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# The impact of COVID-19 on Oral and Maxillofacial Surgery patient presentations to the emergency department: A West of Ireland experience

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## ABSTRACT

Following the outbreak of COVID-19 and subsequent restrictions in the Republic of Ireland, the number of Emergency Department attendances have reduced nationally. Concurrently, it would be expected that there would be a reduction in the number of patients attending the emergency department with specific oral and maxillofacial concerns. A retrospective analysis of Oral and Maxillofacial patients attending the Emergency Department in University Hospital Galway during the first three-month period of COVID-19 lockdown in 2020 was compared to patients presenting to the Emergency Department during the equivalent period in the preceding year. The analysis confirmed a 46% reduction in attendances during the COVID-19 lockdown period. There was also a significant decrease in the number of young patients attending due to maxillofacial trauma. Contributing factors to this reduction may include working from home, reducing face-to-face social activities and the closure of social settings. It must be noted that there was a two-fold increase in the number of patients attending with dental pain during the lockdown period in comparison to the preceding year. Similarly, there was a proportional increase in the number of those attending due to infection and requiring subsequent admission during the COVID-19 lockdown period. Patient anxiety related to contracting the virus may have contributed to patients presenting with infection during the COVID-19 lockdown period.

## 1. Introduction

The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has led to the current global pandemic of Coronavirus Disease 2019 (COVID-19). COVID-19 is a positive sense, single-stranded, RNA virus responsible for the on-going global pandemic declared by the World Health Organisation on the 11th of March 2020 [1]. The exponential increase in the number of patients with COVID-19 has overwhelmed healthcare systems worldwide and has a profound effect on economic and healthcare outcomes. The virus spreads through droplet transmission from the respiratory tract [2].

Following WHO recommendations, the Irish Government implemented restriction measures and social distancing recommendations on the 12th of March in Ireland. The Economic and Research Institute (ESRI) conducted a study of the attendance in Emergency Departments (ED) throughout Ireland during the first period of this lockdown. It revealed a 32.5% reduction compared to 2019 figures [3]. A similar reduction in Oral and Maxillofacial Surgery (OMFS) emergency attendances was expected due to the nature of patient presentations through University

Hospital Galway (UHG) ED. This is the first study investigating the impact of COVID-19 has had on Oral and Maxillofacial surgical activity in the Republic of Ireland.

## 2. Aims and objectives

The aim is to investigate the impact of the COVID-19 pandemic on the OMFS attendances in the Emergency Department in University Hospital Galway.

## 3. Methods

A retrospective analysis of OMFS patients presenting to the ED in UHG was carried out for the first three-month period of COVID-19 lockdown in 2020. This period started from March 13th, 2020 and ended on June 13th, 2020. These figures were then compared to OMFS patients presenting to ED in UHG for the period starting from March 13th, 2019 and ending on June 13th, 2019.

A list of OMFS patients that attended the ED was obtained by

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examining the ED logbooks. Further details of patients were obtained by viewing their electronic record using Evolve (Hospital database). The data was recorded on an Excel spreadsheet and included; patient's age, gender and the reason for attendance. Patients were divided into different age groups, which included; infants (age 0–2), children (age 3–16), young adults (age 17–29), middle-aged adults (age 30–49), old adults (age 50–74), and elderly (age 75+). These patients were assigned with their primary reason for attendance, which included oral medicine, temporomandibular joint disorders, dental pain, oral trauma, infection and maxillofacial trauma.

#### 4. Results

From March 13th, 2019 to June 13th, 2019, (n = 147) patients attended ED requiring OMFS input. Maxillofacial trauma accounted for almost 39% (58) of the patient attendances in the ED. Infection accounted for 22% (33) of patients, followed by dental pain 17% (25) and oral trauma 14% (20). Of the 33 patients attending for infection, 14 patients required admission while 19 did not and could be discharged. Oral medicine and temporomandibular joint disorders represented the smallest group of ED patients at 5% (8) and 2% (3) respectively as shown in Table 1.

During this period, the largest group which attended ED for an OMFS input was the young adults group at 31% (45), followed by middle-aged adults group at 26% (38). Of the remaining patients, children represent 18% (26), followed by old adults at 16% (23), infants at 6% (9) and elderly adults at 4% (6) (Fig. 1).

From March 13th, 2020 to June 13th, 2020, (n = 79) patients attended ED requiring OMFS input. Maxillofacial trauma accounted for most of the ED patient attendances at 35% (28), while infection followed closely at 28% (22). Of the 22 patients attending for infection, 16 required admission, while the remainder did not require care as in-patients. Oral trauma and dental pain contributed to 16% (13) 14% (11) of OMFS patients attending the ED, respectively. Likewise, temporomandibular joint disorders and oral medicine concerns represented the smallest groups of patients in ED at 4% (3) and 3% (2) respectively as displayed in Table 2.

In the COVID-19 lockdown period, the largest group which attended ED were middle-aged adults at 39% (31), followed by children at 23% (18). The old adults group accounted for 18% (14) of attendees, while young adults at 14% (11), elderly patients at 4% (3) and infants at 3% (2) (Fig. 2).

The COVID-19 lockdown has reduced the number of patients requiring OMFS input through ED by almost half (46%). The most significant reduction seen was in the young adults group, reducing by 76% (Fig. 3).

For the 2019 and 2020 periods, maxillofacial trauma and infection are still attributed to most patient attendances. Similarly, both temporomandibular joint disorders and oral medicine concerns represented the smallest groups of the patient attendances.

#### 5. Discussion

SARS-CoV-2 has led to the current global pandemic of COVID-19, declared by the World Health Organisation (WHO) on the 9th of

March, 2020. It was first detected in Wuhan, Hubei province, China in December 2019 [4]. This zoonotic virus is composed of a positive-sense single-stranded piece of RNA. The first confirmed case of COVID-19 in the Republic of Ireland was reported on the February 29, 2020 [5].

Patients that are COVID-19 positive can be symptomatic or asymptomatic, however asymptomatic patients can be contagious [6]. Symptoms of COVID-19 can include fever, headache malaise, persistent cough, dyspnoea, loss of taste and smell, along with gastrointestinal conditions [7,8]. Additionally, oral lesions have been observed. Their formation has been attributed to microvascular thrombi formation and secondary vasculitis [9,10]. Patients that are elderly or that have comorbidities may be susceptible to develop severe acute respiratory, heart and kidney failure and have been shown to have a poor prognosis [7].

In UHG, all elective operating and non-acute operating during this COVID-19 lockdown had ceased. There was a distinct reduction in patients presenting to the ED for OMFS input. This finding has been mirrored by other departments, who also found a significant decrease in maxillofacial emergencies attending the ED [11]. This reduction is likely due to patient reluctance in attending hospital during the COVID-19 lockdown period. A large multi-centre study in Italy also noted mounting delays for non-emergency procedures during the first month of the COVID-19 lockdown period [12].

A recent study by Yeung et al. found that there had been a reduction in trauma seen by the OMFS department in King's College Hospital [13]. This study also showed that the median age of trauma occurring had increased from 28 years in 2019 to 34 years in 2020. Our study also showed older patients were more prone to sustaining maxillofacial trauma during the COVID-19 lockdown period, primarily due to mechanical falls. The young adult group showed the most apparent reduction in maxillofacial trauma between in the 2019 period and COVID-19 lockdown period. Overall, our study showed a decrease in maxillofacial trauma and oral trauma by 51.8% and 35%, respectfully. It has been shown that one of the leading causes of trauma during the COVID period was from domestic accidents [14].

Politi et al. showed the number of patients attending for cervicofacial infection of dental aetiology decreased during the COVID-19 lockdown [15]. Our findings outlined a similar total decrease in patients attending to the ED for infection requiring OMFS input. Although, we found a proportional increase in patients attending our services during the COVID-19 period for infection compared to the same period in 2019. This increase may have been due to the restriction of primary care services and no centralised urgent dental care centres present in the Republic of Ireland. Admission rates for infection increased significantly from 42% in the 2019 period to 73% during the COVID-19 lockdown period. Similarly, Long et al. found a substantial increase in the proportion of patients attending their services requiring admission for infection [16]. Patient anxiety related to contracting COVID-19 may have led to the avoidance of health services, and thus may be contributable to the increased proportion of infection cases requiring hospital admission.

Interestingly TMD showed a 100% proportional increase in patients presenting to the ED. Psychological stress is a significant contributor to the onset of TMD symptoms. A recent systematic review and meta-analysis by Salari et al. showed that the COVID-19 pandemic has impinged on individuals' mental health and that there has been an increase in psychological stress [17].

**Table 1**  
OMFS patient presentation to ED in UHG during 2019 period.

	Infants	Children	Young Adults	Middle-aged Adults	Old Adults	Elderly	Total
Maxillofacial Trauma	0	12	25	15	5	1	58
Oral Trauma	8	7	4	0	0	1	20
Infection	0	1	3	18	10	1	33
TMD	0	0	1	1	0	1	3
Dental Pain	0	6	10	3	6	0	25
Oral Medicine	1	0	2	1	2	2	8
Total	9	26	45	38	23	6	147

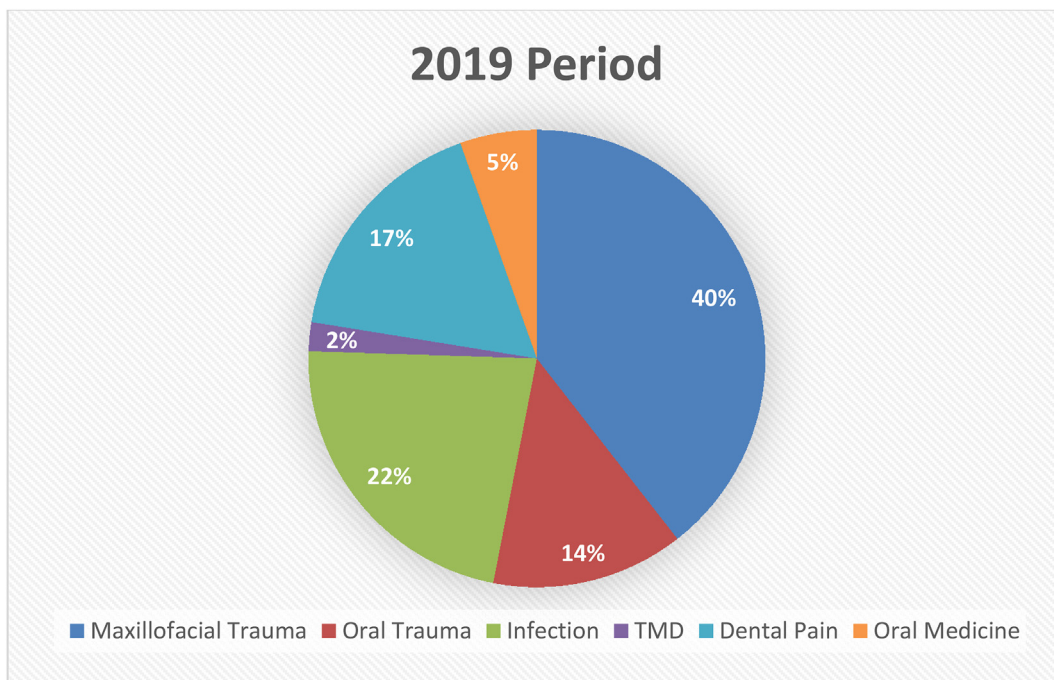


Fig. 1. Pie-chart showing the OMFS reason for attendance to ED in UHG during the 2019 period.

**Table 2**  
OMFS patient presentation to ED in UHG during COVID-19 Lockdown period.

	Infants	Children	Young Adults	Middle-aged Adults	Old Adults	Elderly	Total
Maxillofacial Trauma	1	4	2	12	8	1	28
Oral Trauma	1	8	0	3	1	0	13
Infection	0	4	5	8	3	2	22
TMD	0	1	2	0	0	0	3
Dental pain	0	1	2	6	2	0	11
Oral Medicine	0	0	0	2	0	0	2
Total	2	18	11	31	14	3	79

It is well documented that the oral and nasal cavity are reservoirs for this virus [18]. Consequently, Oral and Maxillofacial surgeons are at high risk of viral transmission due to their exposure to the oral environment, close patient proximity, saliva and the use of aerosol generating procedures (AGPs) [19]. AGPs encompass the use of high-speed handpieces, mechanical aspiration, abscess drainage, debridement with irrigation and tracheotomy procedures including their aftercare [20,21]. Aerosols containing potential pathogens have been shown to spread up to 1.5 m from the operative field and can remain airborne for up to 3 h once aerosolized [22,23]. A high viral load has been found in the oropharynx and nasopharynx [2]. If inappropriate PPE is worn, surgeons operating may become a potential source of contagion.

The British Association of Oral and Maxillofacial Surgery has released statements relating to patients' care during the COVID-19 pandemic [24]. These guidelines recommended masks, eye protection, aprons and gloves for examinations and treatment, and necessary hand hygiene measures. Due to the high numbers of asymptomatic SARS-CoV-2-positive patients, all patients are to be assumed to be infective [25].

Virtual consultation clinics were introduced across the Health Service Executive (HSE) in Ireland, aiming to reduce patient contact. Virtual clinics allowed for the continuation of healthcare services, amidst circumstances that limit face-to-face examinations. Al-Izzi et al. demonstrated that during the COVID-19 period, clinicians perceived virtual clinics as mainly positive. The acceptance of virtual consultations by both clinicians and patients may be attributed to the benefits of reducing social contact and the risk of exposure to the virus [26]. However, concerns about logistical issues for call scheduling, uncontactable patients and

system faults were raised by clinicians [27]. Furthermore, virtual consultations are not viable in an emergency as a physical examination is necessary to achieve an accurate diagnosis. Thus, the introduction of virtual consultations may be beneficial in terms of review cases but is unlikely to impact Oral and Maxillofacial patient presentations to the emergency department.

There has been the recent approval of the Pfizer 19' BNT162b2 mRNA COVID-19' vaccine and the Moderna' mRNA-1273' vaccine in the Republic of Ireland. Currently, other vaccines are in use which include the Oxford-AstraZeneca' ChAdOx1 nCoV' vaccine. Reported clinical trials have proven efficacy of up to 90% and 95% for the ChAdOx1 nCoV-19 and BNT162 mRNA vaccinations respectively [28,29]. As vaccinations to COVID-19 become more readily available, the development of herd immunity will limit the spread of COVID-19 [30]. With the gradual return of normality, OMFS presentations to the ED would be expected to increase. However, the effects of COVID-19 on patient presentations and long-term care remains largely unknown.

## 6. Conclusion

Our study aimed to investigate the impact of COVID-19 on OMFS patients attending the emergency department in UHG. There was a 46% decrease in OMFS ED attendances in UHG compared to the same period in 2019. Proportionally the breakdown of OMFS ED presentations for both periods was quite similar. However, upon further examination of the age sub-groups, the reasons for attendance differed significantly.

There was a 100% increase in middle-aged adults presenting with

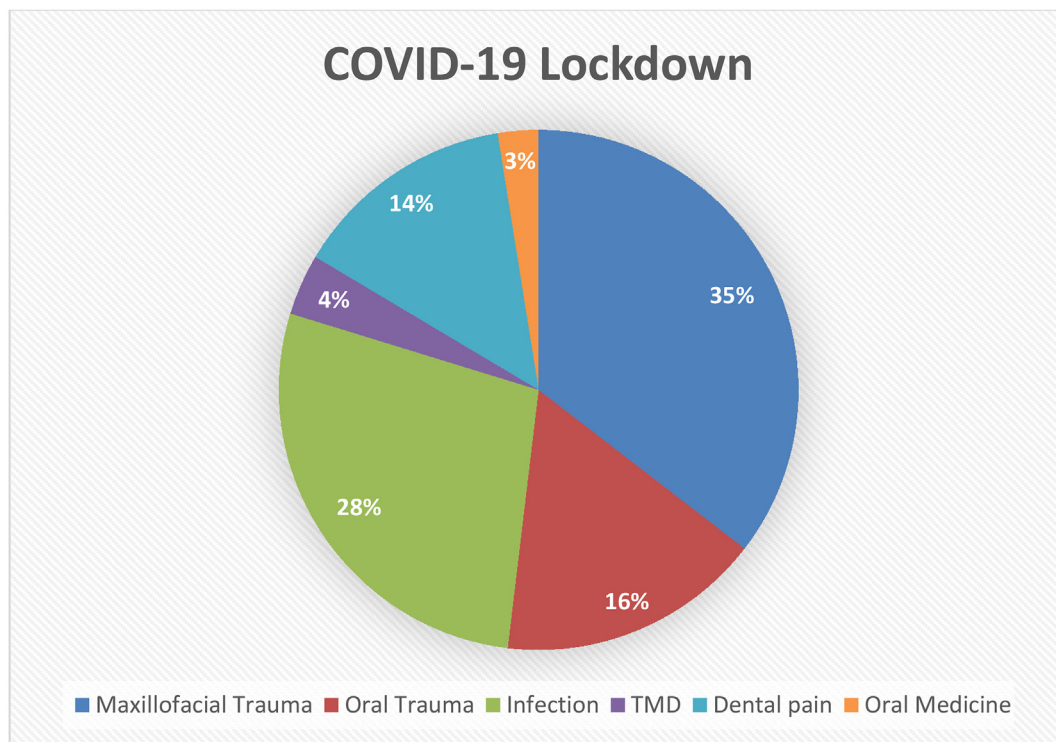


Fig. 2. Pie-chart showing the OMFS reason for attendance to ED in UHG during COVID-19 Lockdown period.

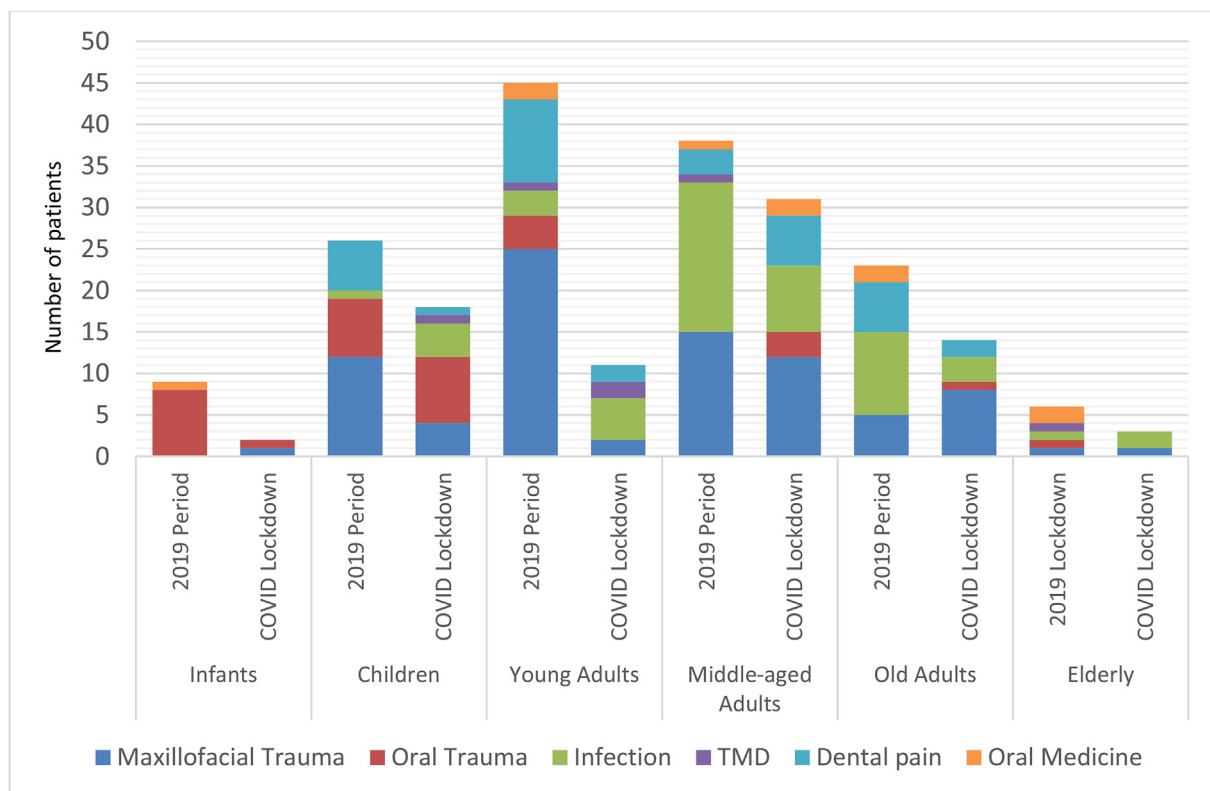


Fig. 3. Stacked bar chart displaying groups of patients in 2019 Period and COVID Lockdown along with breakdown for OMFS attendance to ED.

dental pain during the COVID-19 Lockdown compared to the same period in 2019. This shows the vital role dental services play in managing dental pain, and with the resumption of local dental services, we would expect a reduction in patient attendees regarding this.

Our study demonstrated that the “Young Adults” group had a significant reduction of attendees, with 18% of patients presenting due to OMFS trauma. This may have been associated with the closure of premises in which alcohol is served and cessation of sporting events, both of

which are major contributing factors to OMFS trauma.

### Ethics statement

Approval from the Quality & Patient Safety Department in University Hospital Galway was gained.

### Declaration of competing interest

None.

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