

## Original Research Article

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# Reasons for extraction of teeth in COVID corona pandemic: a retrospective study

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## ABSTRACT

**Background:** Aim and objectives were to evaluate the various reasons for extraction of teeth during corona pandemic time.

**Methods:** A total of 769 patients were selected for the study which included 376 males and 393 females. The study included those patients who had reported to the department of oral and maxillofacial surgery, college of dental science and hospital, Rau, Indore, India for extraction of teeth during COVID pandemic time period of 15 months from April 2020 to June 2021. Extraction procedure was done for all these patients, taking into consideration patient's age, gender, type of teeth and the reason for extraction.

**Results:** A total of 906 teeth were extracted in 769 patients. Females outnumbered males in both total number of patients and number of teeth extracted. Dental caries was the main reason for extraction of teeth, followed by periodontitis, impacted teeth, teeth extraction for orthodontic purposes, malposed, supernumerary teeth and others.

**Conclusions:** Dental caries and periodontitis were the two main reasons for extraction of teeth in Corona pandemic times.

**Keywords:** Extraction, Pandemic, Corona, Teeth, Dental caries, Periodontitis

## INTRODUCTION

In the late 2019 and early 2020, a new virus was discovered which caused a very severe type of viral infection. With time, this deadly virus had engulfed almost the whole world. By March 2020, WHO finally declared this viral infection as a pandemic, and was termed as COVID-19 infection.<sup>1</sup>

Virus had a very fast spread by humans and inanimate contact, aerosol, droplets as in sneezing and coughing and with body fluid contact as saliva, blood and others. Oral cavity with Saliva and nasopharynx were a good site for the presence and detection of corona virus. As per a study by Tsang et al in some patients, coronavirus was detected more and sometimes only in saliva and not in nasopharyngeal swab. Being in constant touch with

saliva, dental surgeons were amongst the first to get exposed to the virus.<sup>2</sup>

The world came to a standstill. There were no means to know and understand about this new strain of Coronavirus. There was no readily available vaccine, also. A complete lockdown was imposed to curb the spread of this virus. First lock down, it's opening in phase wise manner, a second lockdown in April 2021 to May 2021 as "Janata curfew" and its reopening together, comprised of approximately 15 months of peak of COVID-19 infection.

The objective of this study was to determine the major reasons for extraction of teeth during the time duration of 15 months from April 2020 to June 2021. All elective dental procedures were put on halt for these initial few

months. Only emergency dental services were being performed. At this time, Extraction procedure was the only, safe, single sitting, best option available to give patients, fast and sure relief from dental pain. Dental caries and periodontitis were the two main reasons for extraction of teeth in this COVID pandemic time.

## METHODS

This study was conducted via retrospective data analysis available in the department of oral and maxillofacial surgery at college of dental science and hospital, Rau, Indore, India during the Corona pandemic time duration of approximately 15 months from April 2020 to June 2021. This time period included the first lockdown, reopening in phases, second lockdown by April 21 followed by reopening in June 2021. A total of 769 patients were included in the study. Out of these 376 were males and 393 were females. All these patients had reported to the department of oral and maxillofacial surgery for extraction of teeth. These patients were divided into 13 groups comprising of five years difference in each age group. These were from 15 to 19 till 74 to 79 years of age. Other factors taken into consideration were the gender, type of tooth and the reason for extraction.

All these patients had severe unbearable type of dental pain. All the patients were medically fit. Patient who had any associated medical ailment, were under respective medication and control. A thorough dental examination was done. Relevant findings were noted in pre-formed chart. The need for extraction was explained to the patient. A well written informed consent was obtained and ethical committee approval was taken. Being the pandemic time, extraction was the only way out to give relief to the patients. Extraction was single sitting, safe, fast, contamination free procedure which was agreed to by both the patient and dental surgeon. Patient who had relevant signs and symptoms of any viral infections were sent to respective centres and were not included in the study. Extraction procedure was done for all the patients taking care of all safety measures and standard operating protocols known at that time.

The data was manually entered in excel sheet and statistical analysis was done using Microsoft excel spreadsheet software [Version 2019]. Chi square test was carried out and p value was estimated.

## RESULTS

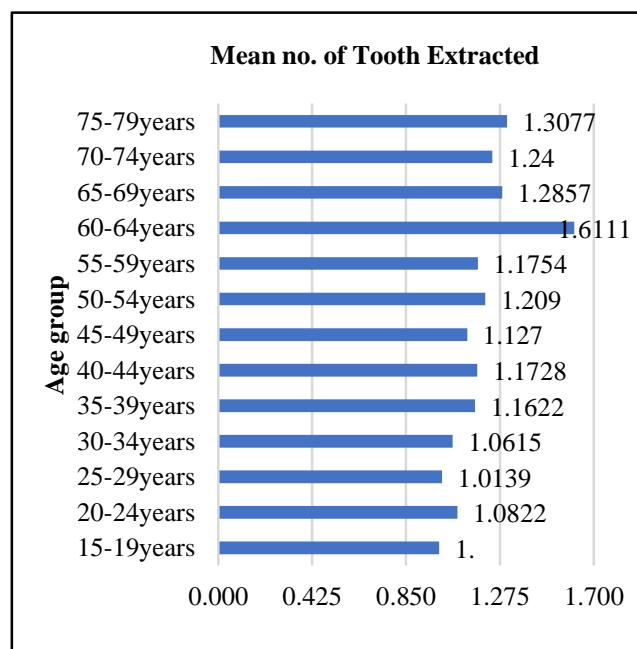
A total of 769 patients were selected for the study out of which 376 (49.8%) were males and 393 (51.1%) were females. A total of 906 teeth were extracted in 769 patients. The total number of extractions performed in male patients were 452 (49.8%) whereas for females it was 454 (50.1%). Maximum number of extractions were done for the age group of 40-44 years (10.5%).

Among the type of teeth, mandibular molars were extracted the most amounting to 323 (35.6%), followed by maxillary molars 225 (24.8%). As the maxillary and mandibular first molars are among the first few permanent teeth to erupt, at very early age, they get exposed and susceptible to carious.

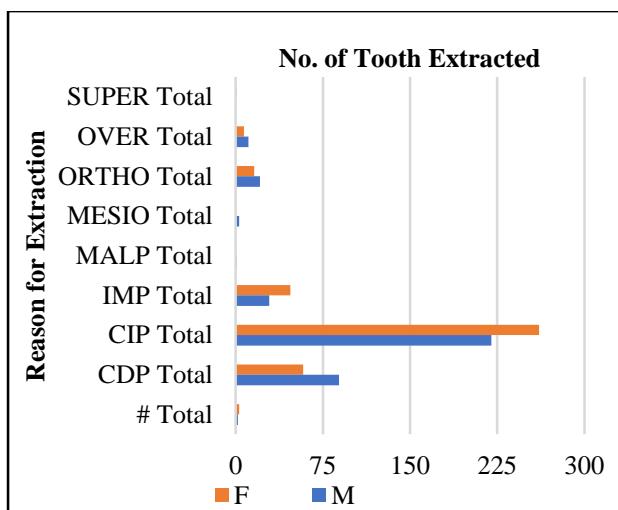
After molars, the number of maxillary and mandibular premolars extracted were 102 (11.2%) and 93 (10.2%) respectively. Next in the sequence were maxillary and mandibular Central Incisors, 56 (6.1%) and 42(4.6%) respectively. Maxillary canines 24 (2.6%) and mandibular canines 19 (2.09%) were the last to get extracted among all the teeth. Both canines and anterior teeth in both the jaws generally don't get carious and are lost with age mainly due to Periodontal reasons. Trauma is also one of the main reasons for the extraction of anterior teeth.

Dental caries which included teeth with or without pulpal involvement and root stumps was the main reason for extraction 481 (62.5%) whereas periodontitis was the second main reason for extraction of teeth 147 (19.11%), 10% of the total extractions were done for orthodontic reasons, 2.7% in males and 2% in females. Surgical extraction of impacted teeth amounted to a total of 9.8% of the total extraction which included more females 61.8% than males 38.1%. Only 1.3% of the total extractions were carried out for reasons as supernumerary, malposed, severely abraded and fractured teeth.

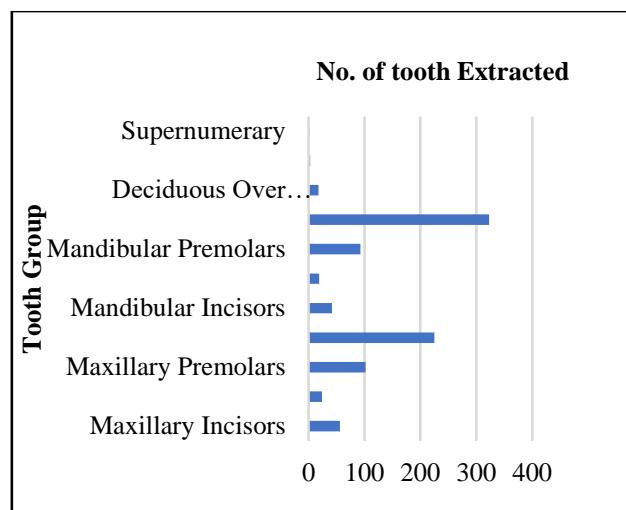
The main reason for extraction in males was periodontitis while in females it was dental caries. But overall dental caries was main reason for extraction of teeth in pandemic times.



**Figure 1: Mean number of tooth extracted by age group.**



**Figure 2: Reason for extraction by gender.**



**Figure 3: Reason of extraction by tooth group name.**

**Table 1.**

Age group (In years)	Sex		Grand total	Extractions		Grand total
	M	F		M	F	
15-19	30	28	58	30	28	58
20-24	34	39	73	37	42	79
25-29	30	42	72	30	43	73
30-34	24	41	65	26	43	69
35-39	20	54	74	21	65	86
40-44	39	42	81	48	47	95
45-49	29	34	63	32	39	71
50-54	35	32	67	46	35	81
55-59	35	22	57	43	24	67
60-64	39	33	72	58	58	116
65-69	35	14	49	48	15	63
70-74	18	7	25	24	7	31
75-79	8	5	13	9	8	17
Grand total	376	393	769	452	454	906
Percentages (%)	48.89	51.11		49.89	50.11	
<b>Chi square value</b>	20.83	19.93	40.76	31.89	31.75	63.65

The p value is less than 0.0001

**Table 2.**

Reason	Sex		Grand total	Percentages (%)
	M	F		
Total	2	3	5	0.650
CDP total	89	58	147	19.116
CIP total	220	261	481	62.549
IMP total	29	47	76	9.883
MALP total	1	0	1	0.130
MESIO total	3	0	3	0.390
ORTHO total	21	16	37	4.811
OVER total	11	7	18	2.341
SUPER total	0	1	1	0.130
Grand total	376	393	769	
Percentages (%)	48.89	51.11		
<b>Chi square value</b>	10.12	10.58	20.69	

The p value is less than 0.005.

## DISCUSSION

In December 2019 a new SARS-COV like Corona virus was discovered which was supposed to have originated in China. The virus had eventually spread to the world and was named novel Coronavirus which caused COVID-19 viral infection. By March 2020 this COVID-19 infection was declared a pandemic by WHO.<sup>3</sup>

This novel Coronavirus had a very fast spread and a high infectivity rate. Human contact, contact with inanimate objects, aerosol procedures, droplets as in coughing and sneezing, contact with blood and saliva were the common and easy ways of spread of this Coronavirus. Within no time the virus had engulfed most of the world. Initially there was not much information about properties of virus and also there was no readily available vaccine to combat this deadly virus. A lockdown was imposed to curb the spread of this virus and infection. Other measures to prevent the spread of this virus as, social distancing, no direct contact with other person and even inanimate objects, maintaining one's immunity and special care for immunocompromised patients, were brought into immediate effect.

First lockdown was imposed from April 2020 to June 2020.

This initial time saw considerable decrease in the number of patients visiting our institute.

Due to the Coronavirus pandemic all elective dental procedures were halted. Only emergency dental conditions as severe pain, swelling, haemorrhage, space infections were being taken care of and managed.<sup>4</sup>

Main priority was to give relief to the patient from severe dental pain. In majority of the checkups dental caries and periodontitis were the two main findings for the pain. No aerosol producing procedures were to be performed. In the present scenario, extraction of involved teeth was the only treatment option which was agreed to by us and patients. All patient were medically fit. Those who had any relevant symptoms, were excluded from the study and sent to respective referral centres for needful.

Extraction was the only choice of treatment during this pandemic time as it was safe, single sitting, no aerosol producing and with no risk of contamination.

While performing extraction and few other emergency procedures in this pandemic time, most simple safe principles of surgery were followed. Many of patients were asymptomatic, but could have been COVID positive. Thus, assuming all patients to be corona positive all standard operating protocol's strictly followed so as to minimize risk of spread of COVID-19 pandemic.<sup>5,6</sup>

Few teeth which could have been managed endodontically were also extracted with patient's consent.

Situation was such that the extraction was inevitable during this time of pandemic, wherein both patients and dental surgeon were scared of getting dental treatment done and perform respectively.

By July 2020, after the first phase of reopening the number of patients visiting our institute gradually increased. A new normal working system was initiated with new standard operating procedures. All these norms were brought into action and followed strictly. With time the other reasons for extraction such as Impacted teeth, extraction for orthodontic treatment, supernumerary teeth, malposed teeth and others were also taken into consideration.

Data during this period showed that dental caries was the main reason for extraction of teeth. In males periodontitis was the main reason, partly because of poor oral hygiene, less awareness and care of teeth with history of adverse oral habits. Vaccination drive was started in January 2021, initially for healthcare workers which included dental surgeons as well. This was a very important aspect as dental surgeons come in high risk category of frontline workers who come in direct contact with the patient and are always at a risk of exposure.<sup>7</sup> We all got vaccinated. This gave confidence to the dental surgeons and even patient to a certain extent. As vaccination became available for general public, the number of patients and procedures performed also increased. All the patients were also encouraged to get vaccinated. With time vaccination was made mandatory for getting a dental check-up and treatment in our institute. A second lock down from April 2021 till May 2021 again saw a decrease in number of patients but less than that in first lockdown in April 2020.

During the study duration of 15 months, findings revealed that dental care was the main reason for extraction of teeth followed by periodontitis.<sup>8</sup> Surgical extraction of impacted teeth were done more in female patients, while extractions for orthodontic treatment were more in males. This observation differed from a similar study done in this institute back in 2011 wherein surgical extraction of wisdom teeth was done more in male patients, while extraction for orthodontic reasons were more in female patients.<sup>9</sup>

Overall, the pandemic has actually changed the whole concept and working of dentistry. These fifteen main months of Corona pandemic saw lots of ups and downs in this institute in patient flow and type of procedures and treatments performed.

Initial months saw a significant decrease in number of patients, and the same was in second lockdown in April and May 2021. Time duration between the two lockdowns witnessed an increase in both patient flow and treatment procedures with reopening and standard operating protocols, and good vaccination drive from January 2021.<sup>10</sup>

There were few limitations to this study. These included-  
1. Extraction of teeth in young patients had to be carried out when they could be saved. 2. Few of the patients were under antibiotic coverage and few others were not. So, extraction results could have been different in pre medicated and non-medicated patients.

## CONCLUSION

In the pandemic and post pandemic times, lot of changes have taken place in the working of dentistry. Similar to the pre pandemic normal times, dental caries was the main reason for the extraction of the teeth irrespective of age in the pandemic times as well, followed by periodontitis. Had patients taken a regular dental check-up and timely dental treatments, there was every possibility that this loss of teeth on large scale could have been minimized.

Effective measures need to be taken by both dental surgeons and patients to avoid extraction of teeth as far as possible to prevent their loss from the oral cavity. This will help, maintain and improve the overall general and dental health of the population.

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*Ethical approval: The study was approved by the Institutional Ethics Committee*

## REFERENCES

1. Cucinotta D, Vanelli M. WHO Declares COVID-19 a Pandemic. *Acta Biomed.* 2020;91(1):157-160.
2. To KK, Tsang OT, Yip CC, Chan KH, Wu TC, Chan JM et al. Consistent Detection of 2019 Novel Coronavirus in Saliva. *Clin Infect Dis.* 2020;71(15):841-3.
3. Meng L, Hua F, Bian Z. Coronavirus disease 2019 (COVID-19): emerging and future challenges for dental and oral medicine. *J Dent Res.* 2020;99(05):481-7.
4. Berlin-Broner Y, Levin L. 'Dental Hierarchy of Needs' in the COVID-19 Era - or Why Treat When It Doesn't Hurt? *Oral Health Prev Dent.* 2020;18(1):95.
5. Ahmed MA, Jouhar R, Ahmed N, Adnan S, Aftab M, Zafar MS, et al. Fear and Practice Modifications among Dentists to Combat Novel Coronavirus Disease (COVID-19) Outbreak. *Int J Environ Res Public Health.* 2020;17(8):2821.
6. Barca I, Cordaro R, Kallaverja E, Ferragina F, Cristofaro MG. Management in oral and maxillofacial surgery during the COVID-19 pandemic: Our experience. *Br J Oral Maxillofac Surg.* 2020;58(6):687-91.
7. Kamalova MK, Fomenko IV, Dmitrienko DS, Matvienko NV, Arjenovskaya EN, Gevorkyan AG et al. Reasons for 1-17 year old Children to visit a dentist during the covid-19 pandemic. *Eur J Molecular Clin Med.* 2020;07(7):546-58.
8. Heningtyas AH, Naka AR. Dental Patient Utilization During the COVID-19 Pandemic at Mungkid Primary Health Centre in 2020. *Adv Heal Sci Res.* 2022;55:258-66.
9. Rashmi S, Neema HC. Evaluation of various factors for extraction of teeth in a rural dental college. *J Pierre Fauchard Academy.* 2014;28(1):28-33.
10. Odeh ND, Babkair H, Abu-Hammad S, Borzangy S, Abu-Hammad A, Abu-Hammad O. COVID-19: Present and Future Challenges for Dental Practice. *Int J Environ Res Public Health.* 2020;17(9):3151.

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