



Original Research:

The Reasons for Extraction of primary teeth: The Pattern and Its Association with Sociodemographic Factor at Dental Hospital, Universitas Sumatera Utara in 2019 – 2020

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Funding: NIL

Acknowledgments: The authors would like to thank all the participants involved in the study.

Data Availability Statement: The data supporting this study's findings are available from the corresponding authors upon reasonable request.

Conflicts of Interest: The authors declare no conflict of interest.

How to cite this Article: Harahap AA, Adiana ID, Cindy. The tooth extraction needs for deciduous dentition: the pattern and its association with sociodemographic factor at Dental Hospital, Universitas Sumatera Utara in 2019 – 2020. J Updates Pediatric Dent. 2022; 1(2). 15-21.
<http://doi.org/10.54276/JUPD.2021.1204>

Abstract

The purpose of this study was to establish the tooth extraction needs of deciduous teeth, as well as their relationship with age and gender. This study was designed as a descriptive-analytic retrospectively. Only 529 children met our criterion, which was drawn from children's dental records at the USU Dental Hospital in 2019-2020. The Pearson Chi-square Test was utilized for the analysis. The descriptive statistics were carried out using SPSS (version 21.0) with a p-value of <0.05 significance. The data revealed that the most frequent age range of visitors was 6-10 years (84.12%). The second left mandibular primary molar was commonly extracted, followed by the first molar, maxillary central incisor, first and second maxillary molars, maxillary lateral incisor, and mandibular incisors. The most prevalent reason for extraction (41.76%) is the presence of dental roots. There was a significant link between deciduous teeth extraction needs and age ($p < 0.05$), but not between gender ($p > 0.05$). In this study, 1772 teeth have been extracted, and it is projected that early tooth loss will occur at young ages, with primary molars being the most commonly extracted due to dental caries. Age was an important factor in this sociodemographic study.

Keywords: Tooth extraction, Deciduous teeth, Age, Children

Submitted: 04.02.22; **Revised:** 06.05.22; **Accepted:** 31.08.22; **Published:** 12.12.22

Introduction

Oral health is a component of overall health and a reflection of the condition of an individual's overall health. Dental and oral diseases continue to be significant concerns for children. It can affect many aspects of life, including the quality of life for children. The impact could disrupt the child's education by causing a variety of issues, including difficulty ingesting and rapid onset of illness. ^[1,2] Deciduous teeth play a crucial role in the stimulation and formation of dental arches, normal occlusion connections, maintenance of beauty, development of speech function, improvement of mastication efficiency, and enhancement of quality of life. There have been numerous initiatives to preserve the teeth's functionality. The primary objective of dental care, especially for children, is to prevent the loss of both primary and permanent teeth. ^[2]

The tooth is extracted from the alveolus as a last-resort dental treatment because it can no longer be spared. This therapy, which reflects the state of untreated caries and periodontal tissue problems, nutrition and oral health, and attitudes toward preserving carious teeth, could be used as one of the criteria to determine a child's dental and oral health status. ^[3] According to the 2018 Basic Health Research (RISKESDAS) report, those with dental and mouth problems in the range of 41.1%-67.3 who only received dental care from dental and medical personnel were 4.3%-14.6%, with an average caries experience at ages 3-5 (DMFT 6.2-8.1) and 5-14 (DMFT 0.7-1.4). Both statistics are indicative of the severity of dental and oral disorders in minors, as well as the lack of treatment for these conditions. ^[4]

This could be the result of inadequately targeted dental and oral health programs, leaving the population lacking in dental and oral health knowledge, awareness, and motivation. Community factors such as sociodemographics have a significant impact and should be taken into account when implementing effective oral health initiatives. In the event of failure, the oral health issues will either remain unchanged or worsen. Age, gender, race, and genetics are biological factors

that predispose to dental and oral health disorders, particularly gingivitis. However, education, occupation, and marital status are behavioral factors. In many situations, a child's age is a crucial factor in their growth and development, both physically and psychologically; consequently, certain modifications are necessary when teaching appropriate behavior. Gender can also affect how the importance of maintaining dental and oral health is conveyed. These two variables also affect the timing and implementation of preventative measures. ^[3, 5, 6]

Methodology

This study used a detailed retrospective method to look at the dental records of all children who were treated at the Universitas Sumatera Utara Dental Hospital between August 2021 and June 2022. The ethical study committee of the Faculty of Medicine at Universitas Sumatera Utara (USU) gave out order No. 289/KEPK/USU/2022. Only 529 of the 743 patients' dental data were useful for this study. The patient's general health, medical history, mouth health history, main complaint, oral exam, radiology exam, tooth nomenclature, diagnosis, treatment plan, and the doctor in charge's signature were all in the patient's dental record. All of the doctors who were in charge were measured. The final treatment plan is used to find out what kind of extraction treatment is needed. The kids were between 4 and 14 years old. The FDI World Dental Federation tooth numbering method was used in this study. Using the chi-square test, the link between the need for tooth extraction in deciduous trees and sociodemographic factors was studied. The descriptive statistics were carried out using SPSS (version 21.0) with a *p*-value of <0.05 significance

Results

The collection of patients' dental records showed that 529 patients met the inclusion criteria, consisting of 463 patients in 2019 and 66 patients in 2020 with the age range of 4 – 14 years. Most were at age seven (23.44%), and the number of girls was more than boys (50.47% and 49.53%, respectively). (Table 1)

Table 1. Patient Distribution at the Pediatric Dentistry Department of Dental Hospital, USU, in 2019 –2020.

No	Demographic	N	%
1	Years visited		
	2019	463	87.52
	2020	66	12.48
2	Gender		
	Male	262	49.53
	Female	267	50.47
3	Age (Years)		
	4	9	1.70
	5	51	9.64
	6	115	21.74
	7	124	23.44
	8	79	14.93
	9	74	13.99
	10	53	10.02
	11	15	2.84
	12	3	0.56
	13	4	0.76
	14	2	0.38
Total		529	100

The extraction needs of deciduous tooth elements regarding the most indicated for extraction were mandibular molars [left second molar (9.31%), followed by right second molar (9.20%), left first molar (8.25%), right first molar (7.56)], right maxillary central incisor (7.11), left maxillary central incisor (6.77%), left maxillary

first molar and the left maxillary second molar (6.32%), right maxillary first molar (6.21%), left maxillary second molar (5.76%), and left maxillary lateral incisor (5.53%), right maxillary lateral incisor (5.36) and the right and left mandibular incisors (2.71% - 2.16%) (Table 2).

Table 2. Distribution of the tooth extraction needs for deciduous at pediatric dentistry Department of dental hospital, USU, in 2019 – 2020.

Arch	Side	Anterior			Total Anterior	Posterior		Total Posterior	Total
		I1	I2	C		M1	M2		
Maxillary	Right	126 (7.11%)	95 (5.36%)	28 (1.58%)	249 (14.05%)	110 (6.21%)	102 (5.76%)	212 (11.97%)	461 (26.02%)
	Left	120 (6.77%)	98 (5.53%)	29 (1.64%)	247 (13.94%)	112 (6.32%)	112 (6.32%)	224 (12.64%)	471 (26.58%)
	Total	246 (13.88%)	193 (10.89%)	57 (3.22%)		222 (12.53%)	214 (12.08%)		932 (52.60%)
		496 (27.99%)				436 (24.61%)			
Mandible	Right	48 (2.71%)	41 (2.31%)	28 (1.58%)	117 (6.60%)	134 (7.56%)	163 (9.20%)	297 (16.76%)	414 (23.36%)
	Left	46 (2.60%)	38 (2.14%)	26 (1.47%)	110 (6.21%)	151 (8.25%)	165 (9.31%)	316 (17.83%)	426 (24.04%)
	Total	94 (5.31%)	79 (4.46%)	54 (3.05%)		285 (16.08%)	328 (18.51%)		840 (47.40%)
		227 (12.81%)				613 (34.59%)			

The most common deciduous tooth extraction etiology is the extraction due to the remains of tooth roots (41.76%) (Table 3). According to the Chi-square test, there is a significant

correlation between age and deciduous tooth extraction needs ($p < 0.05$) (Table 4). However, there is no significant correlation between gender and deciduous tooth extraction needs ($p > 0.05$) (Table 5).

Table 3. The tooth extraction needs for deciduous etiology distribution at pediatric dentistry of department dental hospital, USU, in 2019 – 2020.

No	Deciduous Tooth Extraction Etiology	N	%
1	Trauma	7	0.40
2	Caries	530	29.91
3	Persistent tooth	240	13.54
4	Physiology mobility	237	13.37
5	Supernumerary teeth	11	0.62
6	Orthodontic reasons	4	0.23
7	Tooth root remains/tooth radix	740	41.76
8	Apical perforation	3	0.17
Total		1772	100

Table 4. Association between the tooth extraction needs for deciduous and age at pediatric dentistry department of the dental hospital at USU, in 2019 – 2020.

Etiology	Age											Total	P-value
	4	5	6	7	8	9	10	11	12	13	14		
Trauma	0	0	3	1	1	2	0	0	0	0	0	7	0.797
Caries	6	38	113	145	97	81	36	10	4	0	0	530	0.483
Persistent tooth	0	3	38	53	35	44	51	8	0	4	4	240	0.000*
Physiology mobility	0	21	65	63	37	30	15	5	0	0	0	237	0.165
Supernumerary teeth	0	0	0	5	2	2	2	0	0	0	0	11	0.485
Orthodontic reasons	0	0	0	0	0	0	4	0	0	0	0	4	0.159
Tooth root remains/tooth radix	23	102	182	197	112	65	47	9	2	1	0	740	0.000*
Apical perforation	0	0	1	1	0	0	1	0	0	0	0	3	0.858
Total	29	164	402	465	284	224	156	32	6	5	5	1772	0.004*

Table 5. Correlation between the tooth extraction needs for deciduous and gender at pediatric dentistry department of dental hospital at USU, in 2019 – 2020.

Etiology	Gender		Total	P-Value
	Male	Female		
Trauma	3	4	7	0.775
Caries	244	286	530	0.191
Persistent tooth	103	137	240	0.113
Physiology mobility	123	114	237	0.581
Supernumerary teeth	10	1	11	0.090
Orthodontic reasons	0	4	4	0.322
Tooth root remains/tooth radix	382	358	740	0.399
Apical perforation	2	1	3	0.552

*significance at $p < 0,05$, Chi-square Pearson test

Discussion

This study looked at the number of dental records that will be kept on each individual patient in the years 2019 and 2020. 2019 had the largest increase in the

people went to the doctor. In the year 2020, our dentistry school was forced to close for a period of four months due to SARS-CoV-2 or COVID-19

(Corona Virus Disease), and the majority of educational institutions moved their focus to online education. In addition, only a small group of students were permitted to enroll in dentistry schools. In addition to this, it resulted in fewer people being able to be seen in the year 2020.

At the Juvenile Dentistry Clinic housed within the Dental Hospital of USU, 84.1% of the patients seen were between the ages of 6 and 10. Students were in charge of selecting the cases, and the majority of their attention was focused on those with many cavities. In order to do the bare minimum in the shortest amount of time possible. According to the findings of the study carried out by Ashiwaju and colleagues,[7] that the medical needs of 74.9 % of children who were younger than 10 years old. The teeth were in a stage known as "mixed dentition" between the ages of six and twelve. During this stage, the teeth were in the process of transforming, and the jaw, occlusion, and dental arches were developing. This leads to an increase in the number of dental visits required owing to the degradation and loss of teeth, as well as the delay in the eruption of new teeth. [7-10] Our class has made the decision to provide dental care for this patient since they have a mixed dentition, a significant number of cavities, and improved participation. Because dental students were already treating their children and instructing them on how to keep their oral hygiene in tip-top shape, parents often gave their unqualified assent without any reservations.

The pattern of the order of the primary teeth that were pulled most often in 2019 and 2020 at the University of Utah's dental hospital's juvenile dentistry department Based on the results of this study, the teeth that were taken out the most were the deciduous molars in the mandible and the incisive central molars in the maxilla. This result was similar to Murshid et al.[11] study that the deciduous posterior tooth is part of the deciduous tooth that is taken out the most often. It shows that the teeth that were taken out were more likely to have oral problems like caries. These teeth had to be taken out. [11] The main reason was that they were hard to clean because of where they were, how close they were to the surface, and how they were shaped. Also, they were often exposed to things that could cause caries and didn't have many ways to protect themselves, like protecting their maxillary teeth with saliva. [11-15] People have a right to worry that losing these molars too soon could hurt their ability to chew and the way their teeth fit together, which could lead to crooked teeth in the long run. Also, the children's standard of living would be in danger. Because this happened, dental practices have

to put a lot of work into preventive care. This means giving more attention to preventive care, like teaching kids and their parents about how important oral health is, promoting oral health in schools, and doing preventive things like putting sealants in fissures and repairing molar deciduous teeth to keep them from getting cavities.[1,2,16]

Also, most of the people who came to our clinic for treatment came from low-income or low-social-status homes, and their parents needed more education about things like what to eat and how to brush their teeth. Because of this, they didn't know what would happen if they fed their children a lot of sugar and unhealthy food, like unhealthy snacks and sugary drinks, which led to a rise in the number of people with cavities. Also, the parents needed to know how important it was for their kids to brush their teeth every day. The parents' views also showed that they only took their kids to the dentist when they were in pain. They never took their kids to the dentist for regular checkups. Because of what all of these things did to the teeth, it was decided that they couldn't be fixed, so the teeth had to be taken out.[6,17,18] Most deciduous teeth were taken out at the Dental Hospital of USU's juvenile dentistry department because the tooth was still there or because it had a radix or caries that couldn't be fixed. This was the main reason why people lost teeth. These results were similar to prior studies which is that the most common reason for having to take out primary teeth is also because there are dental roots in the mouth.

[19-21]

According to the findings of this study, exfoliated teeth are also one of the leading causes of tooth extraction. It may be the result of protracted tooth movement or physiological changes. Even though the preponderance of patients in this study who required tooth extractions was between the ages of 6 and 7, this may be because this age group has a higher-than-average frequency of dental checkups. This finding also revealed that a substantial proportion of 8- to 9-year-old children had teeth extracted; however, the teeth extracted were not those that should have been extracted at this age. It was conceivable to achieve the same outcome with fewer extracted incisor or mandibular canine teeth. Unfortunately, greater concentrations were discovered in the molars of deciduous teeth. This led us to recognize that the loss of deciduous molars occurred much earlier than we had previously believed. Both parents and children should be made aware of the significance of deciduous teeth.

According to the results of the correlation test, there is a statistically significant relationship between the need for deciduous tooth extraction and increasing age. According to Saeed et al., [23] there is a significant correlation between age

and the necessity for the extraction of deciduous teeth. It was reported that parental education on oral hygiene practices and the treatments involved in pediatric dentistry plays a key role in their oral health e. [24] According to the demographic breakdown of dental patients, our clinic saw more female patients than male patients. Cadernartori et al.[25] reported that there were 54.7% females and 45.3% males. In contrast, Alsakarna et al. reported that 51.7% of the population was female, while 48.2% was male. In their respective studies, Samuel et al., Koruyucu et al., and Bamashmoosh et al.

.. [26-28] found no correlation between the need for extraction of deciduous teeth and gender. On the other hand, this is a measure of dental institutions' attention to increase prevention efforts, such as promoting dental health to the public in various circles, particularly among community groups at high risk for dental and oral disease. In the meantime, our dental school and practitioners must promote the significance of preventive measures, such as educating parents and children about preventing oral diseases in both hard and soft tissues, as well as introducing and implementing preventive, restorative, and silent fissure treatments.

Conclusion

In this study, it was determined that there would be numerous premature tooth loss at a young age, particularly in the mandibular second molars. The number of teeth lost prematurely indicated a lack of cognizance regarding the significance of dental health, as well as a lack of parental knowledge regarding oral health. In addition, parents with low socioeconomic status have limited access to dental treatment

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