has been an influencing factor and WTI was higher in parents with a higher education level, in accordance with Tianviwat (2008), Leung and McGrath (2010), Van der Tas JT (2016), Wigen (2010), from the literature, it is known that children from lower-educated parents have a higher risk of dental caries compared to children from higher educated parents background. This was not by the studies conducted by

on hypothetical situation when it comes to dental treatment.

REFERENCES:

- Augusti D, Augusti G, Re D. 2014. "Prosthetic restoration in the single-tooth gap: patient preferences and analysis of the WTP index." Clin Oral Implan Res. 25(11):1257–1264.
- Berendsen J, Bonifacio C, van Gemert Schriks M, van Loveren C, Verrips E, Duijster D. 2018. "Parents' willingness to invest in their children's oral health." Journal of Pre-university health dentistry. 78(1):69-77.
- Birch S, Sohn W, Ismail AI, Lepkowski JM, Belli RF. 2004. "Willingness to pay for dentin regeneration in a sample of dentate adults." Community Dent Oral Epidemiol. 32(3):210–216.
- Elison S, Norgate S, Dugdill L, Pine C. 2014. "Maternally perceived barriers to and facilitators of establishing and maintaining tooth-brushing routines with infants and preschoolers." International journal of environmental research and Pre-university health. 11(7):6808-26.
- Grubbel AO. 1944. "A measurement of dental caries prevalence and treatment service for deciduous teeth." Journal of Dental Research. 23(3):163-8.
- Kesztyus D, Lauer R, Schreiber AC, Kesztyus T, Kilian R, Steinacker JM. 2014.

- "Parents' willingness to pay for the prevention of childhood overweight and obesity." *Health Econ Rev.* 4:20.
7. Leung KC, McGrath CP. 2010. "Willingness to pay for implant therapy: a study of patient preference." *Clin Oral Implan Res.* 21(8):789-793.
 8. Matthews D, Rocchi A, Gafni A. 2002. "Pre-universitytting your money where your mouth is—willingness to pay for dental gel." *Pharmacoeconomics.* 20(4):245-255.
 9. Mubarak S, Abubotain S, AlDhahri S, AlGhamdi R, AlOtaibi R, Pani S. 2017. "Willingness of Parents to Pay for Space Maintainer Therapy for their Children." *EC Dental Science.* 9:94-8.
 10. Nair R, Yee R. 2016. "Differences in willingness to pay for an extraction, a filling, and cleaning teeth at various levels of oral health-related quality of life, as measured by oral impacts on daily performance, among older adults in Singapore." *Singapore dental journal.* 37:2-8.
 11. Oscarson N, Lindholm L, K€allesta. 2007. "The value of caries preventive care among 19-year-olds using the contingent valuation method within a cost-benefit approach." *Community Dent Oral Epidemiol.* 35:109-17.
 12. Östberg AL, Skeie MS, Skaare AB, Espelid I. 2017. "Caries increment in young children in Skaraborg, Sweden: associations with parental sociodemography, health habits, and attitudes." *International journal of paediatric dentistry.* 27(1):47-55.
 13. Pradeep N, Murthy AK, Shwetha R, Shilpashree KB. 2021. "Parents preferences and willingness towards their children's oral health." *Int J Appl Dent Sci.* 7:441-4.
 14. Tianviwat S, Chongsuvivatwong V, Birch S. 2008. "Prevention versus cure: measuring parental preferences for sealants and fillings as treatments for childhood caries in Southern Thailand." *Health Policy.* 86(1):64-71.
 15. van Helvoort-Postulat D, Dirksen CD, Kessels AGH, van Engelshoven JMA, Hunink MGM. 2009. "A comparison between willingness to pay and willingness to give up time." *Eu J Health Econ.* 10:81-91.
 16. Van der Tas JT, Kragt L, Veerkamp JJ, Jaddoe VW, Moll HA, Ongkosuwito EM, Elfrink ME, Wolvius EB. 2016. "Ethnic disparities in dental caries among six-year-old children in the Netherlands." *Caries Res.* 50:489-97. 26.
 17. van Spreuwel PC, Jerković-Ćosić K, van Loveren C, van der Heijden GJ. 2021. "Parents' willingness to invest in primary oral health prevention for their preschool children." *International Journal of Environmental Research and Pre-universityblic Health.* 18(21):11437.
 18. Vermaire JH, Van Exel NJ, Van Loveren C, Brouwer WB. 2012. "Pre-universitytting your money where your mouth is: Parents' valuation of good oral health of their children." *Social Science & Medicine.* 75(12):2200-6.
 19. Vernazza CR, Anderson L, Hunter AI, Leck HC, O'Connor SD, Smith GR, Stokes RJ, Rolland SL. 2018. "The Value of Orthodontics: Do Parents' Willingness-to-Pay Values Reflect the IOTN?" *JDR Clinical & Translational Research.* 3(2):141-9.
 20. Wigen TI, Wang NJ. 2010. "Caries and background factors in Norwegian and immigrant 5-year-old children." *Community Dent Oral Epidemiol.* 38:19-28. 27.