

**Prevalence of Endodontic Emergencies during COVID-19 Coronavirus Disease in Jammu Population**

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**Abstract**

**Introduction:** COVID-19 coronavirus has emerged today as a very deadly disease. It has affected almost entire human race in the world. After the first case of this disease diagnosed in India, it is growing at a rapid rate. At this time of public health crisis, it is the duty of the dentist to diagnose and treat emergencies which arises due to endodontic diseases.

**Methods:** A total of 24 patients were accessed who came to department of Conservative Dentistry and Endodontics in IDS, Jammu with endodontic problems from May 26 to June 6, 2020. Patients were diagnosed and treated by taking a history and Verbal numerical rating scale (VNRS) scores, after accessing the body temperature and coronavirus disease investigation. A detailed diagnosis was formulated according to age and sex of the patients and VNRS scores were also recorded.

**Results:** At the time of coronavirus more patients stopped by the department for endodontic emergency conditions (91.67%) as compared to the previous year 2019 where more patients came for routine non-endodontic procedures

(81.55%). Most of the patient who visited the department for endodontic emergencies at the given period were males (79.16%) and were from adult age group (62.50%). The majority of endodontic emergency were symptomatic irreversible pulpitis (54.16%).

**Conclusion:** The study concluded that most of the patients desired to get relieved by the endodontic conditions, so a quick diagnosis and treatment should be done keeping in mind the personal protection of the dentist himself.

**Keywords:** Coronavirus; Endodontic Emergencies; Diagnosis; Symptomatic irreversible pulpitis

**Introduction**

The novel coronavirus COVID-19 is a very strange disease human history is observing today. The actual name of this disease is SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2). It is fast spreading disease all over the world. The first case in the world was reported from Wuhan, Hubei, China in December 2019 [1].

It is mainly an infectious disease of upper air passage. SARS-CoV-2 has many different symptoms like fever

(99%), fatigue (70%), dry cough (60%), myalgia (44%) and dyspnea [2,3]. The most complex of the symptoms include acute respiratory distress syndrome (ARDS), acute kidney disorder, arrhythmias, shock and finally acute cardiac arrest [4,5]. An acute respiratory distress syndrome was record within 9 days of its initial onset [6]. Studies revealed that older patients having comorbidities like diabetes, obesity and hypertension, were at much higher risk compared to other individuals [7].

The first case of novel coronavirus in India was reported on January 30, 2020 in Kerala [8]. As on March 24, 2020 the Indian Government announced a complete lockdown to halt the transmission of the growing pandemic [9]. Healthcare professionals are in risk of becoming the target of growing virus. Number of these healthcare workers are infected worldwide [10]. The common mode of transmission includes respiratory transmission, aerosol transmission, contact transmission [11]. Due to direct exposure to saliva and blood, dental practitioners are also at extreme risk of contracting the virus [12]. To limit the spread of this virus the Government of India issued guidelines for dental professional in Covid-19, to focus on only emergency dental treatments [13]. Dental emergencies caused due to pulpal and periapical disease, accounts for about 85% of the emergencies in dental clinic [14]. An endodontic emergency “is defined as pain and/or swelling caused by various stages of inflammation or infection of the pulpal and/or periapical tissues [15]. Since endodontic emergencies are inevitable in dental practices, so they were carried out in the dental institute to lower the suffering of the patients due to pain or swelling.

The present study was conducted to analyze the frequency of patients visiting the department of Conservative Dentistry and Endodontics in the Institute of Dental Sciences (IDS), Jammu during the time of pandemic between May 26 and June 6, 2020 compared to the

previous year (2019) and also the description of the type emergency treatment provided to them.

### **Materials and Methods**

**Selection of Subjects:** The present study was conducted at Department of Conservative Dentistry and Endodontics, IDS, Sehora, Jammu. All the patients who visited the department from May 26 to June 6, 2020 were evaluated. Before starting the dental examination, the body temperature was acquired with the help of a digital thermometer gun (Infrared Non-Contact Thermometer, GIFTMART, Mumbai, India). The patients were also inquired about being a confirmed or suspected COVID-19 patient.

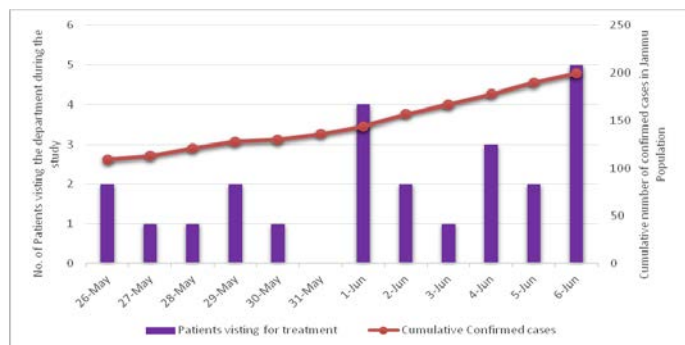
**Evaluation Of Subject:** The information regarding sex, age and any underlying systemic disease, all were acquired from the patients who came to the department for the treatment. Patient’s chief complaint was taken and those of who complaint of pain were asked to describe the pain using verbal numerical rating scale (VNRS) [16]. After taking all the attributes mentioned above, a through diagnosis was made regarding the type of illness present.

**Statistical Analysis:** A cumulative data was formulated regarding the number of patients visited and the type of endodontic disease present, which was compared to the frequency of the patients in the previous year (2019). The number of patients visited were also stratified by sex, age and the diagnosis build on examining. Data was analysed using SPSS version 24 (SPSS Inc., Chicago, IL, USA). The independent t test and one way ANOVA were performed to compare the verbal numerical rating scale (VNRS) scores of the samples [ $p < 0.05$ ].

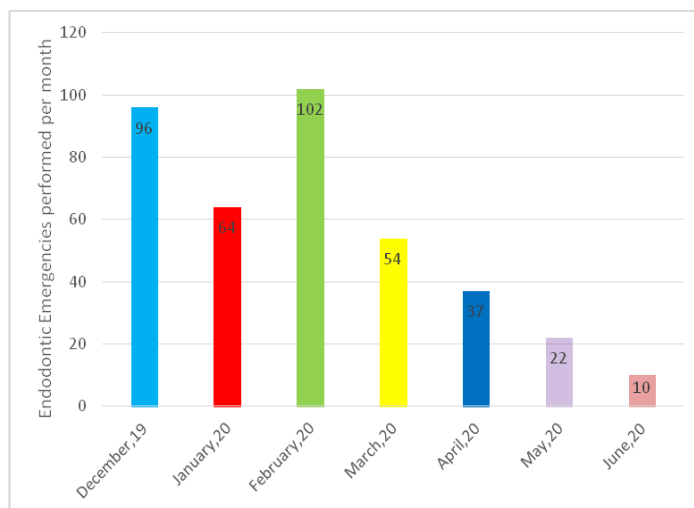
**Result:** The demographic trend of patients visiting the department for the treatment for endodontic disease along with the growing COVID-19 cases in Jammu [17] (Graph-1). Endodontic emergencies were subsequently reduced in month of April, May and June, 2020 after the first case of

Coronavirus COVID-19 as compared to patients visit before the nation-wide lockdown in India [Graph- 2]. Most of the patients who visited the department were treated as endodontic emergency condition (91.67%), this was compared with year 2019 which accounted for only 18.45% of endodontic emergency treatments [Graph- 3]. The endodontic emergency patients were mostly males (n= 19/24) accounting for 79.16% patients who underwent treatment. Females who visited the department were comparatively low with 20.83% (n=5/24). The patients were also divided according to age groups, Adult group manifested with maximum patients (62.50%, n=15/24). Least patients were of senior age group accounting for only 4.16% of patients visit [Table 1].

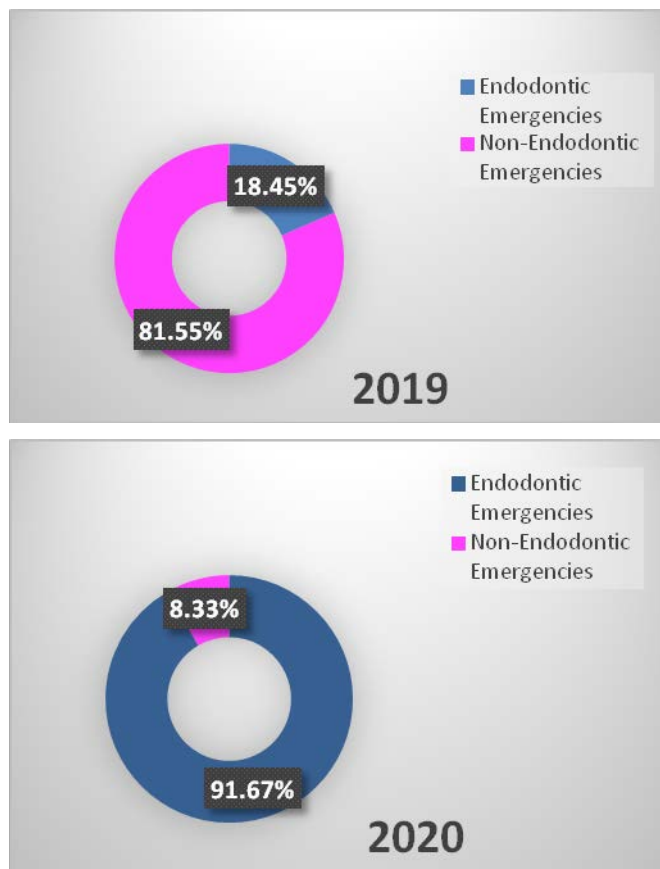
A diagnosis was also reflected for all the patients from the history of the present illness and VNRS scores [Table 1]. Endodontic emergency condition which was more common among the patients was symptomatic irreversible pulpitis (54.16%). According to mean VNRS scores, patients with acute alveolar abscess suffered from increased pain (8.23) as compared to other diagnosis (p<0.05).



Graph 1: Demographic details of patients who visited the department of Conservative Dentistry and Endodontics in IDS, Jammu due to endodontic diseases and the cumulative number of patients suffering from COVID-19 in Jammu from May 26 to June 6, 2020.



Graph 2: Endodontic emergency cases performed per month before and after the Outbreak of COVID-19 in Jammu city



Graph 3: The proportion of patients visited department with endodontic and non-endodontic emergencies in 2019 and 2020

Table 1: The Mean Verbal Numerical Rating scale (VNRS) in different variables like sex, age group and

diagnosis of endodontic disease from May 26 to June 6, 2020 during the Coronavirus Outbreak in Jammu

Variables of Patients	Number	Percentage	Mean VNRS scores (p<0.05)
Sex			
Male	19	79.16%	6.17 ± 1.22
Female	5	20.83%	6.54 ± 1.38
Age group			
Children (0-14 years)	0	0.00	0.00
Youth (15-24 years)	8	33.33%	6.89 ± 2.15
Adult (25-64 years)	15	62.50%	6.7 ± 1.58
Senior (> or = 65 years)	1	4.16%	6.00 ± 0.00
Diagnosis			
Reversible Pulpitis	2	8.33%	3.50 ± 0.70
Symptomatic irreversible pulpitis	13	54.16%	7.65 ± 1.82
Acute alveolar abscess	2	8.33%	8.23 ± 2.08
Symptomatic Apical Periodontitis	6	25.00%	6.24 ± 1.54
Traumatic Injuries	1	4.16%	7.00 ± 0.00

**Discussion**

Today the world is suffering from a pandemic of COVID-19 coronavirus disease. The World Health Organization (WHO) on January 30, 2020 declared Coronavirus as a public health emergency [18]. According to WHO report

on COVID-19 (June 10, 2020) there have been 7,145,539 confirmed cases and 408,025 deaths worldwide [19]. It has become more difficult for the healthcare worker to manage and control the further spread of this virus. Many healthcare has been infected or lost their lives due to this deadly virus. Amongst the healthcare worker’s dental professionals are at increasing risk of containing this virus due to direct contact. The risk of direct contact includes aerosol generation, handling of sharp instruments of infected patients and close proximity to oropharyngeal area of the patient [20]. The virus is said to remain viable for about 3 hours in aerosol and also can stay over a surface even after 72 hours [21]. COVID-19 has also shown spread through the subclinical patients, which provides greater risk to the dentist [22].

Evaluating all the risk factors related to this Coronavirus disease, it is very important for a dentist to reduce the number of patients being treated to only endodontic emergencies in the clinics thus preventing cross-infections among the community [23]. The number of patients examined in this study was less (n=24) and only endodontic emergencies were performed.

Before diagnosing and treating the patients, a body temperature screening test was done with a digital thermometer gun and patients were inquired about any signs of COVID-19, as other medical specialties are implementing [24].

The results of the study revealed that 91.67% (n=22/24) of the patients who visited the department of conservative dentistry and Endodontics during May 26 to June 6, 2020 was due to an Endodontic emergency and not any other routine endodontic procedure. These results were quite similar to a study in Wuhan which showed that even under public health emergency, the patient needs endodontic emergency treatments [25].

In this study, there were more number of males (79.16%) who came for the endodontic department outnumbering the females (20.83%). Many studies have shown this high percentage of male: female ratio presenting with dental emergencies in the operatory [26-28]. Since older population are at higher risk and are associated with poor prognosis to SARS-CoV-2 [29], so they accounted for only 4.16% of patients who came at the time of emergency in the country. Adult age group (25-64 years) visited the department much more than other age groups (62.50%, 15/24).

On recording the VNRS scores of all the patient who came for the treatment, it was noted that most of the patients (91.67%, 22/24) suffered from exuberating pain so a need for endodontic emergency treatment was needed. The dentist is at potentially high risk to exposure from COVID-19 due to release of airborne particles and aerosols during treatment [30]. It is important for the dentist to follow standard protocols and precautions including the use of proper personal protective equipment and hand hygiene practices [31]. A preprocedural mouth rinse is very important as it can reduce the risk of ventilator-associated pneumonia [32]. 0.2% povidone-iodine has said to reduce the viral load of coronavirus in oral cavity [33]. Various points should be kept in mind before proceeding for the emergency treatment like use of disposal instruments (mouth mirror, syringe, burs etc.), avoid taking radiographs were necessary, use of rubber dam to minimize splatter generation [20]. With use of rubber dam, 70% of airborne particles can be reduced in the dental operatory [34]. Surgical mask does not provide with adequate protect to airborne infections, so particular type of face mask (N-95 masks) should be used [35]. The pain occurring due to endodontic disease can be reduced at the first instance After the completion of every emergency procedure the dental operatory must be

absolutely disinfected and cleaned. All the patients must be treated in a well ventilated and isolated rooms [29].

### Conclusion

Emergency Endodontic procedures contributes to a significant amount of the dental patients who visit the clinics. At the times like this when a public health emergency is declared, it is the role of an Endodontist to provide the patients with quick diagnosis and a helpful treatment to stabilize the endodontic condition. The dentist should also keep in mind his/her personal protection by using of mouth rinses, rubber dams and disinfecting the operatory regularly.

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