

Determination and Comparison of Frequency of Endodontic Emergency, Non-endodontic Emergency, and Non-Emergency Conditions in Patients Attending Qamar Dental Hospital, Karachi During Early COVID-19 Pandemic



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OBJECTIVE: To determine and compare the frequency of endodontic emergencies (EE) with other dental conditions in patients attending Qamar Dental Hospital (QDH), Karachi during first wave of COVID-19 pandemic.

METHODOLOGY: The dental records of all the dental patients (n= 1824) who attended the QDH during first wave of COVID-19 Pandemic peak were retrieved and divided into 3 groups based on diagnostic conditions: 1) - non-emergency (NE), 2)- Emergency endodontic (EE), and 3) - Emergency non-endodontic (ENE). The age groups were also divided into 3 group of 0 to 25, 26 to 50, and >50. Categorical variables were reported as %. Chi-square test was used to find inter-group difference. p <0.05 was regarded as significant.

RESULTS: Dental records of 1823/1824 patients were analysed. Results suggested that 54.6% of the patients were females and 50.1% of patients belonged to age range 0 to 25. Moreover, 1040 (57%) patients suffered with EE conditions, and 805 (77.4%) with symptomatic irreversible pulpitis. Analysis showed that significantly higher number of females and patients with age ≤ 50 suffered with EE as compared to males and age >50 (p <0.05). Significantly higher number of patients aged >50 years had ENE conditions as compared to 0 to 25 age group (p= 0.007)

CONCLUSIONS: Emergency endodontic conditions, especially symptomatic irreversible pulpitis was most prevalent during COVID-19 pandemic. This condition was experienced more by females and patients of age group <50 years. Efficient allocation of resources and cross-training is recommended to facilitate treatment of such patients during the pandemics.

KEYWORDS: COVID-19; Dental care; Dental emergency; Demographics; Endodontic emergency; Frequency

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INTRODUCTION

In December 2019, Chinese health authorities were alerted by the presentation of pneumonia of unknown aetiology in individuals living in Wuhan, Hubei province,

China.¹ Later on, Chinese Centre for Disease Control and Prevention isolated the causative agent, categorizing it as a novel coronavirus (2019-nCoV). The virus was later named as Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2).^{2,3} The most common routes of transmission identified for the SARS-CoV-2 included the inhalation of infected respiratory droplets or by having a contact with the infected surface (3,4). Common signs and symptoms of Coronavirus Disease 2019 (COVID-19) caused by SARS-CoV-2 included but not limited to high fever, dry cough, shortness of breath, malaise, lethargy, myalgia, headache, nausea, vomiting, and diarrhoea.^{2,4} High contagiousness of COVID-19 resulted in a widespread lockdown of the societies with countries closing off borders, limiting social mobility, and banning the

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international travel. In dentistry, the guidelines were developed by many scientific dental societies and researchers⁵⁻⁸ and routine dental practices became limited. Most of the guidelines for treating a dental patient included a prior dental triage on call, and treatment of patients with dental emergencies only under strict isolation protocols.^{4,5,9,10} Tele-dentistry was preferred for managing ill patients through telephonic conversations.⁹ The dental setting was considered as a high risk contagion as many dental treatments including periodontal, surgical, endodontic, and restorative involved aerosol-generating procedures.^{3,7,11,12} Moreover, dental emergency conditions that were recommended to be treated pharmacologically, or definitively during COVID-19 pandemic included Symptomatic Irreversible Pulpitis (SIP), Symptomatic Apical Periodontitis (SAP), Acute Apical Abscess (AAA), Avulsion/luxation, Tooth fracture with pain, and life-threatening trauma and cellulitis.¹³⁻¹⁵

It has been postulated that two-thirds of all dental emergencies are of endodontic origin for which the patient seeks the dental treatment.^{7,16} Similarly, it was highlighted in a study conducted by Yu et al that an increased percentage of patients reported with endodontic emergencies (EE) in year 2020 during COVID-19 pandemic as compared to previous years (16). A wide array of literature reported similar rise in number of patients reporting with EE and non-endodontic emergencies (ENE) during COVID-19 pandemic.^{1,17,18} This increased number of patients may exert pressure on the overburdened dental practitioners, especially those in endodontic departments during COVID-19 pandemic.

With the implementation of lockdown by the Government of Pakistan, patients had limited access to the dental care facilities. Additionally, there were diminished number of dental care practitioners available to cater the need of patients. In this scenario, a crucial local data was needed about the prevalence and types of dental emergencies with which the patients may seek an urgent dental treatment during a pandemic. This data could have helped the decision makers in planning an efficient strategy. However, to the best of our knowledge, no such type of data was available. As stated before, global data have suggested that EE was the most common condition because of which the patient may seek dental care during COVID-19 pandemic. Therefore, our study aimed to determine and compare the frequency of EE with other dental conditions in patients attending oral diagnosis department of Liaquat College of Medicine and Dentistry (LCMD), Karachi during first wave of COVID-19 pandemic.

METHODOLOGY

This single-centre retrospective cross-sectional study

was conducted at Qamar Dental Hospital (QDH), LCMD after getting approval from the Institutional Review Board (Ref no.: IRB/D-00009/21). The records of all the patients who visited oral diagnosis department of QDH from 28th February 2020 to 31st August 2020 were retrieved and included in the study. Incomplete dental records were excluded. Non-probability convenience technique was used for sampling. For meaningful analysis, the diagnostic conditions of the patients were divided into three groups: Non-emergency (NE), Emergency non-endodontic (ENE), Emergency endodontic (EE). A pre-made proforma comprising of elements such as date of visit, registration number, age, gender and diagnosis was used to collect data from the patient records.

Principal investigator was responsible to collect the data of the study. The data analysis was performed with the help of SPSS Statistics, version 24.0 (IBM Corp., Armonk, NY, USA). Categorical variables were presented as percentages. Chi-square test was used to find the statistical difference between the groups. The significance level was considered as <0.05 .

RESULTS

A total of 1824 patients attended the dental OPD during a period of six months. The record of one patient was excluded during analysis because of presence of incomplete information. Out of 1823 patients, 828 (45.4%) patients were males and 995 (54.6%) were females. Similarly, 491 (26.9%) patients belonged to the age range of 0 to 25 years, 913 (50.1%) belonged to age range 26 to 50 years, and 419 (23%) belonged to age of >50 . Furthermore, 595 (32.6%) patients presented with NE conditions. Whereas, 1040 (57%) patients came with EE conditions, and only 188 (10.3%) with ENE conditions (Table 1). Out of all EE conditions, 805 (77.4%) were diagnosed as SIP followed by necrotic teeth/previously initiated or treated with SAP ($n=123$ [11.8%]). Similarly, out of all ENE conditions, 73 (38.8%) patients were experiencing acute gingival or periodontal conditions followed by discomfort associated with dislodged fixed prosthesis ($n=56$ [29.7%]). On the other hand, the most common NE condition for which patient attended the oral diagnosis department was reversible pulpitis ($n=105$ [17.6%]) followed by requirement of routine scaling/polishing procedure ($n=103$ [17.3%]) (Figure 1).

Significantly ($p=0.042$) higher number of females ($n=589$) were suffering from EE as compared to males ($n=451$). On the other hand, the number of males ($n=294$) visiting the diagnosis department with NE condition was significantly ($p=0.017$) greater than females ($n=301$). Highest frequency of patients presenting with EE condition

Figure 1: Frequency of Patients with Different Diagnostic Conditions. SAP, Symptomatic Apical Periodontitis; AAA,

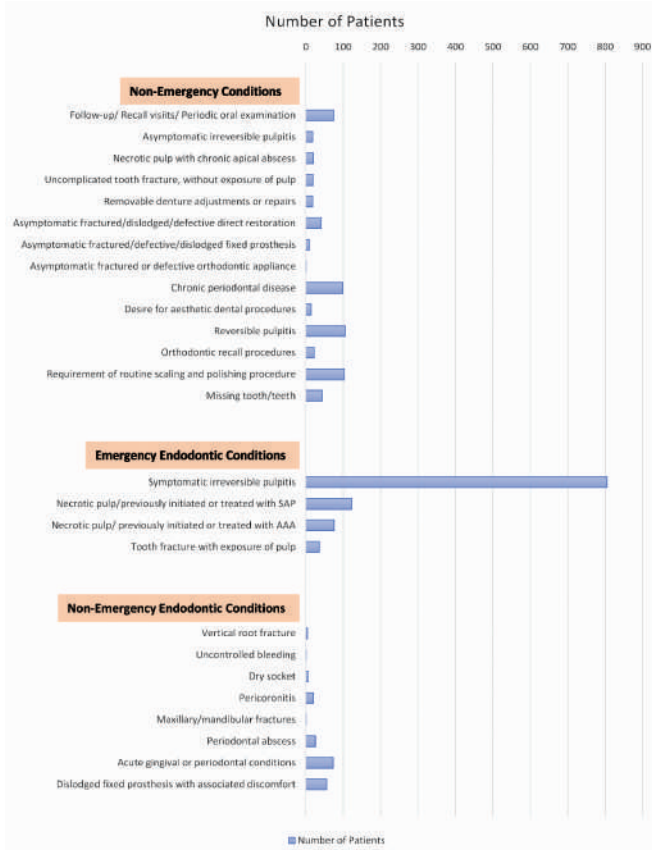


Table 1: Demographic

Variables	Frequency (n)	Percentage
Gender		
<i>Males</i>	828	45.4%
<i>Females</i>	995	54.6%
Age Groups		
<i>Age 0 to 25</i>	491	26.9%
<i>Age 26 to 50</i>	913	50.1%
<i>Age > 50</i>	419	23%
Diagnostic Conditions		
<i>NE Conditions</i>	595	32.6%
<i>EE Conditions</i>	1040	57%
<i>ENE Conditions</i>	188	10.3%

n, number; NE, Non-emergency; EE, Emergency Endodontic; ENE, Emergency Non-Endodontic

belonged to age group 26 to 50 (n= 564). This was followed by the age group 0 to 25 (n= 291). Patients with age <50 attended diagnosis department most with ENE (n= 56) and

Table 2: Difference in Diagnostic Conditions Between Gender and Between Age Groups

Variables	NE Conditions n (%),	EE Conditions n (%)	ENE Conditions n (%)
Gender vs Diagnostic Conditions			
Males (n=282)	294 (35.5%)	451 (54.5%)	83 (10%)
Females (n= 995)	301 (30.3%)	589 (59.2%)	105 (10.6%)
<i>p-value</i>	<i>0.017*</i>	<i>0.042*</i>	<i>0.711</i>
Age vs Diagnostic Conditions			
Age 0 to 25 (n= 491)	161 (32.8%)	291 (59.3%)	39 (7.9%)
Age 26 to 50 (n= 913)	256 (28%)	564 (61.8%)	93 (10.2%)
<i>p-value</i>	<i>0.063</i>	<i>0.358</i>	<i>0.169</i>
Age 0 to 25	161 (32.8%)	291 (59.3%)	39 (7.9%)
Age > 51 (n= 419)	178 (32.6%)	185 (44.2%)	56 (13.4%)
<i>p-value</i>	<i>0.002*</i>	<i><0.001*</i>	<i>0.007*</i>
Age 26 to 50	256 (28%)	564 (61.8%)	93 (10.2%)
Age > 51	178 (32.6%)	185 (44.2%)	56 (13.4%)
<i>p-value</i>	<i><0.001*</i>	<i><0.001*</i>	<i>0.087*</i>

*, Significant difference; n, number; NE, Non-Emergency; EE, Emergency Endodontic; ENE, Emergency Non-Endodontic

NE (N= 161) conditions. Patients belonging to age group of 26 to 50 and 0 to 25 attended the diagnosis department with significantly more EE and NE conditions as compared to age group of more than 50 years (p<0.005). On the other hand, significantly higher number of patients in this age groups attended the diagnosis department with ENE conditions as compared to the age group 0 to 25 (p= 0.007) (Table 2).

DISCUSSION

The unprecedented nature of COVID-19 put systems on hold and societies under lockdown. The healthcare sector also took a surprise hit due to unavailability of established practicing guidelines initially. Moreover, the decision makers including the governments, the leaders of the healthcare bodies, and the doctors in Pakistan did not know where to concentrate the resources because not enough data was available to answer the following question: With which type of dental conditions do the patients attend the dental OPD the most during a pandemic? This data, we believe, will be crucial for stakeholders and policy-makers alike in order for them to decide the allocation of appropriate equipment and resources to the dental care practitioners in this and any future pandemics.

The results of our study suggested that during the COVID-19 pandemic peak, more than half of the patients who attended the dental OPD were diagnosed (through standard investigations)¹⁹ as having an EE condition (57%). Among EE conditions, SIP was most prevalent (44.2%). This finding was found to be similar to the study conducted

by Yu et al.¹⁶ In their study, 50.26% of the patients attended the hospital due to EE, and out these, 53.10% were suffering from SIP. Similarly, another study²⁰ found that the most common condition with which the patient attended the dental setup was SIP. It was also observed that in the current study that during the six months of COVID-19 pandemic peak, there was a substantially decreased attendance of patients who sought the dental treatment. This result might be related to the country wide lock down and fear among the patients for contraction of COVID-19 disease.²¹

Previous studies (1,22) reported that increased percentage of males utilized emergency dental services as compared to females during the COVID-19 period. The authors were of the opinion that the females were more afraid of getting infected with SARS-CoV2 virus resulting in decreased visits to emergency dental centres. Contrarily, in our study, we found that slightly higher percentage of females (59.2%) presented with EE as compared to males (54.5%). This difference may be due to the reason that in this region of the world, males are considered as a sign of endurance and support for females because of which they often ignore or tolerate their health conditions leading to their decreased attendance in dental centres for dental treatments. Results of the current study revealed that the patients with age less than 50 years sought increased number of EE and NE treatments as compared to older age (>50 year). According to a recent study, people belonging to older age group perceive themselves as more vulnerable to contracting the SARS-CoV-2.²³ Moreover, a local study suggested that older population of Pakistan prefer to get their teeth extracted instead of saving it with an endodontic treatment.²⁴ This may result in fewer teeth available to be affected by pulpitis or apical periodontitis with the advancement of age. The combination of these two reasons may explain why there was an overall decrease in attendance (especially with EE conditions) of the patients belonging to old-age group. The reason for increased attendance of the patients of age less than 50 with NE conditions was that the younger patients are generally more conscious about their smile. This was indicated by the results of our study that the most common non-emergency conditions among age groups of <50 were the requirement of a restoration (reversible pulpitis) and scaling and polishing.

Nonetheless, certain limitations need to be highlighted about our study. No comparison of dental records of patients was made between pre-COVID-19 and COVID-19 era. Moreover, the results of our study were based on a single-centre. Therefore, the results of our study cannot be generalized. However, this centre was among only few dental hospitals that were operational during the peak of first wave of COVID-19 pandemic in Karachi, attracting a wide array

of patients. Moreover, the results of this study gave a snapshot of the prevalent dental emergency conditions during COVID-19 pandemic and may help the authorities to allocate resources accordingly.

CONCLUSION

The endodontic emergency was the most prevalent reason among all the dental conditions for which the patient sought dental care. Symptomatic irreversible pulpitis was the most common type of endodontic emergency. Cross-training and increasing the number of dental practitioners that are able to treat endodontic emergencies and a concomitant allocation of enough resources for this purpose is recommended during COVID-19 pandemic or alike in future.

CONFLICT OF INTEREST

None

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None

AUTHORS CONTRIBUTION

JS: Conceptualization; **AT:** Data curation; **MAK2:** Formal analysis; **MAK1:** Investigation; **JS, NN:** Methodology; **AT, TA:** Resources; **MAK2:** Software; **NN, TA:** Supervision; **JS, AT:** Validation; **TZ:** Project Administration; **AT, TZ, MAK1:** Initial draft; **NN, TA, MAK2, JS:** Review; **AT, JS:** Final Draft. Additionally, the authors declare that the data will be provided on request and the authors are responsible for accuracy and integrity of the data.

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