



IMPACT OF COVID-19 ON ORAL AND MAXILLOFACIAL SURGERY

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Article Received on 01/03/2022

Article Revised on 20/03/2022

Article Accepted on 10/04/2022

ABSTRACT

The pandemic generated by the Coronavirus Disease 2019 (COVID-19) has generated a significant impact on the health industry. Dentistry, and especially Oral and Maxillofacial Surgery, has not been the exception since its clinical practice exposes the professional considerably. For this reason, the objective of this literature review is to show and summarize the repercussions of COVID-19 in this field, having as specific objectives the study of the effects in clinical care and surgical practice, the impact on consumption and availability of personal protective equipment, and the psychological and economic repercussions in the professionals.

KEYWORDS: COVID-19, Oral and Maxillofacial surgery, Dentistry, Impact.

INTRODUCTION

In late December 2019, the first case group of patients with atypical pneumonia was reported in Wuhan City, Hubei Province, China. Following this report, the Chinese Center for Disease Control and Prevention identified and communicated the causative agent: a new virus from the coronavirus (CoV) family.^[1-3] The World Health Organization (WHO) defined it as Coronavirus Disease 19 (COVID-19). Due to its high contagiousness, long incubation period, and mild, nonspecific initial symptoms, the virus spread rapidly around the world and on January 30th, 2020, the WHO declared the new coronavirus outbreak a "public health emergency of international concern"; it was subsequently named a pandemic on March 11, 2020, given its evolution.^[1,4,5]

COVID-19 is an infectious disease that mainly causes symptoms of fever, dry cough, and fatigue. However, other less common symptoms that some patients experience are headache, malaise, nasal congestion, conjunctivitis, diarrhea, loss of taste or smell, and rashes on fingers or toes. Most of the symptoms observed in infected people are usually mild and begins gradually, although the spectrum of this disease fluctuates widely, ranging from asymptomatic individuals to patients with acute respiratory distress syndrome and sepsis, that can cause death.^[6] According to studies, the groups most likely to present complications and serious conditions are the elderly and those with systemic concomitant disease such as high blood pressure, heart disease, diabetes, cancer or respiratory disorders. Nevertheless, it has been

observed that any individual can contract COVID-19 and become seriously ill.^[7]

The virus spreads mainly when a person get in touch with droplets emerging from the nose or mouth of an infected person. This can occur at the time the person coughs, sneezes or speaks. Also, if these droplets fall on surfaces which are later touched by other people and carried into their eyes, nose or mouth, they can lead to an infection as well.^[4] The risk of contamination for patients, dental staff and clinical environment is very high during dental and surgical procedures. Therefore, it is a fact that the current pandemic is causing a considerable effect in the field of oral health, especially in Oral and Maxillofacial Surgery, given the characteristics of the dental setting. For example, the close contact established between the surgeon and the patient, through the oral cavity and oropharynx at the time of clinical-surgical care, causes a high risk of cross-infections.^[8-10] In addition, factors such as infections among health professionals, rescheduling and cancellation of appointments, changes in protective measures in the work environment, combined with the product shortages that existed and are now prevalent in some countries, led to feelings of stress, anxiety, fear and burnout among health professionals.^[11-15]

For this reason, it is of great scientific and educational value to provide a review of the main factors that affect the activity of the oral surgeon during the COVID-19 pandemic. Hence, the principal purpose of this bibliographic review is to show the major impacts that

have been presented in Oral and Maxillofacial Surgery, having as specific objectives, the analysis of the repercussions in clinical care, surgical practice and the impact on consumption and availability of protective materials during COVID-19, together with the study of the psychological and economic repercussions observed in professionals.

Repercussions of COVID-19

Clinical Care and Surgical practice

Several measures have been taken since the beginning of the pandemic to prevent the spread of the virus worldwide. In the dental and surgical sector, clinical care was limited to emergency procedures only and, consequently, a decrease in clinical activity was reported due to a reduction in the number of patients treated, with the exception of Israel, Japan, Pakistan, Poland, Singapore and Taiwan, where certain centres continued to operate at normal capacity.^[11-14]

In contrast, countries such as Spain and Italy reported fewer patients treated. In a survey of 400 oral health professionals in Galicia, Spain, most respondents stated that they provided clinical care from one to five patients per week during the State of Alert (Royal Decree 463/2020).^[11] Similar results were obtained in Italy where, during DM-10M20 (Italian National Administrative Order of March 10, 2020), in a questionnaire provided to 356 dentists in Modena and Reggio Emilia, almost the entire study sample reported attending between zero and five patients per week. The same paper found a high number of cancellations of scheduled appointments after the entry into force of DM-10M20.^[15]

The remarkable decrease in surgical activity has also had important repercussions on the training programs for residents in oral and maxillofacial surgery, with an increase of virtual didactic training sessions conducted on digital platforms, and even considering the need to extend the duration of specialized training programs.^[12,16]

On the other hand, the work by Chamorro *et al.* indicated that the number of professionals practicing in the public sector handles more urgent patients per week than those practicing in the private sector.^[11]

Professionals must intervene in situations qualified as urgent as part of the ethical and deontological duty of oral health, since, by carrying out this task, they contribute to relieving the tension in hospital emergency services, thus avoiding possible contacts of healthy patients with positive patients while waiting to be attended.^[17] According to Bai *et al.*, the COVID-19 outbreak affected the type of patient population and the pathologies present in the oral emergency services. In their study, there were fewer total visits in 2020 than in 2019, where the proportion of child, adolescent and elderly patients also decreased. However, the percentage of adult patients with dental pain and infections was

higher in 2020 than in 2019.^[18] Prior to attending an emergency consultation, screening for COVID-19 was implemented in various centres and clinics by telephone or telematic means.^[12,13,15]

Consumption and availability of protective materials

Dentists often work in close contact with patients and it is impossible to maintain a safe distance when performing dental or surgical procedures, as a consequence, they are one of the groups most susceptible to be infected by different pathogens, such as COVID-19.^[8,9,19] In a systematic review, where eleven studies on oral surgery (including extractions) were included, was highlighted the risk of contamination by aerosols, droplets and sprays generated during surgical activity procedures, especially during the extraction of impacted teeth using rotary handpieces. Dissemination was increased by five factors, proximity to the operating site, duration of treatment, greater complexity of the procedure, absence of use of the extraoral dental suction system and areas involving a greater number of contacts during treatment.^[8] Personal protective equipment (PPE) has been shown to be an effective means of preventing the spread of the virus, being essential for safe care and control of cross-infection.^[9,19,20] However, despite the fact that many countries have made changes in patient care protocol and accepted the routine use of PPE (gloves, masks, disposable gowns and caps, goggles and face shields) following the outbreak of COVID-19, most of the literature reflects that during the pandemic there have been scarcity and difficulties in finding personal protective equipments (such as FFP2 masks and N95 respirators), as well as problems in delivering them.^[11-15]

Despite these shortcomings, the number of infected oral health professionals has been low, which might suggest that COVID-19 guidelines and protocols have been largely respected in clinical care. Nevertheless, even with these data, the number of infections among oral health professionals is low, although more than half of them know at least one person who has contracted the virus.^[11,13,15]

Regarding safety in the work area, in the United States, a survey by Hutley *et al.* found a high percentage of satisfaction and safety among participating oral surgeons. This result is in line with a study conducted in 54 countries, with the North American area having the highest percentages. Nonetheless, according to the survey conducted by Maffia *et al.*, this perception of security differs widely among the areas assessed, with Oceania, Europe and Asia having medium to high levels of security, and South America and Africa having medium to low levels. This low-medium level could be related to the fact that more than half of the oral and maxillofacial surgery centers that reported not having received management guidelines for the COVID-19, also did not receive the PPE from its administration, which could generate a higher level of uncertainty in the professional.^[13,14]

Psychology

In the exercise of their functions, the mental health of health professionals was compromised by the COVID-19 pandemic.^[21] According to the literature, surgeons and dentists have reported diverse types of psychological disturbances during their course, including medium to high levels of worry, anxiety, apprehension and fear.^[15] In a study of 160 oral and maxillofacial surgery residents and 13 residency directors, almost 30% of the total sample, reportedly, had some form of argument during the course of the virus outbreak.^[13] The literature indicates that perplexity in the control of COVID-19, decreased income, and fear of infection and transmission to family members, or patients, can be factors with an impact on mental health.^[11,13,15,21,22] This can be a significant problem on a personal level and can lead to a deterioration in the clinical tasks performed, generating a greater risk of contagion and professional malpractice. Dyrbye *et al.*, in a pre-existing COVID-19 study, noted that 700 of the 7905 participating surgeons were concerned about committing a major medical error in the last three months. More than 70% of these surgeons attributed the error to individual factors (emotional fatigue, stress, fear).^[22]

In the United States, the importance of preventing stress and burnout was taken into account in a study by Brar *et al.* to directors of training programmes in oral and maxillofacial surgery, where they found that only slightly more than half of the programmes evaluated had some type of resource to reduce stress and promote the well-being of residents, so they recommended providing more preventive measures to avoid emotional burnout.^[12]

Economic

COVID-19 has and will have an impact on all aspects of the world economy. In this branch, the term "black swan" is used to define the kind of impact that is so unpredictable and surprising as causing a situation that, a priori, no analysis was anticipated or taken into account. According to Ferneini, oral and maxillofacial surgery is not exempt from these consequences, and one of the repercussions is the demand for a better and safer working environment (for the patient, personal and professional), which leads to a possible increase in the general costs of the centre or clinic, reducing the economic profit margin.^[23]

In this scenario, a survey identified the economic impact appears to be higher for men, as most of participants revealed greater economic losses than women (> 15,000 euros). In addition, it is suggested that there is some relationship between economic losses and requests for financial assistance, although the impact this may have in the long term is not yet known. The same study showed that the percentage of patients who complained about exclusive emergency care during the Alarm State was higher in non-franchised clinics than in franchised ones. However, this result is interpretable to the extent that franchised clinics usually have assistants and

receptionists involved in the management of such complaints or claims, while non-franchised clinics often lack such positions.^[11]

Finally, another study showed most of oral health professionals are concerned about their professional future and expect financial measures to be taken to support the sector.^[15]

CONCLUSIONS

Data indicate a decrease in clinical activity and surgical practice during the COVID-19 pandemic due to the limitation of clinical care to emergency procedures only. Also, shortages and difficulties in finding personal protective equipment (such as FFP2 masks and N95 respirators) have been observed. Oral surgeons have experienced feelings of anxiety, fear, apprehension and concern, which, in turn, may trigger emotional fatigue. The overall costs of the center or clinic have increased and, as a result, the profit margin has declined, however the implications for the long term are not yet known.

It should be noted that despite the critical situation and uncertainty generated by the COVID-19 pandemic, professionals involved in dental and surgical activities are still actively seeking the best way to address and respond to this major challenge. Therefore, it would be interesting to publish a greater number of studies assessing and investigating the impact of this pandemic in the field of Oral and Maxillofacial Surgery.

Conflict of interest

The authors declare no conflicts of interest.

Ethics Statement/Confirmation of patients' permission

Not applicable.

Funding

This research received no external funding.

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