



## Knowledge and awareness of adults towards space maintainers and willingness of space maintainer therapy in Riyadh city, Saudi Arabia

**Abdullah Abdulrahman Alduhaymi<sup>1</sup>✉, Abdulghani Saeed Al Zahrani<sup>2</sup>, Abdullah Mohammed Abu Qarnayn<sup>3</sup>, Anas Mohammed Al Mutlaq<sup>3</sup>, Fawwaz Faisal Alabdallah<sup>3</sup>, Shahzeb Hasan Ansari<sup>4</sup>, Mohammad Abdul Baseer<sup>5</sup>**

<sup>1</sup>General Dentist, Prince Mohammed Bin Abdulaziz Hospital, Riyadh, Ministry of Health, Saudi Arabia

<sup>2</sup>Resident, Department of Restorative Dentistry, Saudi Board, Ministry of Health, Saudi Arabia

<sup>3</sup>General Dentist, Private Sector, Saudi Arabia

<sup>4</sup>Lecturer, Department of Preventive Dental Sciences, College of Dentistry, Riyadh Elm University, Riyadh-11681, Saudi Arabia

<sup>5</sup>Assistant Professor, Department of Preventive Dental Sciences, College of Dentistry, Riyadh Elm University, Saudi Arabia

### ✉Corresponding author

General Dentist,  
Prince Mohammed Bin Abdulaziz Hospital, Riyadh, Ministry of Health,  
Saudi Arabia

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### General Note

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## ABSTRACT

**Introduction:** Space maintainers play an important role, which are available in different types. These include removable as well as fixed appliances, both having specific characteristics. **Materials and methods:** A cross sectional study, which utilized a closed ended questionnaire constructed in Arabic language. This online survey was designed using Google forms, which consisted of eleven questions related to the demographics and space maintainers. **Results:** A total of N=700 participants filled out the online survey. Out of this sample, 46% were females and 54% males. As far as the age groups were concerned, 32% belonged to 18-30 years, 46% to 31-45 years and 22% to 46+ years. **Conclusion:** Higher educational backgrounds revealed better knowledge towards the space maintainer as compared to lower educational levels.

**Keywords:** space maintainer, parents' knowledge, pediatric dentistry

## 1. INTRODUCTION

Timely shedding and eruption of teeth usually leads to properly aligned teeth. However, problems occur when the above-mentioned phenomenon is disturbed due to various reasons and result in malocclusion. Teeth mal-alignment is considered to be the major problem in dentistry alongside caries and periodontal disease. Furthermore, it is associated with lack of self-confidence due to difficulty in speech and normal oral functioning (Asiry, 2015). It is believed that prevention is better than cure. This is highly recommended in dental health as the cost is unbearable to many people. Therefore, parents must pay special attention to their children's oral health. It is imperative as studies have shown poor level of knowledge among the parents when it comes to the maintenance of their children's oral health (Vittoba Setty and Srinivasan, 2016). As mentioned earlier, any disturbance in the eruption of permanent teeth may result in malocclusion. It takes place when the primary teeth shed too early, leaving a gap between teeth and interfering with the normal dental chronology. Moreover, early loss of anterior teeth also affects the speech of the child (Saloom, 2005). In order to tackle this dilemma among pediatric patients, space maintainers play an important role, which are available in different types. These include removable as well as fixed appliances, both having specific characteristics (Green, 2015).

The above-mentioned appliances are used to prevent the closure of gaps between teeth, which is essential in maintaining the desired space. The necessity of this procedure increases in importance when primary teeth shed off way before time. Therefore, it becomes more or less mandatory to fill up this space so that there is not malocclusion in future (Terlaje and Donly, 2001). It is important to educate the general public about this dental appliance and its advantages towards the oral health of their children. Parents are solely responsible to detect and manage this situation by taking their child to the dentist as soon as the primary tooth sheds off. In order to achieve this, awareness regarding maintenance of space between teeth is highly important (Imani et al., 2020). A study conducted in Riyadh showed poor level of knowledge among the Saudi parents when inquired about this issue. However, it was also noted that the level of education of the participating parents had to do with the awareness of space maintainers (Linjawi et al., 2016).

### Aims of the study

The aim of this study was to assess the level of Knowledge and awareness of adults toward space maintainers as a preventive measure for oral health and willingness of Space Maintainer Therapy in Riyadh city, Saudi Arabia

## 2. MATERIAL AND METHODS

This was a cross sectional study, which utilized a self-designed closed ended questionnaire constructed in Arabic language. The IRB approval number for the research was RC/IRB/2018/1390 and the research was carried out from 2<sup>nd</sup> February 2019 till 30<sup>th</sup> November 2019. After designing the questionnaire, the content validation was done by subject experts. For testing reliability pilot survey was carried out prior to start of main study on 30 adults and then measuring Cronbach's alpha which was found to be satisfactory (0.85). Data was collected using online survey designed using Google forms, which consisted of eleven questions related to the demographics and space maintainers. The answers to the survey questions were categorical in nature. After sending the forms two reminders were sent at interval of 4 weeks each and 1 month after the second reminder the data collection was stopped. Mail was sent to 1200 adults, out of which 700 filled forms were returned which were used for the analysis. Collected data was then subjected to statistical analysis using SPSS version 19. Chi square test was done to compare the survey responses on the basis of age and education. 0.05 or less was kept as the value of significance.

### 3. RESULTS

A total of N=700 participants filled out the online survey. Out of this sample, 46% were females and 54% males. As far as the age groups were concerned, 32% belonged to 18-30 years, 46% to 31-45 years and 22% to 46+ years. We also divided the sample on the basis of their educational backgrounds. It was observed that 31% had completed high school, 62% were graduates and 7% were postgraduates. 97% of the participants were Saudis (table 1).

**Table 1** Demographics of study participants

Variables		%
Age	18-30 Years	32%
	31-45 Years	46%
	≥46Years	22%
	Total	100%
Gender	Male	54%
	Female	46%
	Total	100%
Educational status	High school	31%
	Graduate	62%
	Post-graduate	07%
	Total	100%
Nationality	Saudis	97%
	Non-saudis	03%
	Total	100%
Occupational Safety	Yes	74%
	No	26%
	Total	100%

**Table 2** Comparison of survey responses on the basis of age groups

Item		18-30 years	31-45 years	46+ years	P-value
Your child lost any teeth?	Yes	43%	72%	76%	0.000
	No	43%	25%	19%	
	Don't know	14%	3%	5%	
Aware of consequences of empty space is left unattended?	Yes	26%	37%	48%	0.000
	No	51%	45%	32%	
	Don't know	23%	18%	20%	
Have you heard of space maintainer?	Yes	22%	22%	23%	0.979
	No	78%	78%	77%	
Any of your children using space maintainer?	Yes	6%	8%	12%	0.170
	No	94%	92%	88%	
How often do you take your child to the dentist?	Twice a year	13%	11%	13%	0.006
	Once a year	54%	65%	69%	
	Never	33%	24%	18%	
Dentist advised	Yes	13%	13%	14%	0.000

about space maintainer?	No	61%	73%	73%
	Don't know	26%	14%	13%

**Table 3** Survey response comparison on the basis of education

Item		High School	Graduate	Post graduate	P-value
Your child lost any teeth?	Yes	65%	62%	69%	0.270
	No	29%	29%	31%	
	Don't know	6%	9%	0%	
Aware of consequences of empty space is left unattended?	Yes	29%	38%	40%	0.003
	No	45%	44%	42%	
	Don't know	16%	18%	8%	
Have you heard of space maintainer?	Yes	15%	24%	37%	0.002
	No	85%	76%	63%	
Any of your children using space maintainer?	Yes	7%	9%	13%	0.306
	No	93%	91%	87%	
How often do you take your child to the dentist?	Twice a year	6%	13%	27%	0.001
	Once a year	65%	62%	56%	
	Never	29%	25%	17%	
Dentist advised about space maintainer?	Yes	12%	13%	23%	0.093
	No	69%	71%	69%	
	Don't know	19%	16%	8%	

We compared the survey responses on the basis of age groups and educational levels. Statistically significant differences were found when inquired about awareness of consequences of empty space if left unattended. Older age group tends to be more informative about this issue as compared to younger participants (P-value: 0.000). Majority of the younger age group participants took their child to the dentist once a year. This number was significantly lower than the other age groups (P-value: 0.006). No significant relationships were found when inquired about knowledge of space maintainer and children using space maintainer (table 2 & 3).

When compared the findings on the basis of educational levels of participants. It was noted that postgraduate group had better knowledge of the consequences of not treating empty spaces in children's oral cavity as compared to lower educational groups (P-value: 0.003). When inquired about knowledge regarding the use of space maintainers, higher educational group had better understand as compared to lower educational groups (P-value: 0.002). Similar difference was noted when inquired about frequency of dental visits (P-value: 0.001). No significant relationships were found when inquired about child losing teeth, knowledge of space maintainer, children using space maintainer and dentists advising about using space maintainer.

#### 4. DISCUSSION

This study aimed to assess and determine the knowledge and awareness of parents in Saudi Arabia regarding the primary dentition and space maintainers. It can be noted from the results that the overall knowledge of parents is observed to be on the lower side. Several studies have investigated the correlation of multiple demographical factors and the level of knowledge regarding space maintainers. We compared the results on the basis of age groups and educational levels. These factors have previously found to be associated with low or high level of knowledge among parents. As our findings suggest, knowledge of space maintainers increased with the higher educational level. Similar results were demonstrated by Setty & Srinivasan.

Linjawi et al. has associated the knowledge of primary dentition and space maintainers with age. However, this association was not found to be statistically significant as far as our study findings were concerned. We need to educate our patients and their families regarding this integral issue as this is the leading cause of malocclusion among children. Majority of the parents are not aware of the reasons behind malocclusion (Rafique et al., 2011).

## 5. CONCLUSION

The present study concludes that, overall knowledge of participants was regarding space maintainer was low and no significant comparisons were found on the basis of age. Higher educational backgrounds revealed better knowledge as compared to lower educational levels. This suggests the need to improve the awareness regarding space maintainers in the general population.

### Author contribution

AAA contributed for the design, literature review. ASA involved in literature search, data collection. AMA contributed for the literature search and manuscript Writing. FFA conducted manuscript review and editing. SHA conducted manuscript review and editing. MAB performed analysis of the data, review of manuscript.

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This study has not received any external funding.

### Conflict of Interest

The authors declare that there are no conflicts of interests.

### Informed consent

Written & Oral informed consent was obtained from all individual participants included in the study. Additional informed consent was obtained from all individual participants for whom identifying information is included in this manuscript.

### Ethical approval

The study was approved by the Medical Ethics Committee with ethical approval code: RC/IRB/2018/1390).

### Data and materials availability

All data associated with this study are available upon request to the corresponding author.

### Peer-review

External peer-review was done through double-blind method.

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