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Original Research

Search for urgent dental care during COVID-19 pandemic: report of a university dental care setting experience

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Dental emergencies may represent a challenge to clinicians, that sometimes may even need to treat patients with COVID-19. **Aim:** In this sense, we aim to report our experience in an urgent dental care setting during COVID-19 pandemic, providing a profile of patients and staff involved in attendance appointments. To address that, a retrospective analysis was conducted based on charts of the Urgent Dental Care Clinic. Data obtained from patients were extracted considering the period between July 2020 and December 2020. Final data were compiled, and continuous variables were expressed as mean ± standard deviation (SD). Categorical variables were presented as *n* (%). **Results:** A total of 92 patients (39 ±16.59 years) were attended with prevalence of female. Most patients (n = 83; 94.3%) answered that they did not have any symptoms since COVID-19 outbreak in March up to 21st day prior the appointment and searched for treatment with pain as the main complaint (n = 59; 64.1%). Drug prescriptions and advice were sufficient on several occasions (n = 19; 22.4%), eliminating the need for dental procedures. Recementation and temporary restorations were the most frequent clinical choice in this cohort (n = 19; 20.7). Regarding dental staff, COVID-19 symptoms after attendance were reported only seven times (3.4%) by 5 different persons. **Conclusion:** All patients treated in the emergency department during the COVID-19 pandemic were asymptomatic and pain was their main complaint. Importantly, occupational transmission was not detected during the study period, which highlights effectiveness of our prevention strategies.

Keywords: Dental care. COVID-19. Dentistry.

Introduction

Late in 2019, a new and potentially lethal respiratory infection was reported by Chinese health authorities. This viral disease spread to European countries within few weeks[1]. Subsequently, in March 2020, a pandemic named Coronavirus Disease (COVID)-19 was declared by the World Health Organization (WHO), which led to several challenges in public health, due to its associated morbidity and mortality. As a result, there was an increase in Intensive Care Unit (ICU) hospitalization[2]. Current knowledge points to a human-to-human transmission of SARS-CoV-2 virus, due to droplets and aerosols, that can be expelled in coughing, sneezing, and even speaking[3]. Contribution of other transmission routes (such as contact with contaminated surfaces) are under investigation, since the viability of this virus in different materials[4] remains unknown.

Its impact on dental care was promptly perceived, due to the possible role of aerosols in virus spread and transmission, leading health agencies to point out several vulnerabilities that could impair safe dental practice[5,6]. Faced with an unknown enemy, several dental offices remained closed until different guidelines were elaborated by regulatory authorities[7]. Dental education activities were profoundly impacted, which required a different organization of work, training and adaptation of facilities. Globally, undergraduate students had their practices discontinued and were promptly inserted in an online education effort[8].

In addition, a significant challenge in dental education was adapting clinical activities in this new scenario, considering that clinical practice is extremely important in dental school. Therefore, as dental practical activities returned, new personal protective equipment were incorporated in clinical settings in order to provide a safer practice to professionals and patients[9]. According to protocols, patients began to be submitted to an accurate screening, with body temperature measurement and a health questionnaire.

Many procedures were unadvised, especially those related to aerosol spreading. Careful selection of cases, anti-retraction handpieces and rubber dam isolation were the recommended main measures to avoid virus spread and cross-infection in dental settings[6]. However, dental emergencies can present a challenge for doctors, who may sometimes need to treat patients infected with COVID-19. In this sense, the American Dental Association (ADA) published a guideline to a proper identification of emergency and urgent conditions[10]. Pain, trauma, and infections are among these urgent conditions, which can impair patient's quality of life and need to be recognized and promptly treated early. Furthermore, the pandemic impaired the access of many patients to dental services, leading to a poorer health status, and a crescent demand for urgent services, changing the routine of dental services[11]. During this challenging period, dental care facilities had to develop strategies to adapt their routine and face the health crisis. Thus, considering the lack of consensus regarding the best strategy for organization, it opened space to different initiatives in the return to public attendance. In this sense, it was aimed

to report the experience of an urgent dental care during COVID-19 pandemic, providing a profile of patients and staff involved in attendance appointments.

Materials and Methods

A retrospective analysis was conducted based on charts of the Urgent Dental Care Clinic, from a Faculty of Dentistry in Brazil. During the COVID-19 pandemic, a new biosafety protocol was implemented, and patients underwent symptom screening prior to dental care (Figure 1). In case of possible COVID-19 related symptom, dental appointments were performed in an isolated setting. Complaints were classified as proposed by ADA guideline[10], and symptomatic patients were up to be attended only in case of pain or bleeding. Furthermore, before in-person care, patients were contacted by telephone to receive guidance from a dentist. In case of persistence of complaint, dental appointment was scheduled. All charts were included, regardless age and sex. Data obtained from all patients were extracted considering the period between July 2020 and December 2020. Urgent visits were classified according to ADA guidelines[10]. The present study followed the STROBE checklist.

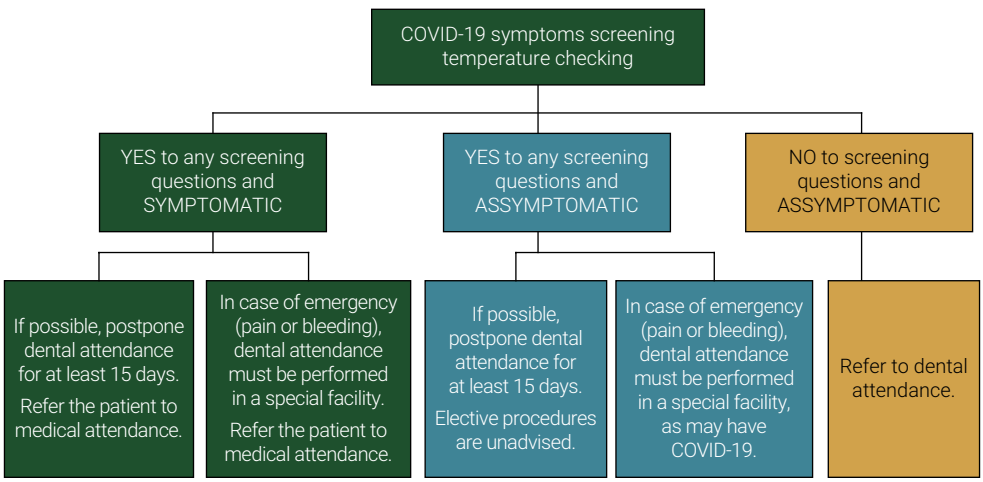

Figure 1. Flowchart of dental urgent attendance during COVID-19 pandemic.

This study was conducted in accordance with international ethical standards and was approved by the local ethics committee under protocol number 35623820.3.0000.5245.

Information regarding exposure to COVID-19 was extracted by one researcher from a chart containing the following questions: "Did you experience any symptom (fever, cough, fatigue, dyspnea, diarrhea, anosmia, ageusia) related to COVID-19 in the past 21 days?" "Do you have any symptom related to COVID at this moment?" "Did you have contact with a confirmed COVID-19 patient?" "Were you submitted to any COVID-19 test?". Patients could respond "yes", "no", or "I do not know". In addition, demographic

data (sex [male/female] and age [in a continuous fashion]) were recorded. Finally, the main complaint and clinical procedures were addressed.

Data from staff was also recorded. In this sense, variables as a positive COVID-19 diagnosis and exposure to infection were considered. Final data were compiled, and continuous variables were expressed as mean ± standard deviation (SD). Categorical variables were presented as *n* (%).

Results

Demographic variables

A total of 92 patients were attended between June 6th and December 14th, 2020, in the Urgent Care Service, and they were all included in the study. (Figure 2).

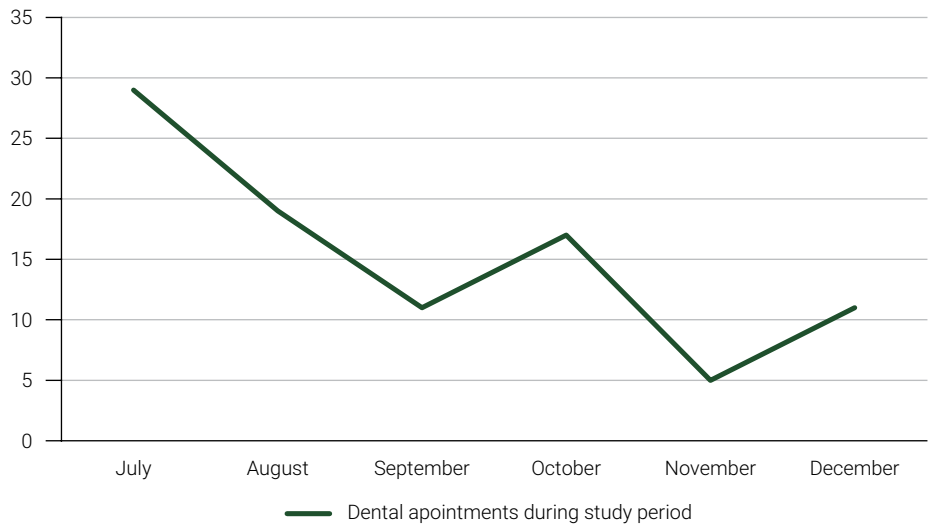

Figure 2. Dental appointments throughout the study period.

Most of the patients were female (n = 62), and 30 were male. The youngest patient was 6 years old and the oldest was 73 years old, with a mean age of 39±16.59 years (Table 1).

Table 1. Demographic variables of the patients included in this study.

Sex	Female	62 (67.4%)
	Male	30 (32.7 %)
Age	39.5 ± 16.59	

Sex data were expressed at absolute numbers and its percentage. Age-related data were expressed as mean and standard deviation.

COVID-related variables

No patient had fever or main symptoms of COVID at the consultation (data not shown). Most patients (n = 83; 94.3%) responded that they had never presented any symptoms related to COVID-19 considering the period from March to the 21st prior to the consultation. Regarding COVID laboratory screening, only two patients (2.3%) reported a confirmed diagnosis of COVID-19.

The majority of patients were not tested for COVID-19 diagnosis (n = 69; 78.4%). In addition, a higher percentage of patients reported that they did not have contact with a person with fever or diagnosis of COVID-19 (n = 84; 95.5% and n = 80; 90.9%, respectively).

When asked about COVID-19 related symptoms, only few patients reported that had experienced fever (n = 2; 2,3%), cough (n = 2; 2,3%), intestinal discomfort (n = 2; 2,3%), or headache (n = 3; 3,4) in the past 21 days. Dyspnea, anosmia or ageusia were not reported in the present sample (Table 2).

Table 2. COVID-related variables of the patients included in this study.

Any possible COVID-related symptoms up to 21 days prior dental appointment?	
Yes	83 (94.3%)
No	5 (5.7%)
Missing data	4
Did you do any laboratorial exam to assess COVID?	
No	69 (78.4%)
Yes, negative result	16 (18.2%)
Yes, positive result	2 (2.3%)
Yes, ignored result	1 (1.1%)
Missing data	4
Did you have physical contact with a person with COVID in the past 21 days?	
No	80 (90.9%)
Yes	8 (9.1%)
Missing data	4
Did you have physical contact with a person with fever in the past 21 days?	
No	84 (95.5%)
Yes	4 (4.5%)
Missing data	4
Did you have any of the following COVID-related symptoms in the past 21 days:	
Fever	
No	86 (97.7%)
Yes	2 (2.3%)
Missing data	4

Continue

Continuation	
Cough	
No	85 (97.7%)
Yes	2 (2.3%)
Missing data	5
Respiratory distress	
No	87 (100.0%)
Yes	0 (0.0%)
Missing data	5
Anosmia and/or ageusia	
No	87 (100.0%)
Yes	0 (0.0)
Missing data	5
Headache	
No	84 (96.6%)
Yes	3 (3.4%)
Missing data	5
Intestinal discomfort	
No	85 (97.7%)
Yes	2 (2.3%)
Missing data	5

Values were expressed at absolute numbers and its percentage.

Dental care variables

Most patients searched for treatment with pain as the main complaint (n = 59; 64.1%). Among these, six patients (6.5%) had an associated swelling. Unsatisfactory restorations and/or dental fractures (n = 18; 19.6%), soft tissue lesions (n = 2; 2.2%) or trauma (n = 1; 1.1%) were others causes listed during anamnesis. Before dental appointment, a secretary contacted the patients by call or WhatsApp message. During this screening, two patients (2.4%) had their main complaints solved by remote professional orientations. Considering dental appointments, drug prescriptions and advice were sufficient on several occasions (n = 19; 22.4 %), and those patients did not receive dental procedures at that point. Recementation and temporary restorations were the most frequent clinical choice in this cohort (n = 19; 20.7). Similarly, dental extractions with forceps and endodontic access were frequently performed (n = 17, 18.5%, each), followed by extractions with high-speed turbine (n = 8; 8.7%) and biopsy (n = 1; 1.1%). No intercurrence was reported in analyzed charts.

Table 3. Dental procedures and related complains of the patients included in this study.

Main complaint	
Pain (tooth or soft tissues)	59 (64.1%)
Pain and swelling	6 (6.5%)
Soft tissue lesion	2 (2.2%)
Trauma	1 (1.1%)
Unsatisfactory restoration/ dental fracture	18 (19.6%)
Others	6 (6.5%)
Procedure	
Remote professional orientation	2 (2.2%)
Drug prescription and/or exam	20 (21.7%)
Recementation/ temporary restorations	19 (20.7%)
Biopsy	1 (1.1%)
Extractions with forceps	17 (18.5%)
Extractions with high-speed turbine	8 (8.7%)
Endodontic access	17 (18.5%)
Others	8 (8.7%)

Values were expressed at absolute numbers and its percentage.

Staff variables

Dental staff was formed by ten dentists, two dental assistants and 38 dental students (Table 4). During the study period, forms regarding COVID-19 related information were completed 208 times. Most respondents reported that they did not have contact with a COVID-19 infected person until 21 days prior attendance (n = 190; 94%). Furthermore, attending at other hospitals or clinics was the higher exposure reported by them (n = 85; 40.9). Restaurants, cafeteria, or pubs (n = 39; 18.8), public transport (n = 27, 13%), and supermarkets (n = 21; 10.1%) were also often cited among responders. COVID-19 symptoms after attendance were reported only seven times (3.4%) by 5 different persons. There was no report of occupational transmission.

Table 4. Information about exposure and COVID-19 symptoms of the clinical staff.

Higher exposure in the past week:	
Stayed home	11 (5.3%)
Visited some relative	11 (5.3%)
Market	21 (10.1%)
Barber shop/ Beauty saloon	13 (6.3%)
Restaurant/Cafeteria/Pub	39 (18.8%)
Other Health Service (Hospital or Clinic)	85 (40.9%)
Public transport	27 (13.0%)

Continue

Continuation	
Missing data	1 (0.5%)
Did you have any COVID-19 symptom after your last clinical attendance?	
No	201 (96.6%)
Yes	7 (3.4%)
Did you have direct contact with a COVID-19 infected person in the past 21 days?	
No	190 (94.0%)
Yes	12 (6.0%)
Missing data	12

Values were expressed at absolute numbers and its percentage.

Discussion

Health care was profoundly impacted during COVID-19 outbreak, and dental practices were specially affected due its proximity with aerosols and droplets[5]. Therefore, uncertainty about providing safe care was topic for several discussions and resulted in many direct strategies to mitigate risk of transmission[12-15]. In addition to lockdown, emergency and urgent dental care had often been provided in health facilities, due to its intrinsic nature[10,11]. Reporting on the efforts to organize attendance flow is of upmost importance to improve the response to a possible new health crisis[16].

The present study describes the profile of an urgent dental care service provided to community for a dental education school. Pain was the main complaint reported by the patients. Similar studies reported that symptomatic endodontic and periodontal complaints were main reported reasons for seeking dental care[16]. During the pandemic period, telemedicine was a prolific discussion topic, and it was implemented in many health facilities. On our service, remote orientation was implemented as screening tool since dental appointments could not be entirely provided in a remote way. This strategy was efficient to identify the necessity of a dental appointment, eliminating unnecessary exposure and was enough in a few cases. Conversely, dental examination was necessary in most cases, due to uncertainty of diagnosis and necessity of intervention.

In most cases, drug prescription and orientations, as self-care orientation were enough to solve a patient's complaint. As expected, invasive procedures were frequently performed, what relates to reported complaints. Other experiences were similar in reporting needing for invasive procedures[16-18]. One study reported a similar proportion of dental extractions and restorative treatments. Furthermore, it highlighted the increase in need of surgical procedures in comparison to pre-pandemic period, reflecting its urgent character[17]. According to Carter et al.[16], (2020), dental extractions were necessary in 65% of attended patients over a six-weeks period of lockdown. This higher percentage, compared to pulp extirpation, was justified for the nature of the service. This may reflect deterioration of dental condition of patients. During the pandemic, reports of dental fractures, due to many

causes, such as dental caries or tooth clenching become more frequent, which relate with psychological features as stress and lack of access to dental care[19,20]. Since the dental service of the present study was a pioneer in providing urgent care during pandemic, our sample may represent a repressed demand in our city. It is important to highlight that our data represents dental appointments throughout 2020 2nd semester and, as elective dental procedures other than urgent care were gradually resumed at the university clinics, it may explain the decrease in the demand for dental urgencies.

Aerosols and droplets generation were a main concern, and strategies of personal protection were strictly followed. Moreover, all patients attended during the study period were asymptomatic at dental appointment and did not report any recent previous symptom related to COVID-19. This finding is similar to other studies, which found a major proportion of patients that did not report COVID-related symptoms (up to 99.4%)[17,21]. Finally, only a few patients related that ever performed some laboratorial exam to detect COVID-19 infection, and this finding may be related to sparse access to COVID-19 screening tools at that moment. It is well-known that many infected patients do not develop associated symptoms[22]. Therefore, we cannot rule out that these patients were COVID-positive at that point, due to lack of laboratorial test results.

Symptoms among dental staff were infrequently related after dental appointment. More importantly, it did not register any occupational transmission, which reflects effectiveness of biosafety strategies. However, most professionals involved in dental care were not isolated and maintained some external activity as frequent visits to supermarkets or to relatives. It is important to highlight that personal protective equipment was reinforced to avoid crosslinked transmission. Based on several guidelines, our service developed an Institutional protocol for dental attendance during COVID-19 pandemic, establishing PFF2/N95 and face shield as clinical routine equipment and implementing intensive decontamination procedures.

At that point, very few dental facilities were functioning, and fewer dental schools were providing dental care, even in an urgent fashion. Thus, mitigation of aerosols and droplets generation, attention to crosslinked infection and personal protective measures were the pillars for services comeback.

Since pandemic initiated, Brazil is struggling both in health assistance and strategies to limit the virus transmission. During the study period, the number of infected were still growing and strategies as lockdown were losing strength[23]. Until now, there are some concerns towards Brazil confrontation strategies, what still place us in a vulnerable position when consider dental care what impute even more importance to our present data[24]. With more services functioning, it is crucial to develop strategies to provide safer dental care. In this sense, our findings reflect COVID-19 impact in a current discussion point, considering that prevention strategies remain necessary to mitigate occupational transmission in dentistry setting.

It is important to emphasize that the present study involved only one dental care setting, which may be faced as a limitation of the present study. In addition, readers must be aware that filling the patients' charts was performed by several dental

students, which does not allow a standardization of the data. However, to compensate for it, only one trained researcher was responsible for the data extraction of the present study.

In conclusion, the present data provides additional information regarding urgent dental care, considering both patient characteristics and professional exposure. All patients attended were asymptomatic and pain was the main complaint. Occupational transmission was not detected during the study period, which highlights effectiveness of our prevention strategies.

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Conflict of Interest

The authors have no conflict of interest to disclose.

Data Availability

Datasets related to this article will be available upon request to the corresponding author.

Authors Contribution

Juliana Zóffoli: performed data collection, data compilation, revised and approved the final version of the manuscript. **Francisco Wilker Mustafa Gomes Muniz:** analyzed data and revised and approved the final version of the manuscript. **Vera Mendes Soviero:** conceptualized study, analyzed data and revised and approved the final version of the manuscript. **Thayanne Brasil Barbosa Calcia:** conceptualized study, analyzed data and revised and approved the final version of the manuscript.

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