



## The pattern and causes of permanent teeth extraction AL–Karkh Baghdad

Imad Salman Hammoodi AL-Rubaye <sup>1\*</sup>, Mohammed Sedeeq Obaid AL-Banaa <sup>1</sup>,  
Ghassan M. Tariq Ahmed <sup>2</sup>

<sup>1</sup> Assist Lecturer, Department of Dentistry, College of Dentistry, Al-Esraa University College, IRAQ

<sup>2</sup> Assist Lecturer, Department of Dentistry, College of Dentistry, AL-Rasheed University College, IRAQ

\*Corresponding author: [emad@esraa.edu.iq](mailto:emad@esraa.edu.iq)

### Abstract

**Abstract:** To investigate the reason for tooth extraction and their correlation with age, gender and to determine the pattern of the teeth loss among pts undergo this study.

**Materials and method:** The study populations considered of 1610 permanent teeth were extracted in 779 males and 831 females. For each patient the age, the number of the tooth loss anatomically in the oral cavity, the cause, and gender, was recorded in his file. The files of patients in AL Mamoon dental center were recorded from the beginning of 2019 to the end of the year, and retrospectively were analyzed. The p-value less than 0.05 was considered significant and p= 0.000 considered highly significant.

**Results:** The major group of patients age was the group between 30-39 Ye of age N= 360 which comprises 22%. Caries related extraction N= 1141 which comprise 71.31. %, which include the failure root canal treatment, retained root, and badly carious teeth. So it is the most common cause of tooth loss followed by periodontal diseases in 188,11. 75.% of all cases and impacted tooth in N=, 153,9.56 %., the rest include the fractures of teeth due to accident, badly positioned teeth which make 2.7%. The upper 3rd molar in the upper and lower jaws were the most teeth extracted (N=391,24%) the second tooth is the first molar,(N=324,20%).The least tooth extracted is the canine (N=70,4%), followed by the central incisor (N=104,6%).

**Conclusion:** The most common causes for permanent tooth loss is still dental caries and periodontal disease in this part of population.

**Keywords:** AL-Mamoon, Baghdad, causes, extraction

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### INTRODUCTION

It is important to investigate the reasons for permanent teeth extraction because tooth extraction, regardless of the progress of modern dentistry causes serious problems and dysfunction of masticatory system and is considered as a multi complex problem for both the clinical dentist and the patient, The problems of the patients due to function and esthetic. The number of teeth extraction can serve as an indicator of socio-economic and oral hygiene level (Chrysanthakopoulos, 2011).

Decrease in the number of teeth results in poor dietary habits and deterioration of quality of life (Miyaura et al. 1999). In general the indicators of tooth loss reflect oral impairment while indicators of tooth retention reflect oral health and good being (Loe,1990). It is generally believed that dental caries is the main cause of tooth loss in young, whereas after 40 Ye s of age periodontal disease become more prominent (Loe, 1990) In dental caries appears the principle cause of tooth extraction in

a large number of countries and the number of teeth extraction increasing by age. Only few studies reported that periodontal disease was the main cause. (Reich et al. 1993; Phipps et al. 1995; Ong,1996; Murray et al. 1996). However the dental caries and the periodontal disease have consistently been shown as the two main causes of tooth extraction (Chest et al. 2000; Akter et al. 2008; Shigli et al. 2009).Other reasons for tooth extraction were Accidents-injuries, orthodontic reason, impacted teeth,failed root canal treatment, prosthetic, and patient request (Caldas, 2000) which is excluded in this study.

### MATERIALS AND METHODS

The causes of the permanent tooth extraction were classified into; 1- badly carious tooth (BC) that the tooth beyond the category of useful treatment either because of the crown structure or deep fracture of the crown in

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**Table 1.** Descending classification of extracted teeth in relation to the age group

Age (Years)	N	%
30-39	360	22
40-49	331	21
20-29	326	20.1
50-59	321	19.9
60-69	154	10
11-19	66	4
70-79	52	3
Total	1610	100

**Table 2.** Descending classification of extracted teeth in relation to their type

Tooth	N	%
3rd molar	391	24
1st molar	324	20
2nd molar	210	12.7
1st premolar	205	12.3
2nd premolar	201	12
Lateral	105	7
Central	104	6
Canine	70	4
Total	1610	100

some area that what we call it (un restorable). 2-Retained root (RR) that the root or roots of a tooth was carious and arrangement.3-Failure root canal treatment. 4-Impaction, either and mostly wisdom teeth, or other teeth. 5- Mobile teeth. 6-Ortho-purpose7-pericoronitis that the wisdom tooth caused recurrent pericoronitis by its self or by the opposing wisdom tooth causing irritation to retro molar area or bite.8- Badly positioned tooth ; lateral (buccal) or palatal (lingual) inclined teeth that cause irritation to the soft tissue around or food impaction or discomfort to the patient. 9-Accident; tooth that fractured or its position in fracture line because of trauma (police case) or rood traffic accident. Patients who refuse the treatment (REF) because of it is expensive or his or her choice because of previous bad painful experience, were excluded from the study.10-Prosthetic reason; such as over erupted tooth, lonely tooth that interfere with the designing of prostheses, or the future of the tooth is not encouraging to be an abutment or receiving a load of clasp.

In this study we exclude the extraction of permanent tooth because of neoplasm or large cyst.

Clinical examination was performed by the specialist in oral medicine and oral pathologist in the diagnosis department. Criteria for tooth extraction because of dental weakening because of the caries (Ong, 1996; Basir et al. 2018). Tooth lost by periodontal diseases which indicated the need for extraction, the criteria was tooth mobility, severity of attachment loss, and furcation involvement (Newman and Carranza, 2002; Moreira et al. 2007).

## RESULTS

A number of (1610) missing permanent teeth were recorded from patient the males were (779) which constitute (48.39 %), females were (831) 51.61 % and the age range between 11 YE to 84 in a mean of 37. 154 with S.D.14.845 for male and 37.633 with S.D. 14.726 for female. The total mean of age for both male and female was 37.401 with S.D. 14.781.The predominant age group was (30-39 Ye) with N=360 constituting (22%) of the cases (**Table 1**), followed by age group (40- 49 Ye).The least age group was (70 and over in N=52,3%, followed by age group (11-19 Ye) N=66,4% (**Table 1, 4, 5**). The descending classification of type of the extracted teeth shows that the 3rd molar N=391, 24%, the first molar N= 324,20%, the2nd molar 210,12.7%, the 1st premolar N=205, 12.3%, the 2nd premolar N=201, 12%, the lateral incisor N=105,7%, the central incisor N=70,4%, and the canine N=70.4% (**Table 2**).

There is a significant difference between upper lateral N=70 - 8%,, upper canine = N45-5%, upper 1st premolar N=143-16%,upper 2nd premolar N=121-14%, except the upper 1st molar N= 133—15%, and the lower 1st molar N= 191-26%, with the lower same teeth respectively. Lateral incisor N= 35-5%, lower canine N=25-3%, 1st premolar N=62-9%, 2nd premolar N=8 0-11% **Table 9** (X<sup>2</sup>=58.102, p-value =0.000) H.S.

There is a high significant correlation between age factor in groups of age in the upper arch in **Table 3**, X<sup>2</sup>

**Table 3.** Frequency distribution of extracted teeth according to the type of teeth and age groups. X=137.273, p=0.000 (HS)

Tooth		Age (years)							Total
		11-19	20-29	30-39	40-49	50-59	60-69	70 & over	
Central incisor	N	3	4	6	13	21	12	3	62
	%	5	6	10	21	34	19	5	100
Lateral incisor	N	0	8	16	14	23	6	3	70
	%	0	11	23	20	33	9	4	100
Canine	N	5	5	5	6	14	6	4	45
	%	11	11	11	13	31	13	9	100
1 <sup>st</sup> premolar	N	6	24	31	38	30	9	5	143
	%	4	17	22	27	21	6	3	100
2 <sup>nd</sup> premolar	N	3	22	34	26	22	11	3	121
	%	2	18	28	21	18	9	2	100
1 <sup>st</sup> molar	N	7	21	42	27	24	9	3	133
	%	5	16	32	20	18	7	2	100
2 <sup>nd</sup> molar	N	0	15	23	28	18	14	5	103
	%	0	15	22	27	17	14	5	100
3 <sup>rd</sup> molar	N	4	74	61	40	25	6	0	210
	%	2	35	29	19	12	3	0	100
Total	N	28	173	218	192	177	73	26	887
	%	3	20	25	22	20	8	3	100

**Table 4.** Frequency distribution of extracted teeth regard to age groups and type of teeth in the lower jaw

Tooth1		Age ( years)							Total
		11-19	20-29	30-39	40-49	50-59	60-69	70 & over	
Central incisor	N	2	3	7	7	13	8	2	42
	%	5	7	17	17	31	19	5	100
Lateral incisor	N	2	2	2	5	12	8	4	35
	%	6	6	6	14	34	23	11	100
Canine	N	1	2	0	2	14	6	0	25
	%	4	8	0	8	56	24	0	100
1 <sup>st</sup> premolar	N	1	6	10	12	20	10	3	62
	%	2	10	16	19	32	16	5	100
2 <sup>nd</sup> premolar	N	3	10	14	16	18	14	5	80
	%	4	13	18	20	23	18	6	100
1 <sup>st</sup> molar	N	17	58	44	29	30	7	6	191
	%	9	30	23	15	16	4	3	100
2 <sup>nd</sup> molar	N	3	26	22	22	17	14	3	107
	%	3	24	21	21	16	13	3	100
3 <sup>rd</sup> molar	N	9	46	43	46	20	14	3	181
	%	5	25	24	25	11	8	2	100
Total	N	38	153	142	139	144	81	26	723
	%	5	21	20	19	20	11	4	100

X=128.487, p-value =0. 000. (HS)

**Table 5.** Frequency distribution of extracted teeth regard to the age and reasons

Causes-1		Age (years)							Total
		11-19	20-29	30-39	40-49	50-59	60-69	70-over	
Accident	N	9	14	2	0	0	0	0	25
	%	36	56	8	0	0	0	0	100
Badly carious	N	29	135	156	120	59	26	2	527
	%	6	26	30	23	11	5	0	100
Bad position	N	0	16	40	21	6	1	1	85
	%	0	19	47	25	7	1	1	100
Failure RCF	N	0	11	16	6	3	0	0	36
	%	0	31	44	17	8	0	0	100
Impaction	N	15	89	34	9	1	3	2	153
	%	10	58	22	6	1	2	1	100
Mobility	N	0	2	7	34	74	42	21	180
	%	0	1	4	19	41	23	12	100
Ortho- purpose	N	8	9	0	0	1	0	0	18
	%	44	50	0	0	6	0	0	100
Pericoronitis	N	0	3	1	3	1	0	0	8
	%	0	38	13	38	13	0	0	100
Retained root	N	5	47	104	138	176	82	26	578
	%	1	8	18	24	30	14	4	100
Total	N	66	326	360	331	321	154	52	1610
	%	4	20	22	21	20	10	3	100

X=790.607, p-value=0.000. (HS)

=137.273, P-value =0.000 since the age between 20 -60 has the main number of extraction of the 3rd molar. The 1st molar was extracted more in the age 20-40Ye,N=102-55% and to less extent the group 40-60Ye N=59, 21% while the second premolar extraction was more in age group 40-60 Ye 43%. In this table also there is increase in the number of anterior teeth extraction by aging while the number of extraction was decreasing in the younger group 80% of the canine, 57% for lateral incisor and 50% for central incisor between the age 50-70Ye group of age while in the posterior teeth except the 3rd molar, was 45% for the 2nd, and 53% for the 1st molar respectively. This happens also the same for lower jaw in **Table 4** with  $\chi^2 =128.487$ , p-value= 0.000 (H.S.)

The age groups were estimated regard to the causes of permanent teeth extraction in **Table 5**. For example the orthodontic treatment regularly start in the group 11-19, though the percentage of the extraction because of little spacing in the arches, was 94%, accident between

11-40Ye was 100%, the mobility of the teeth in this table more significant after 40 years of age. The relation of the age with the cause of extraction was highly significant.  $\chi^2=790.607$ . p value= 0.000 (**Table 5**).

The frequency of the extracted teeth in relation to the causes and age was highly significant in **Tables 5-8**. The distribution of teeth that extracted in age group more than 40Ye and below 40Ye was so significant  $\chi^2=443.068$ , p-value =0.000(H.S.).

**Table 7** shows that a significant relationship between teeth extraction and caries related causes which include failure RCF, retained root, and badly carious teeth with  $\chi^2=141.655$ , p-value 0.000 (H.S.), So it appears increasing the number from the start of 20 and above while in **Table 8** we have a significant relationship between age and periodontal disease that makes a sharp increasing after 40 years of age and above,  $\chi^2=17.613$ , p-value =0.000-(H.S.).

**Table 6.** Frequency of extracted teeth in relation to the cause and age

Causes	Age (Years)			Total
		Less than 40 years	More than 40 years	
Accident	N	25	0	25
	%	3	0	2
Bad ly carious	N	320	207	527
	%	43	24	33
Bad position	N	56	29	85
	%	7	3	5
Failure RCF	N	27	9	36
	%	4	1	2
Impaction	N	138	15	153
	%	18	2	10
Mobility	N	9	171	180
	%	1	20	11
Ortho purpose	N	17	1	18
	%	2	0	1
Pericoronitis	N	4	4	8
	%	1	0	0
Retained root	N	156	422	578
	%	21	49	36
Total	N	752	858	1610
	%	100	100	100

X=443.068, p-value=0.000 (HS)

**Table 7.** Frequency of extraction due to caries reason in relation to age

Cause of extra	Age					
	Less than 40Ye		More than 40 Ye		Total	
	N	%	N	%	N	%
Failure RCF	27	5	9	1	36	3
Retained root	156	31	422	66	578	51
Badly carious	320	64	207	32	527	46
Total	503	100	638	100	1141	100

X=141.655, p-value=0.000 (HS)

**Table 8.** Frequency of extracted teeth due to perio. related causes

Cause	Age (Years)					
	Less than -10 years		More than 40 years		Total	
	N	%	N	%	N	%
Pericoronitis	4	31	4	2	8	4
Mobility	9	69	171	98	180	96
Total	13	100	175	100	188	100

X<sup>2</sup>= 17.613, p-value= 0.000 (HS)

## DISCUSSION

It is always necessary to be careful when we comparing different studies because of the difference that attributed to heterogeneous population samples which were examined, the progression of dental caries and periodontal disease in this or that countries, the difference in methodology that used in estimating the frequency of teeth extraction and the importance that has been adopted by the population samples regarding the value of oral health and the importance of the follow up.

The present study evaluated the causes and pattern of tooth extraction among patients attending Al – Mamoon specialized dental Centre. Females were observed to have little more extracted teeth than male 48.39% to 51.61% respectively, this result disagree with study (Osunde et al. 2017) and agree with the other studies (Daameh, 2012; Anyanechi and Chukwunke 2012) The reason may be explained by their dental seeking behavior and diet habits.

Gender in this study showed that did not influence the causes significantly similar to other study (Osunde et al. 2017) the extracted teeth in female 54%, in male 46%, this in contrast with other studies (Ogini, 2005; Shigli et al. 2009; Chrysanthakopoulos, 2011).

The maxillary 3rd molar and the lower 1st molar was the most teeth extracted as well as the upper 2nd molar were noted to be the most frequently extracted teeth in our study, the anterior teeth for both maxillary and mandibular showed attend to be more frequently extracted for periodontal disease while the posterior 2nd and 1st molars for both jaws extracted for dental caries. Other studies showed that the more frequently extracted tooth is the mandibular molars (Murray et al. 1996; Ogini, 2005), molars of both jaws (Ogini, 1998) maxillary teeth (Sayegh et al. 2004) mandibular central incisor (Sayegh et al. 1996; Sayegh et al., 2004), The 3rd molar extraction was extracted due to painful eruption and the impaction. A reason adduced for this is often related to the age, the 1st molar in the mouth being one of the first permanent tooth to erupt. The extractions of molars and premolars are often due to caries and its sequelae

**Table 9.** Type of tooth in relation to other parameters Frequency distribution and arch difference with regard to type of tooth

Tooth		Upper	Arch Lower	Total
Central	N	62	42	104
	%	7	6	6
Lateral	N	70	35	105
	%	8	5	7
Canine	N	45	25	70
	%	5	3	4
1 <sup>st</sup> premolar	N	143	62	205
	%	16	9	13
2 <sup>nd</sup> premolar	N	121	80	201
	%	14	11	12
1 <sup>st</sup> molar	N	133	191	324
	%	15	26	20
2 <sup>nd</sup> molar	N	103	107	210
	%	12	15	13
3 <sup>rd</sup> molar	N	210	181	391
	%	24	25	24
Total	N	887	723	1610
	%	100	100	100

$\chi^2 = 58.102$ , p-value = 0.000 (HS)

while that for anterior teeth specially lateral and central incisors the causes were mobility and in little extent trauma. These results similar to other studies in the world (Ong et al. 1996; Ong et al. 1999; Chukwu et al. 2004; Daameh, 2012; Anyanechi and Chukwunke, 2012) High levels of caries and its sequelae tooth loss were seen in present study. These findings may just be a reflection of the lack of dental health care. Our study shows that dental caries and its sequelae were the main cause for tooth extraction 46% while periodontal disease makes 11%. The dental caries appears to be the main cause of tooth extraction in a large number of countries in which the following percentages were recorded 70% (Caldas, 2000), 67.5% (Akter et al, 2008), 63.3% (Jovino-Silveira et al. 2005), 59.2% (Murray et al, 1997), 59% (Daameh, 2012), 56.4% (Ogini, 2005), 52.6% (Murray et al. 1997), 51% (Chest et al. 2000), 46.9% (Spalj et al. 2004), 43.3%, On the other studies which showed that both caries and periodontal disease were almost equally the main reasons (Angelillo, 1996; Ong, 1996; Aida et al, 2006) Periodontal

disease appears in other little studies (Reich, 1993; Chrysanthakopoulos, 2011) 36.4% for periodontal disease and 24.5% for dental caries. In Asian population the periodontal disease was 35.8 and dental caries was 35.4, also in Jordan (Angelillo et al. 1996).

In our study the age from 40 and below and above according to the variables dental caries and periodontal disease were highly significant. there is an increase in the periodontal disease by age and dental caries increases in the young age, this match all the studies in the world.

## CONCLUSION

- 1- The predominant group of age in this study was (30-40) Year.
- 2- The first molar is the most teeth extracted after the wisdom teeth and extracted more in age 20-40 Year.
- 3- There is a sharp increase in teeth loss because of periodontitis after the age of 40 Year.

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