

Parent's Awareness of the Importance of Space Maintainers in Riyadh; A Cross-Sectional Study

Fatmah AlMotawah^{1*}, Namariq Al Thani², Aseel Al Qudrah², Muneera Al Shabi², Yara Jammoul², Misk Al Alwan²

¹Department of Preventive Dentistry, College of Dentistry, Riyadh Elm University, Riyadh, Saudi Arabia. ²College of Dentistry, Riyadh Elm University, Riyadh, Saudi Arabia.

Abstract

Parents' understanding of the dental therapy to retain the deciduous tooth space may influence treatment plans. Parents should be made aware of the consequences of such matters through comprehensive educational initiatives, as well as the preventive measures that can be taken for children during primary or early mixed dentition, as well as the importance of space maintainers in preventing space loss and a variety of malocclusions. To minimize exposure due to COVID-19, data was gathered in Riyadh, through a questionnaire utilizing Google forms and sent to guardians electronically by sending it to their devices. Inclusion criteria include healthy children aged 4 to 12 years old, except special needs children. The majority of parents said their kids didn't lose any teeth because of caries and don't know what'd happen if space is ignored. The majority of them thought adjacent teeth will tilt if there'd be no space maintainers. A high proportion had never heard about space maintainers and their dentists also didn't advise those regarding maintainers. The awareness level about space maintainers among Parents living in Riyadh, Saudi Arabia is low and a lesser percentage know about the space maintainers. Dentists are not creating awareness about the importance of space maintainers and the drawbacks associated with leaving a space between teeth empty, without a space maintainer in case of tooth loss.

Keywords: Parents awareness, Space maintainers, Cross-sectional, Orthodontics

INTRODUCTION

Early space loss in primary teeth has been increasing dramatically throughout the years [1-3]. Exfoliation of the primary dentition is a normal physiological process. However, premature loss of primary teeth that is caused by caries, and trauma would lead to mesial migration of the adjacent teeth causing future disruption in the eruption alignment of the permanent dentition [4]. The disturbance of the alignment of permanent teeth will therefore lead to future esthetic issues in adolescence, which will require a costlier and an increase in the treatment duration required for a comprehensive orthodontic appliance. Therefore, the conservation of primary teeth is not only essential for mastication and speech, but also for the guidance of permanent teeth and avoidance of malocclusion [4].

Space maintainers are very important to children in mixed and primary dentition for preventing problems of malocclusion, the parent's awareness of the dental therapy to keep the deciduous tooth space may have an impact on treatment planning. Through comprehensive educational initiatives, parents should be made aware of the consequences that such matters hold, they should be aware of the preventive measure that could be done for children during primary or early mixed dentition and be exposed to the necessities of space maintainers to prevent space loss and many different forms of malocclusion [5]. Parents

should be exposed to the financial benefits of space maintainers as well, by educating the parents about the cost benefits of manufacturing a space maintainer compared to the cost of an orthodontic appliance. It is important to improve parents' attitudes regarding the maintenance of space maintainers [6].

This will be achieved by increasing parents' awareness and knowledge regarding the beneficial function of space maintainers.

Study Hypothesis

The knowledge of parents about the space maintainers is unsatisfactory.

Address for correspondence: Fatmah AlMotawah, Department of Preventive Dentistry, College of Dentistry, Riyadh Elm University, Riyadh, Saudi Arabia. fatmah.almotawah@riyadh.edu.sa

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Aim of the Study

This study aimed to assess and determine the level of parents' knowledge of the importance of space maintainers for their children in Riyadh, in addition to that to improve parents' awareness, which will reflect better care given to the children.

MATERIALS AND METHODS

Data was collected in Saudi Arabia, Riyadh, via a questionnaire using Google forms that were delivered to the guardians electronically by sending to their devices to avoid

exposure. The reliability of the questionnaire was measured by achieving Chronbach's alpha value: of 0.729, which is good in terms of continuing to collect data. Inclusion criteria included healthy children between the age of 4-12 years old after taking the guardians' written consent before filling out the questionnaire, with the exclusion of special needs children. 1035 questionnaires were collected within 2 months and the data were analyzed through SPSS V22.

RESULTS AND DISCUSSION

Table 1. Frequency Table

Variable	Frequency Percentage
How often do you take your children to the dentist?	
Regularly (every 6 months)	140(13.5%)
Sometimes (once in 1-2 years)	281(27.1%)
Never	53(5.1%)
When there is an emergency	561(54.2%)
How frequently should children be taken to the dentist?	
Regularly (every 6 months)	554(53.5%)
Sometimes (once in 1-2 years)	321(31%)
Never	20(1.9%)
When there is an emergency	140(13.5%)
Did your child lose any teeth due to caries or trauma?	
Yes	753(72.8%)
No	282(27.2%)
Do you know what will happen if the empty space between teeth is ignored?	
Yes	387(37.4%)
No	648(62.6%)
What do you think will happen to the space if no space maintainers were placed?	
Adjacent teeth will tilt	457(44.2%)
Permanent teeth will erupt	53(5.1%)
Nothing will happen	82(7.9%)
I don't know	443(42.8%)
Have you heard about space maintainers?	
Yes	248(24%)
No	787(76%)
Did your dentist advise you regarding space maintainers?	
Yes	134(12.9%)
No	741(71.6%)
I don't remember	160(15.5%)
Does any of your children use space maintainers?	
Yes	99(9.6%)
No	936(90.4%)
If the space maintainer is lost or broken what is the best time to go to the dentist?	
Immediately	294(28.4%)
Nearest appointment	603(58.3%)
In the annual visit	138(13.3%)
Do you think the space maintainer requires special care with brushing?	
Yes	429(41.4%)
No	97(9.4%)
I don't know	509(49.2%)

Table 2. Comparison across Age groups

Variable	4-6 years	7-9 years	10-12 years	P value
Nationality				
Saudi	45.4%	33.6%	42%	
Non-Saudi	54.6%	66.4%	58%	.000

Education level of Parents				
High school or below	14.5%	8.5%	17.2%	.000
University	71.5%	84.8%	63.9%	
Higher educational level	14.1%	6.7%	18.9%	
Profession of Parents				
Health Professionals Field	16.5%	15.2%	18.5%	.000
Other Field	68.7%	76.3%	67.3%	
None of the above	14.8%	8.5%	14.2%	
How often do you take your children to the dentist?				
Regularly (every 6 months)	15.2%	9.9%	16.8%	.000
Sometimes (once in 1-2 years)	28.1%	24.2%	30.1%	
Never	8.4%	2.8%	5.7%	
When there is an emergency	48.2%	63.1%	47.4%	
How frequently should children be taken to the dentist?				
Regularly (every 6 months)	56.2%	50.5%	55.4%	.000
Sometimes (once in 1-2 years)	27.7%	42.2%	19.6%	
Never	0.8%	1.6%	3.1%	
When there is an emergency	15.3%	5.8%	21.9%	
Does your child lose any teeth due to caries or trauma?				
Yes	69.1%	77.6%	69.3%	.011
No	30.9%	22.3%	30.7%	
Do you know what will happen if the empty space between teeth is ignored?				
Yes	42.5%	24.6%	49.4%	.000
No	57.4%	75.4%	50.6%	
What do you think will happen to the space if no space maintainers were placed?				
Adjacent teeth will tilt	53.4%	27.8%	57.6%	.000
Permanent teeth will erupt	4%	6.2%	4.5%	
Nothing will happen	6.8%	11.4%	4.5%	
I don't know	35.7%	54.6%	33.2%	
Have you heard about space maintainers?				
Yes	27%	15%	33%	.000
No	73%	85%	67%	
Did your dentist advise you regarding space maintainers?				
Yes	13.4%	8.6%	17.9%	.000
No	70.6%	78.1%	64.2%	
I don't remember	16%	13.3%	17.9%	
Does any of your children use space maintainers?				
Yes	12%	6.2%	11.9%	.008
No	88%	93.8%	88.1%	
If the space maintainer is lost or broken what is the best time to go to the dentist?				
Immediately	34.5%	17.5%	37.5%	.000
Nearest appointment	55.8%	66.6%	49.7%	
In the annual visit	9.7%	15.9%	12.8%	
Do you think the space maintainer requires special care with brushing?				
Yes	50.2%	26.5%	53.7%	.000
No	6.4%	14.3%	5.4%	
I don't know	43.4%	59.2%	40.9%	

Table 3. Comparison across Education level of Parents

Variable	High school or below	University	Higher Level	P value
How often do you take your children to the dentist?				
Regularly (every 6 months)	14.2%	8.9%	18.8%	.000
Sometimes (once in 1-2 years)	29.1%	25.2%	28.1%	
Never	7.4%	3.8%	4.7%	
When there is an emergency	49.2%	62.1%	48.4%	
How frequently should children be taken to the dentist?				
Regularly (every 6 months)	54.2%	51.5%	54.4%	.000
Sometimes (once in 1-2 years)	28.7%	41.2%	18.6%	

	Never	1.8%	2.6%	5.1%	
	When there is an emergency	15.3%	4.8%	21.9%	
Does your child lose any teeth due to caries or trauma?					
	Yes	67.1%	75.6%	68.3%	
	No	32.9%	24.3%	31.7%	.007
Do you know what will happen if the empty space between teeth is ignored?					
	Yes	43.5%	25.6%	48.4%	
	No	56.4%	74.4%	51.6%	.000
What do you think will happen to the space if no space maintainers were placed?					
	Adjacent teeth will tilt	52.4%	26.8%	56.6%	
	Permanent teeth will erupt	5%	7.2%	5.5%	
	Nothing will happen	6.8%	10.4%	5.5%	.000
	I don't know	35.7%	55.6%	32.2%	
Have you heard about space maintainers?					
	Yes	27%	16%	34%	
	No	73%	84%	66%	.000
Did your dentist advise you regarding space maintainers?					
	Yes	12.4%	8.6%	16.9%	
	No	71.6%	79.1%	65.2%	.000
	I don't remember	16%	12.3%	17.9%	
Does any of your children use space maintainers?					
	Yes	12%	7.2%	12.9%	
	No	88%	94.8%	87.1%	.009
If the space maintainer is lost or broken what is the best time to go to the dentist?					
	Immediately	34.5%	16.5%	36.5%	
	Nearest appointment	54.8%	66.6%	50.7%	.000
	In the annual visit	10.7%	14.9%	12.8%	
Do you think the space maintainer requires special care with brushing?					
	Yes	51.2%	27.5%	54.7%	
	No	6.4%	14.3%	6.4%	.000
	I don't know	42.4%	58.2%	40.9%	

Table 4. Comparison of Income

Variable	Low	Medium-low	Medium-high	High	P value
How often do you take your children to the dentist?					
Regularly (every 6 months)	15.2%	10.9%	19.8%	15.8%	
Sometimes (once in 1-2 years)	30.1%	23.2%	27.1%	31.1%	
Never	8.4%	4.8%	5.7%	4.7%	.000
When there is an emergency	47.2%	61.1%	47.4%	48.4%	
How frequently should children be taken to the dentist?					
Regularly (every 6 months)	54.2%	50.5%	56.4%	53.4%	
Sometimes (once in 1-2 years)	26.7%	40.2%	17.6%	19.6%	
Never	3.8%	4.6%	7.1%	6.1%	.000
When there is an emergency	15.3%	4.8%	19.9%	20.9%	
Does your child lose any teeth due to caries or trauma?					
Yes	69.1%	74.6%	69.3%	67.3%	
No	30.9%	25.3%	30.7%	32.7%	.007
Do you know what will happen if the empty space between teeth is ignored?					
Yes	42.5%	26.6%	49.4%	47.4%	
No	57.4%	75.4%	50.6%	52.6%	.000
What do you think will happen to the space if no space maintainers were placed?					
Adjacent teeth will tilt	51.4%	25.8%	54.6%	55.6%	
Permanent teeth will erupt	6%	8.2%	7.5%	6.5%	.000
Nothing will happen	5.8%	11.4%	4.5%	6.5%	

I don't know	36.7%	54.6%	33.2%	31.2%	
Have you heard about space maintainers?					
Yes	25%	20%	44%	24%	
No	75%	80%	56%	76%	.000
Did your dentist advise you regarding space maintainers?					
Yes	11.4%	8.6%	16.9%	16.9%	
No	70.6%	79.1%	65.2%	65.2%	.000
I don't remember	18%	12.3%	17.9%	17.9%	
Does any of your children use space maintainers?					
Yes	11%	8.2%	11.9%	13.9%	
No	89%	93.8%	88.1%	86.1%	.009
If the space maintainer is lost or broken what is the best time to go to the dentist?					
Immediately	33.5%	15.5%	35.5%	34.5%	
Nearest appointment	53.8%	67.6%	51.7%	52.7%	.000
In the annual visit	12.7%	14.9%	12.8%	12.8%	
Do you think the space maintainer requires special care with brushing?					
Yes	50.2%	25.5%	52.7%	53.7%	
No	7.4%	16.3%	8.4%	7.4%	.000
I don't know	42.4%	58.2%	40.9%	40.9%	

In the current study, we investigate the importance of awareness of parents about space maintainers in the Saudi population and the findings reported significant results across all comparisons. In a frequency distribution, the majority of parents have children in the age group of 7-9 years and a majority of parents weren't from Saudi Arabia. A high proportion of parents have university-level education and work in other fields than healthcare. The income of parents lies in the medium-low category for the majority followed by medium-high. Almost half of the participants take their kids to dentists when there's some kind of emergency and a low number of participants take their kids to dentists regularly but a majority of them think that regular children be taken to dentists. The majority of parents said their kids didn't lose any teeth because of caries and don't know what'd happen if space is ignored. The majority of them thought adjacent teeth will tilt if there'd be no space maintainers. A high proportion had never heard about space maintainers and their dentists also didn't advise those regarding maintainers (**Table 1**).

When comparing the responses according to age group, all three groups had lost their teeth due to caries but didn't know what will happen in case of ignoring empty space. 7-9 years group's parents didn't know what will happen in case of no maintainers being placed in space but the 1st and 3rd group thought adjacent teeth may tilt because of this. They haven't heard about space maintainers before and their dentists also didn't advise them about these maintainers (**Table 2**).

Parents' responses were compared based on educational level, where the university group's parents don't know what will happen in case of no maintainers being placed in space but high school, and the higher level group thought adjacent

teeth may tilt because of this. The high school and higher education level group knew about special care but the university group didn't (**Table 3**).

Finally, parents' responses were compared based on their socioeconomic status, which revealed that low, medium, and high-group children had lost their teeth due to caries but didn't know what would happen in case of ignoring empty space. Overall, all comparisons were found to be statistically significant (**Table 4**).

In the current study, we investigated the importance of awareness among parents about space maintainers in the Saudi population. Data was gathered using a cross-sectional survey design and purposive sampling, Chi-square was used as the main analysis via SPSS. Findings reported significant results across all comparisons. The income of parents lies in the medium-low category for the majority followed by medium-high which is also supported by the previous study in which the vast majority held a university degree or above. Nearly half of those polled were not health professionals, and the other half had a medium-low economic status [1].

Almost half of the participants took their children to dentists when there was some kind of emergency and a low number of participants took their kids to dentists regularly. Previous studies reported a significant percentage of respondents (72.7 percent) had inadequate awareness of the necessity of frequent dental appointments for children [1].

The majority of parents reported their kids didn't lose any teeth because of caries and didn't know what'd happen if space was ignored. The majority of them thought adjacent teeth will tilt if there'd be no space maintainers. The vast majority of parents were unaware that space maintainers help in the emergence of permanent teeth. Similarly, 73.7

percent were unsure when to utilize them, which was also reported by a previous study [6].

The majority of the kids didn't have maintainers and in case of broken or lost maintainers, the majority agreed that the nearest appointment should be visited. However, studies reported that over 50 % of the participants demonstrated a sufficient awareness level in the following areas: the necessity for particular toothbrush care with space maintainers (74%), parental management of broken or lost space maintainers (66.7%), and the ideal time to contact the dentist in the latter circumstance [1].

In the age group, parents of each age group took them to the dentist in case of emergency but thought these visits should be regular. All three groups reported that their children had lost their teeth due to caries and it was supported by findings of the research that more than half of the parents had firsthand experience with their child's missing teeth but don't know what will happen in case of ignoring empty space [6].

CONCLUSION

In the present study, we came to know that the awareness level about space maintainers among Parents living in Saudi Arabia is low and a lesser percentage know about space maintainers. Dentists are not creating awareness about the importance of space maintainers and the drawbacks associated with leaving a space between teeth empty, without a space maintainer in case of tooth loss.

Recommendation

According to an online survey, chances of low internal consistency, and social desirability exist, and due to the restricted area, sample, and sapling size issues of generalizability arise. More studies in this field targeting some specific variables can be conducted.

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