


Knowledge and Awareness of Space Maintainers among Parents in Saudi Arabia: A Literature Review

Mohammed Abdullah Alzubaidi^{1*} 

¹Assistant Professor in Pediatric Dentistry, Department of Preventive Dentistry, Faculty of Dentistry, Taif University, P.O. Box 11099, Taif 21944, Saudi Arabia

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*Corresponding author: Mohammed Abdullah Alzubaidi

Assistant Professor in Pediatric Dentistry, Department of Preventive Dentistry, Faculty of Dentistry, Taif University, P.O. Box 11099, Taif 21944, Saudi Arabia

Abstract

Premature loss is a serious problem that affects children oral health in Saudi Arabia. Different dental consequences could result after early loss of primary teeth if no proper treatment is applied. The aim of this review is to contextualise the previous studies about the parental knowledge and awareness towards the importance of primary teeth, causes and sequels of premature loss of these teeth and space maintenance appliances.

Keywords: Awareness, Knowledge, Parents, Primary teeth, Space maintainers, Saudi Arabia.

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1. INTRODUCTION

Early loss of primary teeth is considered one of the most serious problems which might affect child oral health in Saudi Arabia. Premature loss of deciduous teeth has been defined as “the loss of a deciduous tooth before the time of its natural exfoliation” (Al-Shahrani *et al.*, 2015). As a result of this early loss of deciduous teeth, many serious consequences as loss of space for permanent teeth might occur if their spaces are not kept by space maintainers. Space maintainers have been defined as appliances which are principally used to maintain space for succedaneous teeth when premature loss of primary teeth has happened (Alshammari *et al.*, 2018). Considering this issue, the purpose of this review is to contextualise previous studies about the importance of primary teeth, causes and consequences of premature loss of deciduous teeth, in order to increase awareness of parents about space maintainers as a means of preventive treatment to prevent or reduce possible dental problems in the future.

2. Understanding of Primary Teeth and Their Importance Among Parents

Child oral health is an important and integral part of general health. It is clearly thought that good oral health may positively enable children to contribute physically, mentally and socially and to fully enjoy their lives by allowing them to speak, eat and socialise without

suffering from pain or embarrassment (Alshehri and Nasim, 2015). Furthermore, primary teeth provide valuable benefits for children and play a vital role in their lives for eating, phonetics and aesthetics (Setty and Srinivasan, 2016). Also, they are considered as natural space maintainers for the permanent teeth (Setty and Srinivasan, 2016). For these reasons, American Academy of Paediatric Dentistry (2012) recommends that parents should consult a dentist for the oral health of their infants within 6 months of having the first tooth. It also recommends regular dental visits after the initial visit based on the oral health of child.

Doubtless, children tend to spend most of their time with their parents or those who look after them such as guardians. Parents have been thought to play a crucial role towards their children’s oral health and to keep their families in a healthy environment (Al-Zahrani *et al.*, 2014; Linjawi *et al.*, 2016; Aljameel *et al.*, 2017). Therefore, Children’s oral health can be affected by parents’ knowledge and attitude towards the oral health of their children (Al-Zahrani *et al.*, 2014).

3. Factors that Affect Parental Knowledge and Attitude Towards the Children’s Oral Health

Several dental studies have evaluated factors that might influence the parental knowledge and attitude towards the children’s oral health. For instance, there are

two studies, one study conducted by Manohar and Mani in 2017 assessing the knowledge and attitude of parents regarding children's primary teeth & their willingness for treatment and another research carried out by Kaur in 2009 evaluating the oral health awareness in parents of preschool children, suggested that the parental literacy level employs a vital factor for assessing the importance of children's oral health. These studies generally assumed that parents with high level of education are more aware of the children's general and oral health. Similarly, Aljameel *et al.*, (2017) found that mothers with university degrees were more aware of their children's dental health than those with an education below high school. In the same way, Kamil *et al.*, (2015) noticed that participants with high level of literacy showed good oral hygiene knowledge. Parental socioeconomic status is also considered an important factor that could affect the knowledge of parents regarding the importance of children's oral health. Manohar and Mani (2017) claimed that there is a positive correlation between the oral health knowledge of parents and their socioeconomic status; parents with high socioeconomic status are likely to have more information about oral health than those parents with low socioeconomic status. Likewise, Linjawi *et al.*, (2016) and Hanna *et al.*, (2015) stated that there is a link between the socioeconomic status of parents and the severity of their children's oral health. The oral health of children, therefore, might clearly be influenced by both the educational level and socioeconomic status of parents.

4. Parental Awareness Towards Primary Teeth in Saudi Arabia

Few studies have discussed the importance of primary teeth and assessed the level of parental knowledge and attitude towards these teeth in Saudi Arabia and these studies showed different levels of parental awareness. For instance, a study, conducted in Saudi Arabia by Al-Zahrani *et al.*, in 2014 assessing the knowledge and attitude of Saudi mothers towards their preschool children's oral health in Makkah city of Makkah Al-Mukarrama region, found that 91.1% of participants acknowledged the importance of deciduous teeth for their children's health and 96% of those participating mothers were aware of the negative impact of decayed teeth on primary teeth whereas 28.7% of respondents thought that permanent teeth would not be affected by problems associated with deciduous teeth. Similarly, in research, carried out in the same country by Alshehri and Nasim in 2015 evaluating Infant oral health care knowledge and awareness among parents in Abha city of Aseer region, stated that 66.89% of respondents believed that primary teeth have the same importance as permanent teeth while the rest of participants supposed that primary and permanent teeth are different in their importance. Furthermore, Aljameel *et al.*, (2017) assessed the knowledge and attitudes of mothers living in Saudi Arabia with regards to their children's oral health and found that 80% of participants demonstrated

that both types of teeth are equally important. Taking the above responses into account, it is clear that the majority of parents/mothers in Saudi Arabia seem to be aware of the importance of primary teeth of their children.

5. Prevalence of premature loss of primary teeth in Saudi Arabia

Despite the high level of awareness towards the importance of primary teeth among parents in Saudi Arabia, the number of children with premature loss of primary teeth has significantly increased (Linjawi *et al.*, 2016). For instance, Alamoudi (1999) evaluated the prevalence of premature tooth loss in the primary dentition of 502 children in Jeddah city of Makkah Al-Mukarrama region and found that the prevalence of prematurely lost primary teeth was 6.2%. Moreover, another research carried out by Al-Shahrani *et al.*, in 2015, assessing the prevalence of premature loss of primary teeth among 307 children in the eastern region of Saudi Arabia, found that the prevalence of early loss of deciduous teeth was 51%. Therefore, it generally accepted that those children with early missing deciduous teeth might face malocclusion, which is considered one of the major dental issues in addition to dental caries, gingival disease, and dental fluorosis (Asiry, 2015).

6. Possible Causes of Premature Loss of Primary Teeth

A number of dental researchers have investigated the possible factors that might lead to early loss of primary teeth (Heilborn *et al.*, 2011; Cardoso *et al.*, 2005; Borum and Andreason, 1998). They stated that dental caries, trauma, periodontal disease and premature root resorption are recognised as the most common aetiologies for premature loss of deciduous teeth. Thus, affected children with one of these issues need to be treated as soon as possible in order to avoid premature loss of primary teeth and its following sequels.

6.1. Dental Caries

Dental caries is considered one of most common oral diseases that affect children around the world (Al-Samadani *et al.*, 2017). It represents the main cause of tooth loss among children and adults (Al-Samadani *et al.*, 2017). Globally, 60%–90% of children have been affected by dental caries (Petersen *et al.*, 2005). It can clearly be seen that dental caries seems to be a prevalent oral disease that need to be tackled in order to prevent early missing of primary teeth.

The prevalence rates of tooth decay in the developed countries have significantly decreased in the recent years (Petersen *et al.*, 2005; Setty and Srinivasan, 2016). The reason for this decline is thought to be the efforts that have been done by these countries to provide more oral health awareness, preventive programmes and proper oral health care for their population (Petersen *et al.*, 2005; Setty and Srinivasan, 2016). However, the number of children with dental caries in the developing

countries such as Saudi Arabia is increasing due to poor access to oral health educating programmes and dental care (Al-Samadani *et al.*, 2017). For example, a study, conducted by Al-Shammery in 1999 evaluating caries experience of urban and rural children in Saudi Arabia, found that the prevalence of dental caries was 74% in urban areas whereas it was 67% in rural areas. Moreover, a systematic review of childhood caries studies conducted afterwards in Saudi Arabia by Al Agili in 2013, reported that there was a rise in the prevalence of dental caries of children (80%) which means that the number of children with tooth decay is still increasing.

6.2. Periodontal Diseases

Periodontal disease is recognised as one of the major oral health illnesses that may affect children. It has been defined as “an inflammatory disease that affects the soft and hard structures that support the teeth” (American Academy of Periodontology, 2018). It has been grouped into two main categories based on involvement of alveolar bone destruction; gingivitis and periodontitis (Williams, 1990). Gingivitis is known as an inflammation of gum without alveolar bone destruction which precedes the occurrence of periodontitis (Williams, 1990; American Academy of Periodontology, 2018). Periodontitis is defined as an inflammation of structures that surround teeth with destruction of alveolar bone (Williams, 1990; American Academy of Periodontology, 2018). The prevalence of gingivitis among children in Saudi Arabia was significantly high (100%) and was considered moderate to severe gingivitis in 14% of those children (Al-Banyan *et al.*, 2002). The prevalence of periodontitis among children in Saudi Arabia was 18% (Guile, 1992). Hence, it can clearly be seen that periodontal diseases seem to be prevalent oral diseases in Saudi children that need to be investigated further to prevent early missing of primary teeth.

6.3. Trauma

Traumatic dental injuries are considered the most frequent oral injuries in children aged 0-6 years (Malmgren *et al.*, 2013). In the age group 1-3 years, luxation injuries are mainly reported as a result of falls (Malmgren *et al.*, 2013). A tooth luxation is defined as “a dislodgment of the tooth from its normal position in the alveolus” (Journal of the Canadian Dental Association, 2016). The prevalence of dental trauma among children aged 0-5 years who attending a hospital in Saudi Arabia was 34% (Al-Malik, 2009). Accordingly, children could be highly subjected to dental trauma that might lead to premature loss of their primary teeth.

7. Consequences of Premature Loss of Primary Teeth

Different dental consequences could result after premature loss of primary teeth if no proper treatment is applied. One of these sequels is lack of space left after the early missing teeth which might eventually cause malocclusion, mid-line discrepancies and mesial drift of

permanent teeth (Al-Shahrani *et al.*, 2015). To prevent or reduce the previous consequences, the preventive measures in the form of space maintainers are highly recommended in such cases to keep spaces for successors teeth (Alshammari *et al.*, 2018; Mubarak *et al.*, Linjawi *et al.*, 2016).

8. Space Maintainers

Space maintenance appliances play a critical process in the developing dentition (Alshammari *et al.*, 2018; Linjawi *et al.*, 2016). These appliances are primarily constructed for preventing and reducing the severity of developing malocclusion (Alshammari *et al.*, 2018; Linjawi *et al.*, 2016). These space maintainers can be fixed appliances, for example, band and loop, crown and loop, passive lingual arch, distal shoe, Nance appliance and transpalatal arch (American Academy of paediatric dentistry, 2014). They can also be removable appliances such as partial dentures and Hawley appliances (American Academy of paediatric dentistry, 2014). The selection of these appliances depends on patient’s health status, which tooth is lost, when it was lost, which permanent teeth are present, how much the root of the successor is developed and the amount of alveolar bone covering succedaneous tooth (American Academy of paediatric dentistry, 2014). In addition, pre-existing dental occlusion, favourable space analysis, patient’s cooperation, oral hygiene and habits need to be considered during selecting space maintainers (American Academy of paediatric dentistry, 2014). Thus, it can be seen that there are different circumstances could affect choosing the proper type of space maintainers.

9. Awareness of Space Maintainers among Parents in Saudi Arabia

Although many benefits can be gained by using space maintainers, low level of parental awareness and knowledge toward these ways of preventive tools have been noticed in Saudi Arabia and there are only two studies which have discussed this issue. The first research, conducted by Linjawi *et al.*, in 2016, found that the level of awareness and knowledge among parents in Saudi Arabia was unsatisfactory as more than half of respondents (57.5%) were not be aware of these appliances. The second study, carried out by Alshammari *et al.*, in 2018, demonstrated that the level of parental awareness towards space maintenance appliances was slightly low (46.7%). As a result of unsatisfactory levels of parental awareness towards space maintainers, parents need to be educated about this type of preventive measures.

10. CONCLUSION

Child oral health care needs to be regularly checked as one of the parental responsibilities towards their children’s health. Parents should be educated about the importance of primary teeth and their effects on permanent teeth and both types of teeth are equally important. They also need to be aware of the

consequences of untreated premature loss of primary teeth and the benefits of using a space maintenance appliance as a preventive treatment option that could prevent or reduce the severity of future malocclusion.

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