

# Characteristics of paediatric dental emergencies during the COVID-19 pandemic in Riyadh City, Saudi Arabia



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## Abstract

**Aims** Except for emergencies and urgent cases, dental treatments have been suspended in Saudi Arabia. This report examines the pattern of emergency dental care provided to children and adolescents in Riyadh City, Saudi Arabia, which has been affected by the current COVID-19 pandemic.

**Methods** In late March 2020, the General Directorate of Dentistry, Ministry of Health (MOH), administered an online dental emergency investigation form, which was to be completed by all MOH (governmental) dental centres and sent to the MOH on daily basis. This report included patient information (such as gender and age), whether the patient had contacted the hotline service centre, dental diagnosis, specialty of the treating dental professional and treatment provided. Descriptive analyses were generated.

**Results** Only few (n=95) patients under the age of 14 sought emergency dental treatment during the investigated period (six weeks). Findings showed very low utilisation of the hotline service (14.7%). Most had dental pain (n=85; 89.5%). Eighty four (88.4%) patients were seen by a general dental practitioner (GDP), while the rest (n=11; 11.6%) were seen by a specialised dental professional (SDP). The dental abscess (33.7%) and caries into pulp (29.5%) were the most common diagnoses for emergency dental visits among the children and adolescents. A high proportion of dental centres provided medication prescriptions and assumed inappropriate dental management during the COVID-19 pandemic.

**Conclusion** The COVID-19 pandemic had a significant impact on child and adolescent emergency dental services. The number of dental emergency visits was low, with a high percentage of dental infection. We urge dental professionals to pursue a consistent approach in treating emergency dental conditions during the COVID-19 pandemic era and following the national protocols.

the end of December 2019, early cases appeared in the Chinese city of Wuhan, in the form of acute pneumonia. Since then, reported cases have grown impressively [Li et al., 2020; Zhu et al., 2020]. In the Kingdom of Saudi Arabia (KSA), the Saudi government reported a total of 1,720 confirmed COVID-19 cases as of April 1st 2020, which increased to 22,753 cases as reported on April 30 2020.

The Ministry of Health (MOH) is the highest authority of healthcare system in KSA, delivering and overseeing healthcare across the Kingdom's regions. The General Directorate of Dentistry, under the Agency of Therapeutic Services at the MOH, oversees the preventive and therapeutic dental services provided to citizens.

Dental teams and patients are at high risk of transmission of COVID-19 due to the proximity of individuals during dental procedures and the generation of aerosols [Harrel and Molinari, 2004; Acharya et al., 2020]. In KSA, by the middle of March 2020, all dental services were limited to emergency/urgent care according to the request of the Agency of Therapeutic Services at the MOH. Hence, to reduce the risk of spread, all other dental care specialties were postponed until further notice. This intervention helps staff and patients stay safe by providing personal protective equipment and resources for patient care, thus increasing the capacity of the existing health system. Additionally, the MOH provides 24/7 medical consultations through the (937) hotline service centre.

This report aimed: 1) To explore the utilisation and pattern of emergency dental treatment provided to children and adolescents in Riyadh city, KSA, which had been influenced by the COVID-19 pandemic; and 2) To analyse the characteristics of emergency pediatric dentistry provided.

**KEYWORDS** COVID-19; Paediatric dentistry; Dental care; Emergency treatment, Child

## Introduction

Novel coronavirus (COVID-19) is a new and evolving infectious disease that is spreading rapidly worldwide. At

## Methods

Since late March 2020, the General Directorate of Dentistry, MOH, administered a dental emergency investigation form, which was online and to be completed by all MOH governmental dental centres and sent to the MOH, on daily basis. Children and adolescents up to age 14 years old, who

Diagnosis	N (%)	Treatment	
		GDP	SDP
Localised dental abscess	32 (33.7)	Medication only= 15 Extraction only= 3 Extraction + medication= 3 Pulp therapy only= 3 Pulp therapy + medication= 4	Extraction only= 4
Caries into Pulp	28 (29.5)	Pulp therapy only= 20 Medication only= 6	Pulp therapy only= 2
Dentine Caries	8 (8.4)	Medication only= 6 Restoration= 1	Restoration= 1
Cellulitis	7 (7.4)	Medication only= 6	Medication only= 1
Remaining roots /Gross caries	7 (7.4)	Extraction only=6	Extraction only= 1
Eruption pain	4 (4.2)	Medication only= 4	-
Retained primary tooth	3 (3.2)	Extraction only= 3	-
Initial root canal treatment, tooth 46	2 (2.1)	Root canal irrigation= 2	-
Severe early childhood caries	1 (1.1)	-	Refer to general anaesthesia= 1
Trauma	1 (1.1)	Extraction only= 1	-
Orthodontic wire poking	1 (1.1)	-	Wire cut= 1
Temporary filling came off	1 (1.1)	Temporary filling= 1	-

**TABLE 1** The diagnoses and treatment provided in the emergency dental clinics (n=95).

visited any dental emergency centre in Riyadh city, the capital city of KSA, between March 26 to May 7 2020, were retrieved. Body temperature was acquired for all patients, and a COVID-19 aepidemiological questionnaire was completed before dental screening [WHO, 2020]. Patient information, such as gender, age, medical and dental history, whether the 937 service centre was contacted, dental diagnosis, specialty of the treating dental professional and treatment provided were included in this report. Descriptive analyses were generated using an Excel sheet (Microsoft® Excel®, Microsoft® Office 2016, Microsoft® Corp, Redmond, WA, USA).

## Results

In Riyadh city, KSA, a total of 577 patients sought emergency dental treatment during the investigated period (six weeks). Only 95 patients (16.5%) were 14 years old or younger, and were included in this report. There were 49 (51.6%) boys and 46 (48.4%) girls, aged between 2 and 14 years (median: 8; mean: 8.1; SD: 2.8).

No children or adolescents reported history of confirmed, suspected or showing symptoms of COVID-19. Only 14 patients (14.7%) had called the 937 service centre prior to their visits. Most of the patients had dental pain (n=85; 89.5%). Eighty four (88.4%) patients were seen by a general dental practitioner (GDP), while the rest (n=11; 11.6%) were seen by a specialized dental professional (SDP). We could

not compare the treatments provided among the dentists because of the low proportion of the SDP. The diagnoses and treatment provided are presented in Table 1.

## Discussion

The General Directorate of Dentistry, MOH, has produced and disseminated "Dental emergency protocol during COVID-19 pandemic" [Ministry of Health, 2020]. In this protocol, assessment of patients should consider the patient and staff safety, prioritization of the most urgent care needs, professional judgment, and the availability of urgent dental care.

Moreover, the types of dental care in emergency situations were divided as: 1) Emergent dental care; i.e. all potentially life-threatening situations need immediate treatment by the medical emergency centres. It includes uncontrolled bleeding, significant infection (e.g. cellulitis), facial swelling and oral-facial trauma potentially compromising the patient's airway; 2) Urgent (essential) dental care; i.e. management of severe or uncontrolled symptoms that cannot be managed by the patient and require the patient to see a dentist; 3) Non-urgent (non-essential) dental care; i.e. all routine and elective dental procedures; 4) Advice and self-care; i.e. mild or moderate symptoms managed remotely by the dentist (by phone), providing advice and help, which may involve analgesics and antimicrobials [Ministry of Health, 2020].

Dental treatments have been suspended in the KSA, except dental emergencies and urgent situations. This means that most oral diseases will not receive timely and effective treatment.

The literature shows that many countries suspended non-emergency dental treatment and called for providing emergency dental care only [Dave et al., 2020; Guo et al., 2020].

It is logically obvious that fewer patients visited dental emergency clinics during the COVID-19 pandemic. Access to dental care has been significantly limited because of the required quarantines, along with the new regulations given by the Saudi government and the MOH to provide emergency dental treatment only. Hence, parents of children and adolescents, who require dental treatment, would encounter challenges accessing dental care [Casamassimo et al., 2020]. Policy considerations and personal factors have also prevented patients from seeking dental care except in the case of an emergency. The findings highly suggest that COVID-19 greatly affected the behaviour of people looking for dental treatment [Guo et al., 2020].

Dental consultations may now be done by telephone or by virtual tele-health, which is necessary to minimise the exposure [Dave et al., 2020; Machado et al., 2020; Saccomanno et al., 2020]. The included participants showed very low utilization of the 937 service (15%), although the MOH has made great efforts to publicise this service. However, dental patients would prefer visiting a dentist physically, as the majority had dental pain (90%), which they may have thought necessitated a visit. On the other hand, our findings showed that 40% (n=38) of the participants were treated with only a prescription.

Dental abscess (33.7%) and caries into pulp (29.5%) were the most diagnoses for emergency dental visits among the children and adolescents. In Riyadh city, the prevalence of caries was reported to be 80% and 89% among male and

female school children, respectively [Alamri et al., 2017; Alshiha et al., 2017].

Primary teeth with dento-alveolar abscess are mostly recommended to be extracted instead of pulp therapy [Kratunova and Silva, 2018]. In our findings, 7/32 (21.9%) of the abscessed cases were treated with pulp therapy. Additionally, the high number of prescriptions could be attributed to the attitude toward postponing the treatment. We assume that inappropriate dental management would be higher through the emergency dental care during COVID-19 pandemic [Meng et al., 2020].

Only one case of trauma was reported in this report. This could be attributed to social distancing, quarantine and school closure due to COVID-19 pandemic. Furthermore, some patients with dental trauma may have presented at accident and emergency department (A&E) in hospitals; hence, not reported in our survey.

In KSA, the MOH announced the reopening of dental services commencing 11th May 2020, operating at 50% of the dental clinic's capacity. Given the results of this study, we believe people's demands for dental services could explosively rise with the reopening of dental services post-COVID-19 period.

Within this study's limits, dissemination of our findings aimed for potential comparison worldwide, and baseline for further investigations. However, due to the present limited data collected, further studies should be carried out on the actual situation of long-term dental services influenced by the COVID-19 pandemic [Meng et al., 2020].

Oral hygiene and prevention is a priority and could be expanded to avoid or minimize emergency developments through online promotion. We suggest that the related government administrative departments coordinate to implement comprehensive prevention and promotion approaches.

## Conclusions

Our findings suggest that the COVID-19 pandemic has had a significant impact on emergency dental services among children and adolescents. The number of emergency dental visits was low, and the proportion of dental infection was high.

We encourage dental professionals to pursue a consistent

approach and follow the national protocols in the management of emergency dental conditions during the COVID-19 pandemic.

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