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Assessment of Investment willingness by Parents in Primary Oral Health Care of Preschool Children in Sulaymaniyah Governorate: A Prospective Study

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Abstract

Background and objectives: Preservation of the primary dentition is crucial for the overall health of children and the subsequent permanent teeth. Investment in primary dentition by families plays an important role in oral health promotion. The study aims to assess the willingness of parents to invest in the oral health of preschool children in the Sulaymaniyah governorate.

Methods: A cross-sectional study was conducted at different geographical locations in Sulaymaniyah, Kurdistan Region, Iraq, from January through July 2023. A structured questionnaire was distributed to be answered by three hundred sixty-eight parents. The questionnaire focused on the desire to invest money and time in preschool children`s dental health in addition to the demographic information, perceptions, knowledge, and behaviors of the participants that related to children's oral health.

Results: Despite their education, the 368 parents showed unwillingness to invest money (64.04%) in their children`s oral health in contrast to the investment in time by visiting dentist 1-2 visits/year (71.70%) and brushing teeth 1-3 min/day (60.90%). With p value= 0.271, This suggests that there are no significant associations between the education level of parents and willingness to pay, p value = 0.019 which is an indication of a statistically significant relation between investment in time and the education level of parents.

Conclusions: Parents with regular teeth brushing behavior showed a significant willingness for investment, yet, working on the upper stream to advocate this subject, and tackling parents` responsibilities about children's oral health are needed.

Keywords: Early childhood dental health, Parents, Primary dentition, Sulaymaniyah Governorate, Willingness to invest in time, Willingness to pay

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Introduction

Oral diseases are shared all over the globe and may seriously impair one's entire quality of life by having a severe negative impact on one's health and financial well-being.[1] Preschool children rely on parents for health routines, cleanliness, and oral hygiene, with parental involvement crucial for preventing dental caries.[2] Preschool dental problems are associated with socioeconomic factors and other family-level determinants.[3] Health benefits are one example of a non-market commodity or service that may be valued using the willingness-to-pay (WTP) method.[4] The willingness to pay WTP is the highest monetary value that a person is theoretically prepared to allocate to acquire the advantages of a health program, specifically in terms of enhanced health.[5] Parents' readiness to offer financial resources to WTP and their willingness to invest their time in (WTIT) are equally important in preventive dental treatment, particularly for preschool-aged children.[6] Notably, there are differences between WTIT for home maintenance (like brushing your teeth) and WTIT for professional medical treatment (like dental exams).Willingness to pay for WTP studies is becoming more popular in dentistry. However, not many have looked at how ready parents are to pay to keep their kids' teeth from getting cavities. [7-11] Tianviwat et al. looked at the WTP of Thai parents of elementary school-aged children and compared how much they were willing to pay for preventative measures like sealing programs and treatment choices like filling programs.[7] The study didn't find a big difference between these two types of programs. This suggests that parents' choices might make it harder to keep kids from getting cavities in school. Similarly, Walshaw et al. found that WTP values are different among parents of children aged six to sixteen in Brazil and the UK. These differences are caused by a mix of demographic, social, cultural, and behavioral factors.[8] Along with WTP, two studies also looked at WTIT, which stands for "willingness to invest time." WTIT includes things like cleaning your teeth every day and going to the dentist once a year. In a study by Berendsen et al. they discovered that kids ages five to six whose parents liked to spend money and take them to the dentist more often had more damaged, lost, and filled teeth. On the other hand, kids whose parents were more dedicated to brushing their teeth every day had much lower usual levels of dental cavities.[10] This means that kids' oral health is more likely to be good when their parents make time for self-care activities.[10] Vermaire et al. also found that 12% of parents didn't want to spend money, brush their child's teeth for more than two minutes every day, or go to the doctor more than once a year.[9] According to these data, it is very hard to improve kids' oral health when parents are not willing to spend the time and money needed to do so.

In the UK, there has only been one poll that asked about this group's preferences. Findings from the poll showed that parents cared more about keeping their kids' permanent teeth cavity-free than their baby teeth.[11] After reviewing the literature, we discovered that there were no similar studies conducted in the region. There is a felt belief in our population that parents pay no attention to the investment in their children's primary oral health care, believing it to be temporary and likely to deteriorate as permanent teeth emerge. Regarding this our research aimed to evaluate the governorate of Sulaymaniyah's parents' readiness to contribute money and time to enhance the dental health of preschoolers.

Methodology

We hypothesize that parents' inclination to invest in primary oral health care for preschool children in Sulaymaniyah Governorate is greatly impacted by several

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attributes, such as their educational attainment, prior exposure to dental care, perceived value in oral health, and parental conduct toward dental hygiene. A multi-stage cluster sampling technique was adopted for the sampling process within randomly chosen areas. In Sulaymaniyah Governorate, 368 parents from urban and suburban locations (City Center, Arbat, and Qalachwalan districts) were selected and participated in collecting the information required for the study via a questionnaire on different days and times. Parents of healthy preschool children (Four months to six years old) were included in the study, while parents of children with mental and other developmental diseases and/or parents who refused to take part in the study were excluded. The open-source calculator Open Epi, Version 3, was utilized to calculate the sample size; the minimum sample size determined was 368 to guarantee a convenient response rate. The following equation was used to determine the sample size: Sample size n = [DEFF*Np(1-p)]/ [(d2/Z21-α/2*(N-1) +p*(1-p)].The sample size for frequency in population size (for finite population correction factor or fpc) (N) is 1000000, Hypothesized % frequency of outcome factor in the population (p) is 40%+/-5 Confidence limits as % of 100(absolute +/- %) (d) is 5% Design effect (for cluster surveys-DEFF) is 1, Sample Size(n) for Various Confidence Levels (%95). From January to July/ 2023, data were collected. The study protocol has been approved by the research ethics committee of the Kurdistan Higher Council of Medical Specialties based on ethical concerns and regulatory criteria with the formal letter dated and numbered (Jan 19th, 2023- 4573). Furthermore, written consent was acquired from each participant before their voluntary involvement in the study and filling out a questionnaire. This made sure that the rights and welfare of the participants were protected during the whole study procedure. This study adopted a modified questionnaire from a prior Netherlands study.[2] The questionnaire covered demographic data, perceptions, knowledge, and behaviors related to children's oral health, as well as their desire to spend money and time on their dental health, The modifications made to the questionnaire were the removal of race as a variable and a change in how we measured the parents' willingness to pay. Instead of measuring willingness to pay with a specific monetary value, we used a simple yes or no response. This decision was made because all participants in the study were Kurdish, and there is significant variation in price for dental services within our country. The validity of the questionnaire was checked and assured after it was translated into Kurdish (the participants' mother language). The Participants were asked to answer the 23-item paper-based questionnaire. The purpose, the procedure of filling out the questionnaire, and the volunteerism of the study are explained to the participants prior to the study's conduction. No pre-study motivation was needed to avoid any bias in the participant's response. The present study is an observational analytical type no interference by the researcher was needed to change the knowledge, attitude, and practice (KAP) of the studied sample. In general, the questionnaire was comprised of the following three sections: Demographic variables (6 items); Perceptions, knowledge, and behavior on the oral health of children (17items); Willingness to invest money and time in their child's oral health (3 items). The analysis was conducted using version 27.0 of the Windows SPSS program. The study employed descriptive and inferential statistical analysis to summarize the outcomes, Categorical variables were presented with counts and percentages. Hypotheses regarding associations and differences among categorical variables were

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evaluated using the chi-square test. Spearman correlation was utilized to measure the correlation between variables. Statistical significance was determined with a threshold of a p value less than or equal to 0.05.

Results

In the Table (1) suggests that willingness to pay varies based on the number of children and the child's rank in the family. Specifically, respondents with fewer children and those with lower-ranked children tend to pay more, with a statistically significant difference.

Table (1): Influence of Family Size and Child Rank on Willingness to Pay for Dental Services by Parents

Variables	Answers	Willingness to pay				P value
		Yes		No		
		Percentage	N0.	Percentage	No	
Number of children	One child	43.80%	39	56.20%	50	0.05
	Two children	37.20%	55	62.80%	93	
	More children	28.20%	37	71.80%	94	
rank of child among the family	1st	46.90%	60	53.10%	68	0.02
	2nd	31.60%	43	68.40%	93	
	3rd	27.30%	18	72.70%	48	
	4th	28.60%	8	71.40%	20	
	5th	20.00%	2	80.00%	8	
Total		35.60%	131	64.40%	237	

There are statistically significant positive associations between (maternal education level, the importance of the child's general health, the importance of the child's oral health, how often you brush your child's teeth) with the willingness to visit the dentist with the child in contrast, the Table (2) suggests a statistically significant negative association between the number of children and the rank of children among the family with a willingness to visit the dentist with the child.

Table (2): Spearman correlation between variables and willingness to visit dentist child

Variables	desire to visit the dentist, the child	P value
Maternal education level	.122	0.019
Number of children	-.142	0.006
rank of child among the family	-.164	0.002
Importance of a child's general health	.242	0.00
Importance of child's oral health	.286	0.00
how often do you brush your child's teeth	.171	0.001

The willingness to visit the dentist with the child shows significant associations with an interest in having extra information about the child's oral health and a desire to pay. In contrast, other factors, such as the respondent's gender, do not show significant associations, Table (3).

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Table (3): Association between Willingness to visit a dentist with a child and variables

Variables	Answers	willingness to visit a dentist with the child						P value
		0 visit/ Year		1-2 visit/ Year		3-4 visit/ Year		
		Percentage	No	Percentage	No	Percentage	No	
Respondent	Mother	22.00%	29	72.70%	96	5.30%	7	0.928
	Father	23.70%	56	71.20%	168	5.10%	12	
Are you interested in having an extra information about child oral health	Yes	23.70%	85	71.50%	256	4.70%	17	0.032
	No	0.00%	0	80.00%	8	20.00%	2	
willingness to pay	Yes	26.00%	34	64.10%	84	9.90%	13	0.004
	No	21.50%	51	75.90%	180	2.50%	6	
Total		23.10%	85	71.70%	264	5.20%	19	

The willingness to pay shows significant associations with the willingness to brush the child's teeth, while other factors such as the respondent's gender and interest in having extra information about the child's oral health do not show significant associations, Table (4) and Figure (1).

Table (4): Association between Willingness to brush child and variables

Variables	Answers	willingness to brush a child's teeth								p value
		0 min /day		1-3 min /day		4-5 min /day		more than 5 min/day		
		Percentage	No.	Percentage	N0.	Percentage	No	Percentage	No	
Respondent	Mother	1.50%	2	61.40%	81	35.60%	47	1.50%	2	0.709
	Father	0.40%	1	60.60%	143	37.70%	89	1.30%	3	
Are you interested in having an extra information about child oral health	Yes	0.80%	3	60.30%	216	37.40%	134	1.40%	5	0.65
	No	0.00%	0	80.00%	8	20.00%	2	0.00%	0	
Willingness to pay	Yes	2.30%	3	61.10%	80	33.60%	44	3.10%	4	0.016
	No	0.00%	0	60.80%	144	38.80%	92	0.40%	1	
Total		0.80%	3	60.90%	224	37.00%	136	1.40%	5	

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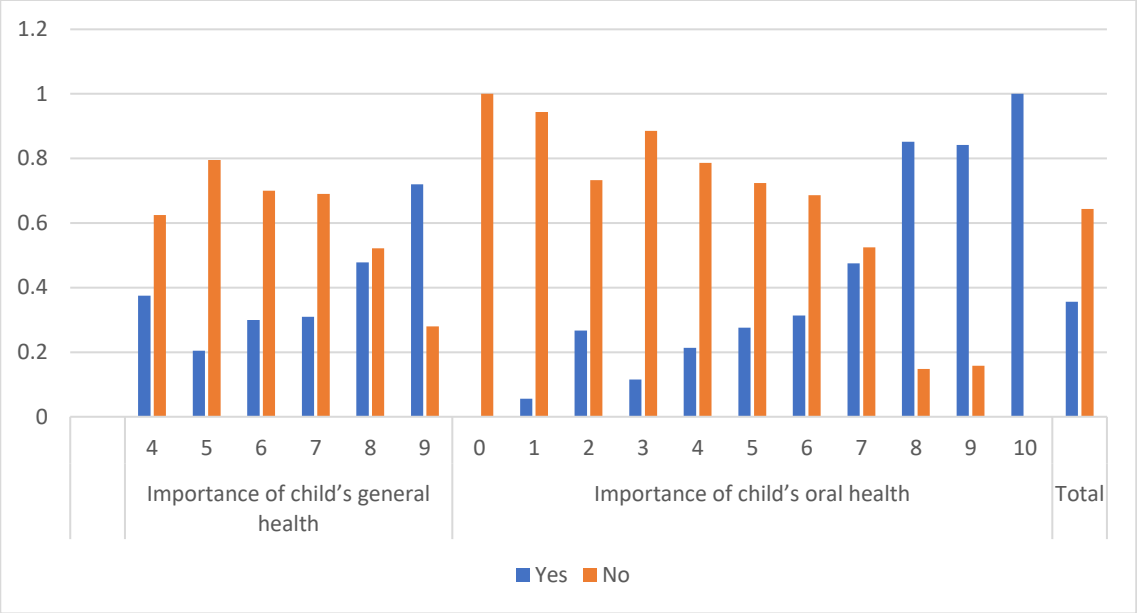

Figure (1): Association between Willingness to Pay for Dental Services and Child's Health by Parents Respondents who perceive their child's general and oral health as more important are generally more willing to pay for primary oral health care for Preschool Children.

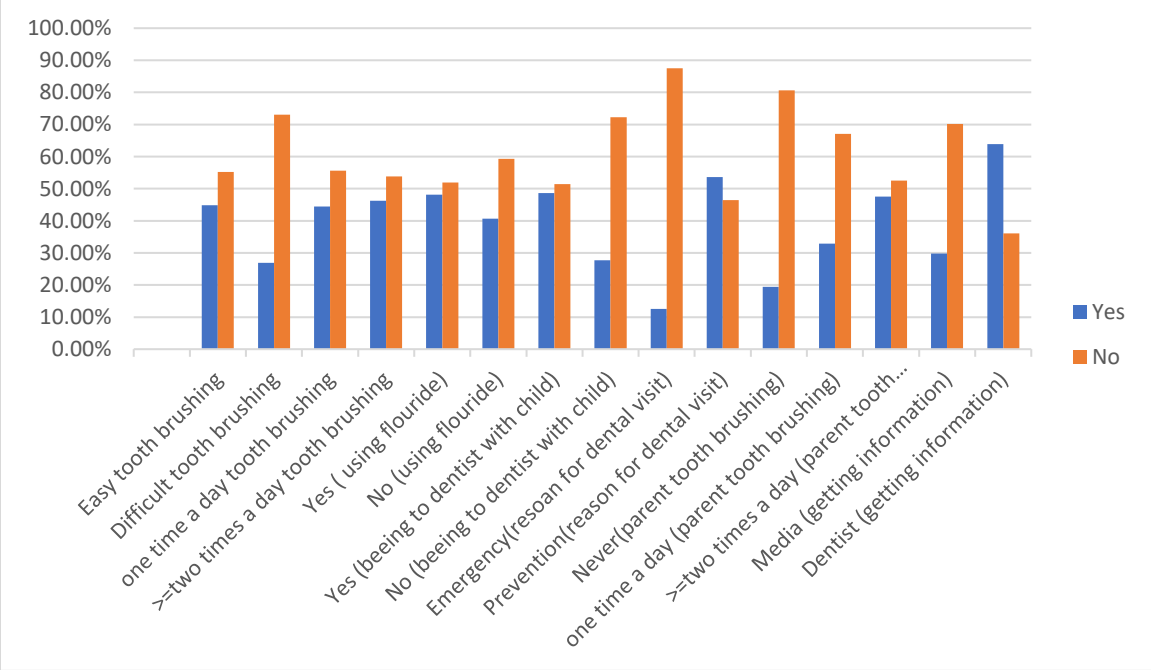

Figure (2): Association between Willingness to Pay for Dental Services and variables

Figure (2) demonstrates that respondents who find it easy to perform tooth brushing activities for their child's teeth show a higher willingness to pay (44.80%) compared to those who find it difficult (26.90%) or do not engage in tooth brushing (30.00%). Respondents who brush their child's teeth never/occasionally or one time a day exhibit a lower willingness to pay (27.60% and 44.40%, respectively) compared to those who

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brush their child's teeth two or more times a day (46.20%). Respondents who use fluoridated toothpaste for their child show a higher willingness to pay (48.10%) compared to those who do not use it (40.70%) or are uncertain (20.30%). Parents who have taken their child to the dentist show a higher willingness to pay (48.60%) compared to those who haven't (27.70%). Respondents whose child's dental visit was for prevention or a check-up demonstrate a higher willingness to pay compared to those whose visit was for emergency reasons or had no reason. Respondents who brush their teeth two or more times a day show a higher willingness to pay (47.50%) compared to those who brush once a day (32.90%) or never (19.40%). Respondents who obtain information from dentists show a higher willingness to pay. (63.90%) compared to those who rely on media (29.80%) or school (40.00%).

Discussion

The point of this study was to look into whether parents of preschool-aged children are willing to spend money on primary oral health protection and whether this readiness is affected by demographic, socioeconomic, and behavioral factors. This study represents is novel attend in the Middle East to investigate WTP and WTIT by parents to prevent dental diseases for their children with primary dentition. This uniqueness presents a challenge when comparing this study with others of the same age group. Previous research on this topic was conducted by Vermaire et al. and Berendsen et al., who concentrated on parents of children involved in clinical trials or visiting a pediatric dentistry clinic. Vermaire et al. examined parents of students aged six to nine, while Berendsen et al. focused on parents aged five to six.[9,10] Another study involved a separate investigation at swimming pools in two major Deutschland, where researchers recruited parents with children aged between six months and four years .[2] Over 50% of parents in the research are reluctant to allocate funds towards preserving good dental health for their children. Only 35.60% of respondents expressed a desire to pay money, which is in stark contrast to the findings of earlier surveys by Van et al. and Berendsen et al. when in both studies nearly all parents showed a willingness to pay for their child's main preventive care.[2,21] In contrast, three quadrants of parents indicated their willingness to bring their children to the dentist biannually and dedicate one to three minutes each day to brushing their child's teeth, which aligns well with the aforementioned research. In contrast to Berendsen et al. and van et al., our research found no association between parents' educational level and their willingness to pay for their child's dental health care.[2,21] However, there was a significant association between parents' education level and visiting the dentist annually. Probably because of the financial statements of the families, families with fewer children tend to prioritize investing in dental care for preschool-aged children, especially if the oldest child is the focus of the research. This investment includes both time and financial resources for regular tooth brushing but this does not include time for annual visits to the dentist and that was in line with findings of previous studies .[17,20] This tendency might stem from a lack of awareness among first-time parents about the importance of regular dental check-ups for preventing cavities or a belief that the optimal age for a child's first dental visit is around six years old, coinciding with the eruption of permanent teeth.[13] Studies done in Saudi Arabia showed that women who went to the dentist often knew more about how they could maintain their children's teeth healthy.[18,19] The results of a prior study also back up the notion that there is a connection between willingness to pay, willingness to invest time in tooth brushing each day, and

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family size. [2]On the other hand, a Berendsen study indicates that larger families are inclined to schedule more frequent dental visits, usually for treatment rather than prevention. [10] People are more likely to spend money on disease or disorder avoidance when they are already exposed to it.[5] Parents who prioritize their children's oral and overall health are more inclined to allocate resources toward primary oral health prevention programs for their preschoolers. This correlation aligns with the findings of a prior study.[2] This research has revealed a strong association between the consistent twice-daily teeth brushing practices adopted by parents for themselves or their children and their inclination to prioritize dental care. Additionally, it has underscored that reduced parental supervision of children's brushing habits diminishes the likelihood of prioritizing investments in dental care. Noteworthy is the emphasis on the ease of a child's toothbrushing routine, as this directly influences parental willingness to invest in dental care, highlighting the crucial role of ongoing parental involvement other studies have also described this phenomenon.[2,9,10] Notably, respondents who utilized fluoridated toothpaste for their children exhibited a heightened readiness to invest in their children's dental care. The present findings are consistent with previous study results.[2, 12, 14, 15] Since this may be indicative of having enough knowledge about proper dental brushing habits. The results of our study show that parents who take their children to the dentist regularly for checkups instead of waiting for emergencies are more likely to invest time and money in keeping their children's teeth healthy. According to the Van et al. study, people in Deutschland get two regular dental visits a year, which are paid for by their government.[2] That may help parents understand how important it is to invest in their child's primary dentition. Since information about dentistry that comes from a dentist is more trustworthy than information that comes from other sources, and according to the findings of our research parents who get knowledge from dentists are more likely to pay for their children's preventive dental care, but this doesn't affect how ready they are to spend time on dental care. Websites and social media make it easy to find medical information, but concern exist about the spread of unreliable news and the lack of validates for non-professional information.[16] This project was carried out with some limitations, Since the study depends on parents' self-expressed data regarding their willingness to pay and dedicate time to their children's oral health care, it may be affected by social desirability bias. Parents might exaggerate their desire to invest to meet perceived social norms or expectations, which could distort the study's findings and limit the reliability of its conclusions. Also, we haven't mentioned sector variables for the parents as we focused on their educational level. Persuading parents to invest in oral health can play an important role in the improvement of the new generation`s oral health and well-being. These results are crucial in emphasizing the importance of primary oral health prevention. The call for collaborative action between pediatricians, healthcare staff, dentists, non-governmental organizations, and media producers is powerful, underscoring the significance of primary oral health care and the collective effort needed to achieve it.

Conclusion

The findings of this study that parents' willingness to invest money in their children's primary oral health care is not influenced by their education level. This contrasts with their desire to invest time in annual dental visits and daily teeth brushing for their children.

Conflicts of interest

The authors report no conflicts of interest.

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