



A Cross-Sectional Study Looked into the Incidence of Early Missing Primary Teeth in Children Aged 6 to 12 in the Southern Iraqi City of Nasiriya

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Abstract: Objectives: *One of the potential risk factors for poor dental arch length growth, which in turn affects the formation of permanent teeth, is the early loss of primary teeth, which is common in childhood dental disease. For the formation of permanent teeth, the dental arch must be the proper length. The length of the weak arc may cause crowding, preterm birth, or impaction of these teeth, which could harm the student's health and development throughout the course of their life. The purpose of this study was to determine the frequency of early primary tooth loss in students aged 6 to 12 years old.*

Materials and Methods: *259 students made up the study group, 135 boys and 124 girls. An expert examiner performed the dental examination in an environment with enough artificial light. The age of the patient and the number of lost teeth were recorded. Data analysis was conducted using descriptive statistics, and based on the findings, Chi-square tests were conducted at a level of significance of 5% (P 0.05).*

Results: *Boys lost their primary teeth at a rate of 49%, while girls of the same age lost their teeth at a slightly higher rate of 51%. The study also revealed that first molars (42.6%) are the dental arch's most often missing teeth.*

Conclusion: *In the study group, there was a high prevalence of early loss of primary teeth, students could retain a healthy primary dentition and eventually avoid disruptions in the development of appropriate occlusion with the support of effective educational and preventive programs for oral health. Reducing malocclusion issues would be made possible with the early detection and treatment of the space issues brought on by the early loss of primary teeth.*

Keywords: *Missing Primary Teeth, Cross-Sectional Study, Primary School Student's, Premature Exfoliation, and Southern Iraq.*



1. INTRODUCTION

For a normal permanent occlusion to be established, primary teeth must be maintained [1]. The most frequent reasons for early loss of primary teeth include poor oral hygiene, dental trauma, and tooth rot. The biggest contributing element to the high incidence of loss is still tooth decay. [2] Due to the early loss of these primary teeth in youngsters, those of us in the pedodontics and orthodontics practice commonly run into malocclusion issues [3].

One of the main things that might lead to malocclusion in the sagittal, transverse, and vertical planes is the premature loss of primary teeth [4]. According to studies, the early loss of primary teeth causes the dental arch to shorten and the antagonist and marginal teeth to move, which causes the permanent teeth to rotate, crowd, and impaction [5]. In addition, if a primary second molar rather than a primary first tooth is lost, the reduction of the dental arch length is larger in the mandible than in the maxilla [6]. Additionally, if tooth loss starts earlier in life this effect is also noticeable [7]. And if it happens in densely packed teeth as opposed to well-spaced teeth [8]. For instance, mesial migration of permanent first molars causes the arch length to be reduced as a result of early loss of primary second molar, particularly in the maxillary arch [9]. The permanent teeth in the permanent maxillary arch may need to be extracted in order to realign the dental arch, but the mandibular arch may not need to be extracted. In most circumstances necessitate long-term orthodontic treatment. [10].

Early primary tooth loss in primary school students is strongly correlated with an increase in the occurrence of primary teeth extractions without further assessment of the necessity for spacing correction [11]. We made the decision to research the prevalence of early loss of primary teeth among students in primary school of Nasiriyah city due to the serious effects that result from the premature loss of primary teeth.

2. RELATED WORK

1- (Surveying the prevalence of widespread erosion, caries, and caries among kindergarten children in the city of Nasiriyah, southern Iraq) The article talks about the prevalence of tooth decay among children from 5 to 3 years of age, with a field survey of tooth erosion among those age groups. 2- (The prevalence of recurrent aphthous ulcers among students Primary schools in the city of Nasiriyah, southern Iraq) . The article includes a discussion of the spread of aphthous ulcers in children between the ages of 6 and 12 years and its causes 3- (Bad breath, halitosis, smoking habits, and oral hygiene practices among dental students) A survey of the prevalence of poor oral hygiene, bad habits, and halitosis among dental students of various stages, comparison between females and males, and comparison with similar research in other regions of the world 4- (Frequency and prevalence of smoking among dental students in southern Iraq) Research on the prevalence and amount of smoking among dental college students 5- (Investigation of dental caries, poor oral hygiene practices, and malocclusion rates among adolescents enrolled in



secondary schools in southern Iraq) Statement of poor eating habits and caries Teeth and their impact on malocclusion among adolescent students between the ages of 14 and 17 years.

3. MATERIAL AND METHODS

During the 2017–2018 academic years, a cross-sectional survey was carried out on all primary school students in Nassiriya city, southern Iraq, aged 6 to 12 years. All students (n = 259) enrolled in Al-Fayhaa Primary School were given the opportunity to take part in the study. By means of a written communication in the hands of the students, for the consent of the parents of the children, and with a thorough explanation of the type of study, its purpose, and the specifics of the examination process, all students who met the study inclusion criteria—(a) 6 to 12 years of age and (b) consent from a parent or guardian to participate in the study—were invited to participate. Students who didn't have their parents' written authorization before participating in the study by writing communication in the students' possession, with the parents' permission, and after a thorough description of the nature and goals of the study as well as the specifics of the examination procedure. Students who did not have their parents' formal authorization to engage in the study were not allowed to participate. Individual interviews done by the researcher on the day of the dental exam allowed for the thorough documentation of each participant's personal information and general health. A single examiner conducted the dental examination in good artificial light. There were wooden spoons, masks, and gloves utilized. Early loss was classified using Kronfield's hypothesized timetable for the eruption of permanent teeth, [12] and falling by a year, as Cardoso et al. anticipated. [13] Models created especially for this study served as the documentation for the data. Age, gender, general health, oral hygiene, daily tooth cleaning after meals, and the kind of missing teeth were all taken into consideration.

The Statistical Package for Social Sciences, version 10, was used to conduct all statistical analyses (SPSS Inc., Chicago, Illinois, USA). To determine the absolute and percentage frequency, descriptive statistical techniques were applied to the data. At a threshold of significance of 5% (P 0.05), chi-square tests were used to confirm the existence of significant relationship among the variables.

4. RESULTS AND DISCUSSION

Result

Through the number of students included in the study group, which numbered only (259), 126 (48.64%) lost primary teeth prematurely, as the number of boys missing primary teeth was 62 boys with a percentage of 49% and in girls the number was 64 with a percentage of 51% so there is a slight increase in girls than boys, the peak prevalence was recorded at approximately 11 years of age [Table 1].

(Table 1) Distribution of individuals who have early tooth loss by age and gender

Age by years	6	7	8	9	10	11	12	Total, PPP,



Gender								N (%)
Boys	2(3)	5(4)	8(5.3)	9(7.2)	12(8.1)	14(9.7)	12 (11.7)	62(49)
Girls	1(1.3)	3(2.3)	8(5.2)	9 (7.3)	11(9.5)	16(12.2)	16 (12.2)	64(51)
Tota	3(4.3)	8(6.3)	16(10.5)	18(14.5)	23 (17.6)	30(22.9)	28(23.9)	126(100)
% ^Λ =5.163,df=3,p=0.365,PPP= prevalence loss of primary teeth								

From the study outputs we found a total of 126 primary teeth lost prematurely in a total percentage (48.64%) of the total pupils studied [Table 2] with the highest loss rate per the FDI primary tooth numbering system.

(Table 2) gender differences in the distribution of primary teeth that lost the most early

Tooth	Gender		Total PPP,n(%)
	Boys PPP,n (%)	Girls PPP,n(%)	
51	1(1.4)	1(1.4)	2 (2.4)
52	2 (1.2)	4 (2.8)	6 (4)
53	6 (3.2)	6 (3.2)	12 (6.4)
54	6 (3.2)	4 (2.6)	10 (5.8)
55	2 (1.2)	1 (1.1)	3 (3.3)
61	2(1.2)	1 (1.1)	9 (2.3)
62	3(1.9)	4 (2.1)	4) (7
63	6 (3.2)	8 (3.6)	14(6.8)
64	5 (2.9)	3 (1.9)	(4.8) 8
65	7 (3.5)	0 (0)	7(3.5)
71	3 (1.9)	5 (2.8)	(4.7) 8
72	2(1.2)	(2.1) 4	6(3.3)
73	3(1.9)	5 (2.8)	4.7)(8
74	6 (3.2)	8 (3.6)	6.8)(14
75	6 (3.2)	9 (4)	15(7.2)
81	0 (0)	0(0)	(0) 0
82	6(3.2)	4(2.1)	(5.3) 10
83	6(3.2)	11 (4.4)	17(7.6)
84	8(3.6)	15 (5.9)	9.5)(23
85	9(4.4)	9 (4.4)	10.2) (18
Total	58(48.7)	68(51.3)	126(100)



PPP= prevalence loss of primary teeth , Number of percentage = n (%)

In terms of the percentage of students who had lost teeth enough early, 49 students (41%) had one missing tooth, 35 students (28.7%) had two missing teeth, 19 students (15.3%) had three missing teeth, 7 students (5.3%) had four missing teeth, 6 students (4.4%) had five, 4 students (4.1%) had six missing teeth, and 1 student (1.2%) had eight missing primary teeth.

The molars (67.5%) were the most frequently lost teeth, with the first molar accounting for the largest percentage of these cases (42.6). Incisors and canines were the next most frequently lost teeth after the molars, at a rate of (23.2%) and (9.3%), respectively, according to [Tables 3, 4]

Table 3 according to tooth types (central incisors, lateral incisors, canine, first molars, second molars), the distribution of primary teeth that were lost too soon varies by gender.

Tooth type	Gender		Total PPP,n(%)
	Boys PPP,n (%)	Girls PPP,n(%)	
Central incisors	4 (5.8)	6.8)(5	9 (12.6)
Lateral incisors	4 (5.8)	3 (4.8)	7 (10.6)
Canine	2 (3.5)	4 (5.8)	6 (9.3)
First molars	33 (20.2)	37 (22.4)	70 (42.6)
Second molars	11.2) 15(19 (13.5)	24.9) (34
Total	58 (46.5)	68 (53.5)	126 (100)

$\chi^2=5.163, df=3, p=0.365, PPP=$ prevalence loss of primary teeth

Table 4 distribution of the tooth types (incisors, Canine, and molars) that were affected by early tooth loss in relation to gender

Tooth type	Gender		Total PPP,n(%)
	Boys PPP,n (%)	Girls PPP,n(%)	
Incisors	8 (11.6)	11.6)(8	16 (23.2)
Canine	2 (3.5)	4 (5.8)	6 (9.3)
Molars	48 (31.4)	56 (35.9)	104 (67.5)
Total	58 (46.5)	68 (53.5)	126 (100)

$\chi^2=5.163, df=3, p=0.365, PPP=$ prevalence loss of primary teeth

The distribution of missing teeth by dental arch is shown in [Tables 5, 6] they shows that the mandibular arch (54%) had more cases than the maxillary arch (46%). The most primary teeth were lost (27.4%) in the mandibular right quadrant.



Table 5 in relation to dental quadrants and gender, the distribution of primary teeth that were lost early.

Dental quadrant	Gender		Total PPP,n(%)
	Boys PPP,n (%)	Girls PPP,n(%)	
Right quadrant of maxilla	12 (11)	11.4)(14	26 (22.4)
Left quadrant of maxilla	14(11.4)	17 (12.2)	31(23.6)
Right quadrant of mandible	19 (15.3)	16 (12.1)	35 (27.4)
Left quadrant of mandible	16(12.1)	18 (14.5)	34 (26.6)
Total	61 (49.8)	65 (50.2)	126 (100)
% [^] =5.163,df=3,p=0.365,PPP= prevalence loss of primary teeth			

Table 6 in relation to dental arches and gender, the distribution of primary teeth that were lost early

Dental arch	Gender		Total PPP,n(%)
	Boys PPP,n (%)	Girls PPP,n(%)	
Maxilla	26 (22.4)	23.6)(31	57(46)
Mandible	35 (27.4)	34 (26.6)	69 (54)
Total	61 (49.8)	65 (50.2)	126 (100)
% [^] =5.163,df=3,p=0.365,PPP= prevalence loss of primary teeth			

Discussion

Particularly in cases of early loss of primary teeth among primary school students, there was a noticeable increase in the prevalence of primary tooth extraction that was not followed by space maintenance. With no interest in generalizing our findings to Total primary school students in the cities of southern Iraq, the main goal of this cross-sectional study is to provide a thorough overview of the early loss of primary dental status in the target sample in order to predict future healthcare needs in preventing disturbances in the normal development of occlusion in children. Additionally, to our knowledge, this study is the first to examine this issue among elementary school pupils in the southern Iraqi city of Nasiriya. Our study found a significant prevalence rate (48.64%) of early primary tooth loss in the study group, which is comparable with a recent Saudi



Arabian study. [14] A sample of pupils from Al-Fayhaa Primary School in the southern Iraqi city of Nasiriya served as a representation of the early loss of primary teeth in the current study. We may therefore anticipate that these pupils do not require dental care any more frequently than other elementary school students in general.

This conclusion can also be drawn from the fact that parents and occasionally some dentists fail to emphasize the value of a child's primary teeth or accord them the same weight as permanent teeth. These people could believe that preventing and treating deciduous teeth is unnecessary because they would eventually be replaced [15], which could account for the high risk of early tooth loss in the current study.

The recent study also revealed that there is no statistically significant difference between boys and girls in the early loss of primary teeth. Although there is a little tendency (2%) for girls to outnumber boys, this small tendency is not thought to be significant. This outcome was consistent with earlier research. [16] This finding suggests that oral hygiene issues, not gender, are to blame for the research group's early loss of primary teeth.

Similar to what was discovered in a prior study, the majority of students in this study had one or two teeth that had fallen out early. Similar to earlier studies, the current study found that early tooth loss peaked at age 11 and that main molars lost teeth more frequently than other primary teeth (17). The lower right first primary molars were the teeth that were missing the most; however, we concur with the study that they are molars and that they are located in the lower jaw. This finding differs from the findings of the previous study, which assumed that the lower left second primary teeth are the most likely to be lost.

This conclusion could be explained by the fact that newborns are more likely to acquire *Streptococci mutans* as they age or as their number of erupting teeth rises. [18] Because they erupt into the oral cavity between the ages of 1.5 -2 years and have an impact on both concave approximal surfaces and fissured occlusal surfaces, the primary molars may be particularly vulnerable to the early colonization of *S. mutans*. [19] *S. mutans* is more likely to colonize occlusal fissures than smooth surfaces. [18]

This may lead to primary molar caries, which, if addressed, could lead to early extraction and contribute to early loss. In addition, we noted a higher incidence in the mandibular arch by examining the distribution of early loss on the arches. These results agreed with earlier research. [20] The greater potential for food packing and increased plaque buildup in the mandibular posterior region may be the cause of the mandibular arch's greater loss of primary teeth. Additionally, the maxillary molar teeth have relatively high levels of saliva, which has anticariogenic characteristics, lowering the rate of early tooth loss. [21]

Early primary tooth loss might lead to issues owing to function loss and a higher likelihood of other teeth migrating. With passing time from the point of extraction, compartment closure occurs more frequently. [16] The rate of vacuum closure is higher for the upper jaw than the lower jaw, although it starts to decline after the first six months, according to earlier studies. Therefore, it is



crucial to educate adolescents about the value of oral health and to warn parents about the possibility of malocclusion issues as a result of the early loss of primary teeth in primary second molar extractions [22]. Parents of young children who lost their primary teeth should be encouraged to take their kids to the dentist to have space maintainers if necessary[23].

The fact that the sample size was tiny is the primary drawback of this study. This study sample might not accurately represent the extent of early primary tooth loss among students in other Iraqi schools, hence it shouldn't be generalized. To solve this issue and observe big student cohorts from various places, additional research is required in order to draw a valid conclusion. This will be considered by the study team in subsequent investigations.

5. CONCLUSION

The Findings of this Study Allow for the Following Inferences:

- Early primary tooth loss was common (48.64%) and more prevalent in children under the age of 11 years.
- (41%) of students have just one lost tooth.
- The mandibular arch (54%) lost more teeth than another arch.
- The most frequent missing tooth is the first primary right lower molar by (4.62%).

In the study population, early loss of primary teeth occurred often. In view of recent research that has shown malocclusion issues to be connected to the early loss of deciduous teeth, this finding is significant. Therefore, it is essential to develop oral health awareness among students and their parents in order to inform them of the value of deciduous teeth, how to care for them, and the negative effects of losing primary teeth too early. Parents of primary school students who lost their deciduous teeth should be instructed to take their kids to the dentist so that, if necessary, a space maintainers can be given to them.

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