

Distribution Statement

Distribution A: Public Release.

The views presented here are those of the author and are not to be construed as official or reflecting the views of the Uniformed Services University of the Health Sciences, the Department of Defense or the U.S. Government.



UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES

POSTGRADUATE DENTAL COLLEGE
SOUTHERN REGION OFFICE
2787 WINFIELD SCOTT ROAD, SUITE 220
JBSA FORT SAM HOUSTON, TEXAS 78234-7510
<https://www.usuhs.edu/pdc>



THESIS APPROVAL PAGE FOR MASTER OF SCIENCE IN ORAL BIOLOGY

Title of Thesis: Comparison of Dental Sick Call Visits among Active Duty Military Prior to and during SARS-CoV-2 Pandemic

Name of Candidate: CPT Andrea C. Baeder, DC, USA

THESIS/MANUSCRIPT APPROVED:

DATE:

Dr. Charles C. Lambert
AEGD Program Director
Committee Chairman

LAMBERT.CHARLES.CHR
ISTOPHER.1154882967
Digitally signed by
LAMBERT.CHARLES.CHRISTOPHER.1
154882967
Date: 2022.06.14 07:49:23 -10'00'

Dr. Nicholas D. Wilson
DEPARTMENT OF RESTORATIVE DENTISTRY
AEGD Assistant Program Director
Committee Member

WILSON.NICHOLAS
.DALE.1252713677
Digitally signed by
WILSON.NICHOLAS.DALE.125271
3677
Date: 2022.06.14 07:54:47 -10'00'

Dr. Jasmin G. de Guzman
DEPARTMENT OF ENDODONTICS
Chief of Endodontics
Committee Member

DE
GUZMAN.JASMIN.GAR
CIA.1263974464
Digitally signed by DE
GUZMAN.JASMIN.GARCIA.12639
74464
Date: 2022.06.14 15:54:08 -10'00'

Dr. Albert W. Cheng
DEPARTMENT OF PERIODONTICS
Chief of Periodontics
Committee Member

CHENG.ALBERT.W
AYEN.1387639507
Digitally signed by
CHENG.ALBERT.WAYEN.13876395
07
Date: 2022.06.14 08:29:43 -10'00'

Dr. Jacob J. England
DEPARTMENT OF PROSTHODONTICS
Chief of Prosthodontics
Committee Member

ENGLAND.JACOB.J
AMES.1364554423
Digitally signed by
ENGLAND.JACOB.JAMES.136455
4423
Date: 2022.06.14 16:19:45 -10'00'

Dr. Jennifer Hawie
DEPARTMENT OF ORAL PATHOLOGY
Chief of Oral Pathology
Committee Member

HAWIE.JENNIFER.B
RITT.1273487740
Digitally signed by
HAWIE.JENNIFER.BRITT.1273487
740
Date: 2022.06.14 12:23:09 -10'00'

COMPARISON OF DENTAL SICK CALL VISITS AMONG ACTIVE DUTY MILITARY PRIOR TO AND DURING SARS-COV-2 PANDEMIC

A manuscript

Presented to the Faculty of the Advanced Education in General Dentistry, Two-Year
Program,

United States Army Dental Health Activity, Schofield Barracks, HI

And the Uniformed Services University of the Health Sciences – Post Graduate Dental
College

In Partial Fulfillment of the Requirements for the Degree of
Master of Science in Oral Biology

By

Andrea Baeder, CPT, DC, USA

MAY 2022

DENTAL



Uniformed
Services
University

DISCLAIMER

The views expressed in this manuscript are those of the author(s) and do not reflect the official policy or position of the Department of the Army, Uniform Services University of the Health Sciences, Department of Defense, or the US Government

By

Andrea Baeder, CPT, DC, USA
D.M.D. Roseman University 2018
M.P.H. Emory University, Rollins School of Public Health, 2007
B.S., University of Wisconsin Madison, 2002

Mentor Staffing By

Nicholas Wilson, MAJ(P), DC, USA
Certificate, Advance Education in General Dentistry-Two Year, Schofield Barracks, HI
2017
M.S., Oral Biology, Uniformed Services University, 2017
D.D.S., University of Colorado School of Dental Medicine 2011
B.S., Washburn University 2007

And

Charles Lambert, COL, DC, USA
Certificate, Advance Education in General Dentistry-Two Year, Fort Bragg, N.C. 2004
D.D.S., Case Western 2002
B.S., Brigham Young University 1998

Schofield Barracks, HI
May 2022

ACKNOWLEDGMENTS

I would like to express my deepest gratitude to my AEGD-2yr Assistant Program Director, MAJ Nicholas Wilson; AEGD-2yr Program Director, COL Charles C. Lambert; Statistician, Mr. Michael Lustik; and Elisha Capstick for their support, guidance, and expertise throughout this research project.

The author hereby certifies that the use of any copyrighted material in the thesis manuscript entitled:

“Comparison of dental sick call visits among active duty military prior to and during SARS-CoV-2 pandemic”

Is appropriately acknowledged and, beyond brief excerpts, is with the permission of the copyright owner.

CPT Andrea Baeder
Comprehensive Dentistry Residency
Uniformed Services University
Date: 05/31/2022

Abstract

COMPARISON OF DENTAL SICK CALL VISITS AMONG ACTIVE DUTY MILITARY PRIOR TO AND DURING SARS-COV-2 PANDEMIC

Presented by: Andrea Baeder, CPT, DC ¹,
Wilson, N¹, Lambert, C¹

¹AEGD-2, Schofield Barracks Dental Clinic

Introduction: In the initial days of the COVID-19 pandemic, dental care was restricted to treating emergent and urgent dental needs. This provided time to develop new infection control and mitigation strategies to protect both dental staff and patients from the newly recognized SARS-CoV2. Due to the limited care provided in the early days of the COVID-19 pandemic, there is the potential to see more dental emergencies as dental treatment was delayed and carious lesions and other dental diseases continued to progress.

Objective: Compare the demographic characteristics of active duty patients presenting to dental sick call at Schofield Barracks Dental Clinic pre and during the SARS-CoV-2 pandemic; and compare diagnosis and treatment of dental sick call pre and during the SARS-CoV-2 pandemic. The null hypothesis is there is no difference in the diagnosis and treatment of dental sick call prior to and during the SARS-CoV-2 pandemic.

Methods: 812 dental sick call electronic records from the same time period in 2019 and 2020 were retrospectively analyzed and divided into pre COVID-19 and during COVID-19 groups according to the date of the sick call visit. Demographics, diagnosis, treatment, and prescription of antibiotics and analgesics were compared between the two groups using unpaired t test and chi-square.

Results: There were fewer sick call visits in 2020 compared to 2019, 332 and 480, respectively. The mean age of patient presenting to sick call in 2019 was 28.3 years compared to 30.0 years in 2020. The two most common diagnosis in 2019 and 2020 were defective restorations and fractured tooth. In 2019 third molar pain was more common, while in 2020 pulpitis was more common. The most common treatment in both groups was providing a referral or scheduling treatment. In 2020, no treatment was more common than in 2019.

Conclusion: During the early days of COVID-19 pandemic there was a reduction in dental sick calls compared to pre-pandemic. Military clinics will need to monitor and plan for an increase in sick call visits to ensure dental readiness as patients experience the effects of delayed treatment and become more comfortable returning to the dental clinic.

TABLE OF CONTENTS

Abstract.....	v
LIST OF TABLES.....	vii
LIST OF FIGURES.....	vii
LIST OF ABBREVIATIONS.....	viii
Background.....	Error! Bookmark not defined.
Methods and Materials.....	3
Results.....	4
Discussion.....	10
Conclusion.....	12
References.....	14

LIST OF TABLES

Table 1: Demographic data	5
Table 2: Distribution of diagnosis for 2019 and 2020.....	5
Table 3: Distribution of treatment for 2019 and 2020.....	7

LIST OF FIGURES

Figure 1: Distribution of diagnosis pre-COVID (2019) vs during COVID (2020).....	6
Figure 2: Distribution of treatment pre-COVID (2019) vs during COVID (2020).....	7
Figure 3: Defective restoration – Treatment rates pre and during COVID.....	8
Figure 4: Fractured tooth – Treatment rates pre and during COVID.....	8
Figure 5: Pupal disease – Treatment rates pre and during COVID.....	8
Figure 6: Third molar pain – Treatment rates pre and during COVID.....	8
Figure 7: Post restorative sensitivity – Treatment rates pre and during COVID.....	8
Figure 8: NSAIDs prescribed by treatment, Pre COVID (2019) and during COVID.....	10
Figure 9: Narcotics prescribed by treatment, Pre COVID (2019) and during COVID.....	11

LIST OF ABBREVIATIONS

ADA – American Dental Association

CDA – Corporate Dental System

COVID - SARS-CoV2

NSAID – Non-Steroidal Anti-Inflammatory Drug

WHO – World Health Organization

BACKGROUND:

COVID-19 is a respiratory tract infection caused by the newly recognized coronavirus, SARS-CoV2. The outbreak began in China in 2019 and rapidly spread globally. The World Health Organization declared COVID-19 a pandemic on March 11, 2020 [1]. The COVID-19 virus is primarily spread through exposure to respiratory fluids carrying the virus. Exposure occurs through the inhalation of respiratory droplets and aerosols particles, deposition of droplets and particles on exposed mucous membranes of the mouth, nose, and eyes, and by touching mucous membranes with hands that have been soiled directly by virus-containing respiratory fluid or indirectly touching surfaces with the virus on them [2]. Dentists work in the oral cavity and the majority of procedures are aerosol producing. This puts dentists and dental staff at high risk of nosocomial infections and becoming carriers of the virus [3]. Transmission of the virus from dental treatment could occur from contaminated dental fluids, saliva or aerosols spread during close human-to-human contact or by contact with contaminated instruments or surfaces [4, 5]. To limit and prevent the spread of COVID-19 in the dental clinic, the American Dental Association (ADA) recommended dental clinic postpone all elective dental procedures to mitigate the spread of COVID-19 [6].

In the early stages of the COVID-19 pandemic, when countries were in lock down and dental care was being limited to emergency treatment, there is evidence that the number of dental emergencies decreased [7-9]. A study conducted in Buenos Aires, Brazil looking at a University Dental Hospital and a private clinic found a fivefold reduction in emergency treatment provided comparing pre-COVID (2019) to COVID (2020) time periods [7]. [10]. Two studies, conducted in Switzerland and Italy, found a decrease in the number of emergency dental visits compared to pre-COVID time periods. The study conducted in Switzerland, found during the lock down abscesses, orthodontic emergencies and surgical follow ups were the most common dental emergencies, while traumatic injuries decreased [8]. The study in Switzerland also found an increase in pharmacological management during their country's lockdown [8]. A study of urgent dental care during the Italian lockdown found the two most common dental care emergencies were pulpitis and abscesses [9]. A retrospective, cross-sectional observation survey conducted in a tertiary care hospital in India compared hospital records and categorized dental emergency cases during COVID -19 pre lock down period from Feb 2020 to complete lockdown in April 2020 and found the overall number of dental visits significantly decreased, however the proportion of those visits that were dental emergencies increased during the COVID lockdown [11]. The study found of dental emergencies almost half (46%) were of pulpal origin followed by abscesses (16.6%), periapical lesions (5%), cellulitis (4.1%) and trauma (0.3%) [11]. One study conducted in China, compared dental emergencies pre-COVID with a time frame further into the pandemic (January – March 2020) and found an increase in the number of dental emergencies compared to pre-COVID [10]. The most common dental emergencies in this study included pulpitis, acute apical periodontitis, acute gingivitis, and acute pericoronitis [10].

On March 20, 2020, following the ADA guidelines and Army Health Protection Conditions, Schofield Barracks Dental Clinic suspended all elective dental procedures and dental care was restricted to treating emergency dental needs [12]. The Schofield Barracks Dental Clinic is the primary dental clinic serving the 25th Infantry Division and all active duty stationed at Schofield Barracks, Hawaii. The dental clinic ensures dental readiness and provides the full spectrum of dental care to the active duty population. Dental emergencies include conditions such as pulpitis, abscess or trauma and cannot be controlled with analgesics. To continue to serve the active duty population a dental triage phone line was established and doctors were present at the clinic to triage any soldiers who came in person with a sick-call concern. Urgent dental needs that did not meet the standard of an emergency were initially triaged and managed via tele dentistry and with pharmacological strategies. The suspension of elective procedures conserved personal protective equipment (PPE) and allowed time for dental clinics to develop and implement strict protocols to limit the transmission and spread of the virus [4, 13, 14].

As more information was learned about virus and the necessary protective equipment was acquired, the clinic began expanding dental services. The military has developed a dental readiness classification system designed to standardize dental readiness, assess oral health, prioritize dental care, minimize the number of dental emergencies and emphasize the importance of oral hygiene [15]. Procedures were prioritized to maintain dental readiness and included treating patients with urgent treatment needs and completing annual dental examinations. Urgent dental care included treating patients who had complaints of pain, large carious lesions, teeth with pulpitis and necrotic pulps, and fractured teeth. By September 2020, the full array of elective dental services were again being offered to service men and women.

As the dental clinic adjusted to the constantly changing landscape, many routine and elective procedures were postponed until new PPE protocols were established and COVID-19 mitigation strategies implemented. Due to the limited care provided in the early days of the COVID-19 pandemic, there is the potential to see more dental emergencies as carious lesions and other dental diseases progress and patients become more comfortable returning to the dental clinic. The purpose of this research is to compare the quantity and types of sick call complaints from active duty soldiers prior to and during the COVID-19 pandemic and the quantity of sick call once the full array of dental care restarted after the shutdown and compare monthly trends in sick call visits throughout the pandemic.

Study Objective: The objectives of this study are: (1) to compare the demographic characteristics of active duty patients presenting to dental sick call at Schofield Barracks Dental Clinic pre and during the SARS-CoV-2 pandemic; and (2) compare the number, type and treatments of dental sick call at Schofield Barracks Dental Clinic pre and during the SARS-CoV-2 pandemic.

Null hypothesis: There is no difference in the number or types of dental sick call prior to and during the COVID-19 pandemic.

METHODS AND MATERIALS:

A retrospective, cross-sectional chart review of dental sick calls prior to and during the COVID-19 pandemic was completed at the U.S. Army Schofield Barracks Dental Clinic, Hawaii. The research project was approved by the #22R07 eIRB (project number 21-13359). Data was extracted from military electronic health record, Corporate Dental System (CDA). A control and comparison group were identified. The control group was all sick call visits that presented to the Schofield Barracks Clinic from September 1, 2019 – December 31, 2019. The comparison group, during COVID group, were sick call visits from September 1, 2020 – December 31, 2020. September – December time period was selected because September 2020 is the first month the dental clinic provided the full array of dental services including elective procedures and then the corresponding time period was selected prior to COVID-19 pandemic. The dental schedule was reviewed for each day within the two study periods to identify the appointments coded as a sick call visit. The corresponding narrative was then reviewed to determine whether the appointment was a sick call. Once the appointment was identified as a sick call visit, the narrative reviewed and relevant data extracted. Data extracted included patient age, sex, diagnosis of chief complaint, treatment rendered, analgesics prescribed and antibiotics prescribed. Once all data was collected, diagnosis and treatment categories were analyzed and consolidated into ten diagnosis categories and nine treatment categories.

The diagnosis categories

- Infection: abscess or cellulitis;
- Defective restoration: lost or defective restoration, crown or temporary crown;
- Post restorative sensitivity: occlusal trauma or post restorative sensitivity.
- Pulpitis: pulpitis, pulpal necrosis or symptomatic apical periodontitis
- TMD pain: joint and/or myofascial pain.
- Third molar pain
- Post extraction pain
- Fractured tooth
- Orthodontic concern
- Other

The treatment categories

- Adjust occlusion
- Extraction
- Pulpectomy
- Temporary restoration
- Definitive restoration
- TMD conservative therapy: which included one or more of the following prescribing or recommending an NSAID, soft diet, warm compress, and/or occlusal splint

- Referral or scheduled: either a referral for treatment was provided or the patient was scheduled for additional treatment
- None: no treatment
- Other

A descriptive analysis was performed for the control (pre COVID-19) and comparison (during COVID-19) based on age and gender of patients presenting to sick call. P-value was determined for categorized age based on chi-square, for continuous age based on unpaired t-test and for sex based on Fisher’s exact test. A significance level of 0.05 will be used for all analyses. P-values for diagnosis and treatment were based on Fisher’s exact test.

RESULTS:

Demographic data

A total of 812 sick call encounters were included in the study, consisting of 480 and 332 encounters in the pre COVID-19 and COVID-19 groups, respectively. In 2019, 351 males (73%) and 129 females (27%) presented to sick call compared with 248 males (75%) and 84 females (25%) in 2020 (Table 1). There was no difference between the number of men and women presenting to sick call between pre and during COVID-19 (Table 1). Comparing age composition, in pre-COVID, 18-21 years of age composed 19% of sick call visits, 22-25 years of age 30%, 26-29 years of age 20%, 30-39 years of age 20% and 40-59 year of age 12%. During COVID-19, 18-21 years of age composed 13% of sick call encounters, 22-25 years of age 23%, 26-29 years of age 19%, 30-39 years of age 31%, and 40-59 years of age 14%. Pre-COVID, 22-25 years of age made up the largest proportion of sick call visits, 30%, while in during COVID-19, 30-39 year of age made the largest proportion with 31%. The mean age of a patient presenting to sick call in pre-COVID was 28.3 years and 30.0 years during COVID-19, a statistically significant difference (Table 1).

	2019		2020		
	n	%	n	%	p-value
All	480	100	332	100	
Age					0.003
18-21	89	19	43	13	
22-25	143	30	78	23	
26-29	95	20	63	19	
30-39	97	20	102	31	
40-59	56	12	46	14	
Mean (std)	28.3 (8.0)		30.0 (8.1)		0.002
Sex					0.627
Female	129	27	84	25	
Male	351	73	248	75	

Distribution of sick call diagnosis

Pre-COVID-19, the most common sick call diagnosis were defective restoration (n= 102, 21.3%), fractured tooth (n=56, 11.7%), third molar pain (n=48, 10%), pulpitis (n= 46, 9.6%) and post extraction pain (n= 33, 6.9%) (Table 2 and Figure 1). During COVID-19, the most common sick call diagnosis were defective restoration (n = 73, 22%), fractured tooth (n=55, 16.6%), pulpitis (n=44, 13.3%), third molar pain (n=34, 10.2%) and orthodontic concerns (n=16, 4.8%) (Table 2 and Figure 1). In both the pre and during COVID-19 groups, the other category made up the large percentage of sick call diagnosis with 22.5% (n=108) pre-COVID-19 and 22.6% (n=75) during COVID-19 (Table 2). The Other diagnosis category included gingivitis, pathology, recession and tooth sensitivity, periodontal disease, bruxing and grinding complaints, caries, implant issues.

Diagnosis	2019		2020	
	n	%	n	%
Defective Restoration	102	21.3%	73	22.0%
Fractured tooth	56	11.7%	55	16.6%
Third molar pain	48	10.0%	34	10.2%
Pulpitis	46	9.6%	44	13.3%
Post extraction pain	33	6.9%	9	2.7%
Post restorative sensitivity	31	6.5%	9	2.7%
Ortho	22	4.6%	16	4.8%
TMD pain	20	4.2%	10	3.0%
Infection	14	2.9%	7	2.1%
Other	108	22.5%	75	22.6%
	480	100%	332	100%

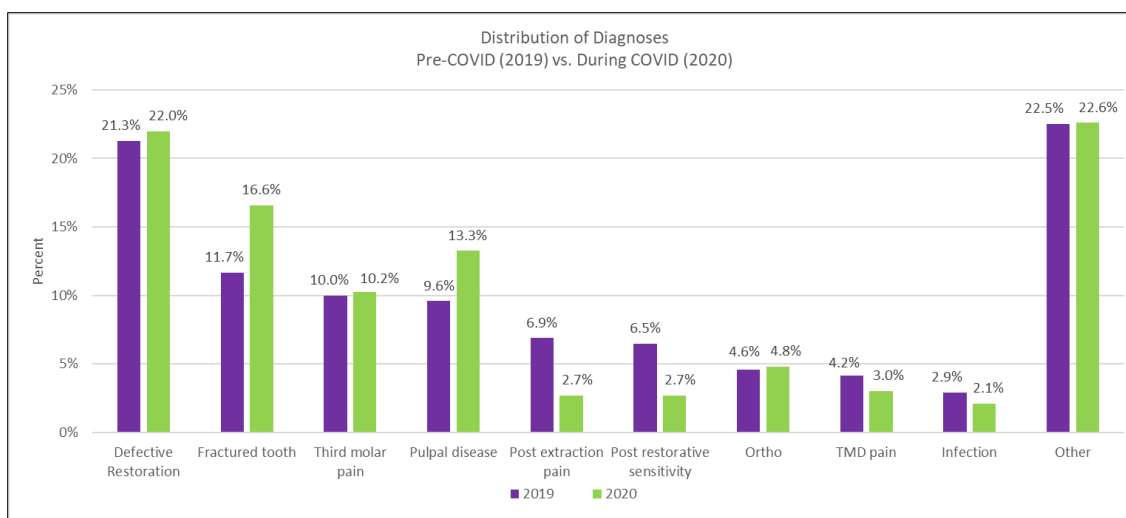


Figure 1: Distribution of diagnosis of sick call encounters pre-COVID and during COVID. Defective restorations and fractured teeth were the most common diagnosis after the other category.

Treatment provided during sick call encounter

The most common treatment rendered in both the pre and during COVID-19 groups was providing a referral for treatment or scheduling the patient for treatment with 28.1% (n=135) pre-COVID-19 and 38% (n=126) during COVID-19 (Table 3 and Figure 2). Pre COVID-19, other treatments were the next most common (n=117, 24.4%), followed by no treatment (n=67, 14%), definitive restoration (n=61, 12.7%), and temporary restoration (n=30, 6.3%) (Table 3). During COVID-19, following referral/scheduled the most common treatments rendered included: no treatment (n=69, 20.8%), final restoration (n=40, 12%), other treatment (n=40, 12%), and temporary restoration (n=29, 8.7%) (Table 3). The other treatment category included prophylaxis or scaling and root planning, smoothing restorations, adjusting orthodontic wires or managing orthodontic retainers, irrigating recent surgical sites.

Treatment	2019		2020	
	n	%	n	%
Referral or Scheduled	135	28.1%	126	38.0%
None	67	14.0%	69	20.8%
Final restoration	61	12.7%	40	12.0%
Temporary restoration	30	6.3%	29	8.7%
Adjust occlusion	19	4.0%	7	2.1%
Extract	17	3.5%	2	0.6%
Pulpectomy	17	3.5%	12	3.6%
TMD conservative therapy	17	3.5%	7	2.1%
Other	117	24.4%	40	12.0%
	480	100%	332	100%

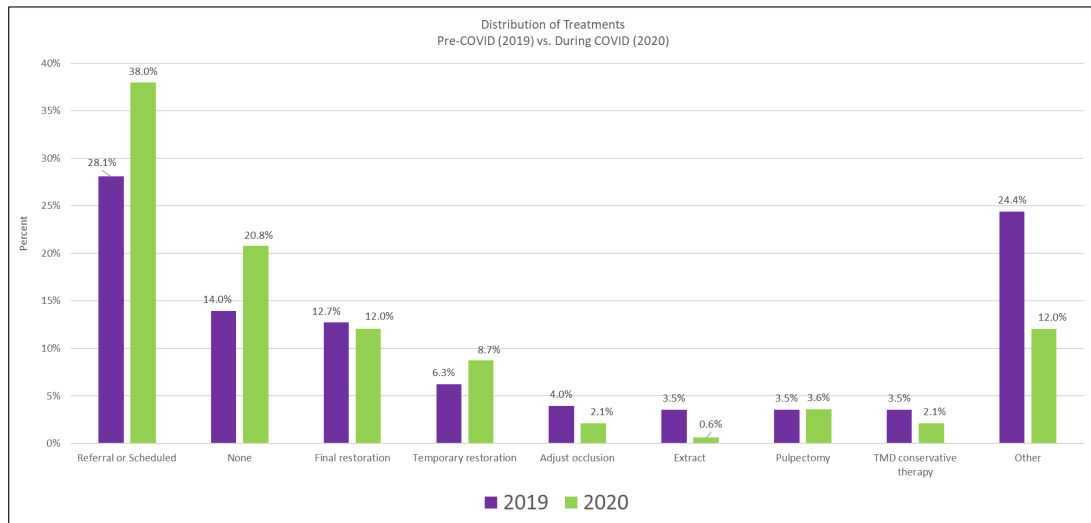


Figure 2: Distribution of treatments providing during a sick call encounter pre-COVID and during COVID. The most common treatment was to either refer or schedule the patient for further care. During COVID it was more common to not provide treatment or place a temporary restoration.

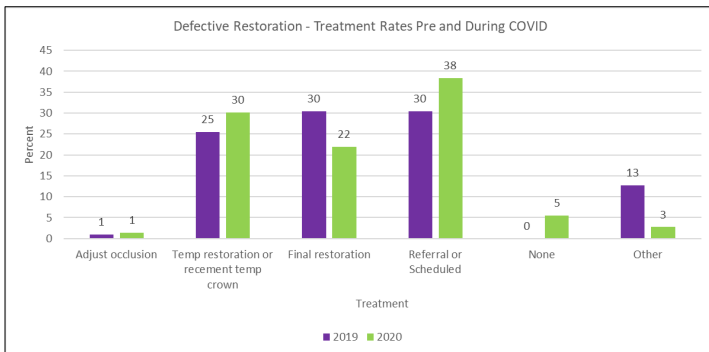


Figure 3: The treatment rates provided for defective restorations pre and during COVID-19

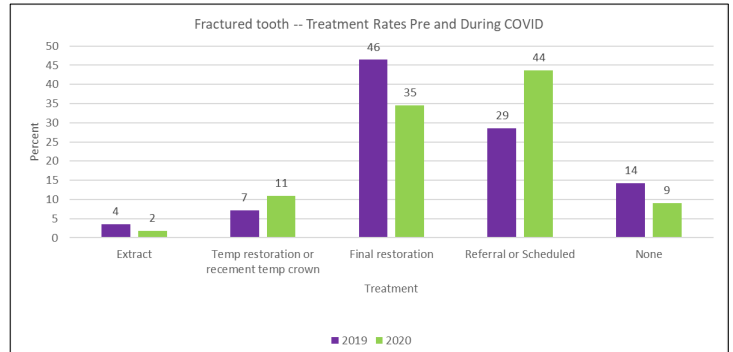


Figure 4: The treatment rates provided for fractured tooth pre and during COVID-19

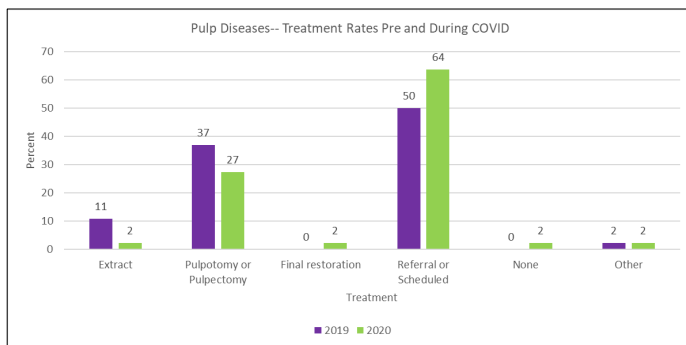


Figure 5: The treatment rates provided for pulpal diseases pre and during COVID-19

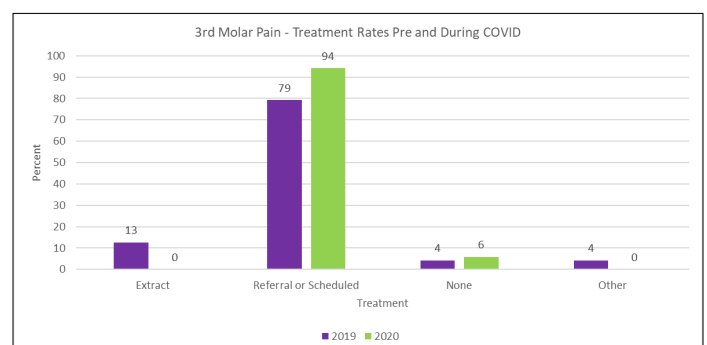


Figure 6: The treatment rates provided for third molar pain pre and during COVID-19

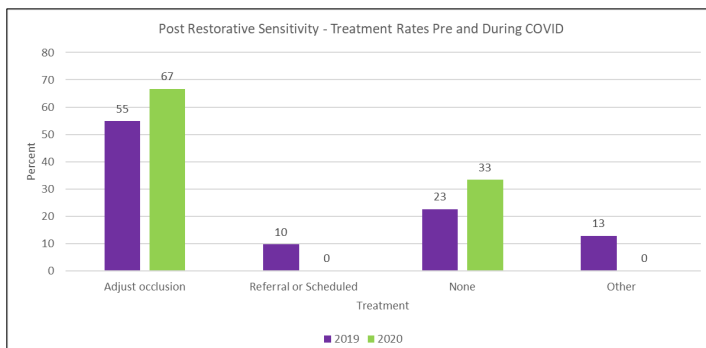


Figure 7: The distribution of treatment rates provided for Post restorative pain pre and during COVID-19

Treatment by Diagnosis

In treating a defective restoration pre COVID-19, 25% (n=26) were treated with a temporary restoration, 30% (n=31) a definitive restoration, and 30% (n=31) were referred or scheduled (Figure 3). During COVID-19, 30% (n=22) of defective restorations received a temporary restoration 22% (n=16) received a definitive restoration and 38% (n=28) were referred or scheduled. These differences were not statistically significant.

In treating fractured teeth pre COVID-19, 46% (n=26) received a definitive restoration, 29% (n=16) were referred or scheduled for treatment and 14% (n=8) received no treatment (Figure 4). During COVID-19, 44% (n=24) were referred or scheduled, 35% (n=19) received a definitive restoration, and 9% (n=5) received no treatment (Figure 4). These differences were not statistically significant.

In treating pulpal disease pre COVID-19, 50% (n=23) of patients were referred or scheduled, 37% (n=17) received a pulpectomy or pulpotomy, and 11% (n=5) had tooth extracted (Figure 5). During COVID-19, 64% (n=28) were referred or scheduled, 27% (n=12) received a pulpectomy or pulpotomy, and 2% (n=1) had the tooth extracted (Figure 5). These differences were not statistically significant.

In treating third molar pain pre COVID-19, 79% (n=38) of patients were referred or scheduled, 13% (n=6) of teeth were extracted, and 4% (n=2) had no treatment (Figure 6). During COVID-19, 94% (n=32) were referred or scheduled, no teeth were extracted, and 6% (n=2) received no treatment (Figure 6). These differences were not statistically significant.

In treating post restorative pain pre COVID-19, 55% (n=17) received an occlusal adjustment, 23% (n=7) received no treatment, and 10% (n=3) were referred or scheduled (Figure 7). During COVID-19, 67% (n=6) received an occlusal adjustment, 33% (n=3) received no treatment and 0 patients were referred (Figure 7). These differences were not statistically significant.

There were no statistically significant differences between pre COVID-19 and during COVID-19 time periods when comparing different treatments rendered by each diagnosis category, due to the number of diagnosis categories and the small sample sizes.

Medications prescribed

There was no statically significant difference in the prescription of NSAIDS pre and during COVID-19. Pre COVID-19, 16% of sick call encounters received a NSAID prescription compared to 14% during COVID-19. For both time periods, approximately half of NSAID prescriptions corresponded with treatment of referral/scheduled, no treatment, or other treatment (Figure 8). Pre COVID-19, 18% of NSAID prescriptions were following extraction and during COVID-19, 17% of NSAID prescriptions were following pulpectomy (Figure 8).

There was no statistically significant difference in the prescription of narcotics pre and during COVID-19. Pre COVID-19, 3% of sick call encounters received a narcotic

prescription compared to 2% during COVID-19. Pre COVID-19, 63% of narcotic prescriptions were provided following extraction or pulpectomy (Figure 9). During COVID-19, all narcotic prescriptions were provided for treatments in the referral/scheduled, no treatment provided, and other treatment categories (Figure 9).

Antibiotics were rarely prescribed in 2019 or 2020, and there were no statistically significant differences between the two time periods. In 2019, 1.7% of sick call encounters received an antibiotic prescription compared to 2.1% in 2020. There were no statistically significant differences when comparing antibiotic prescriptions by either diagnosis or treatment categories.

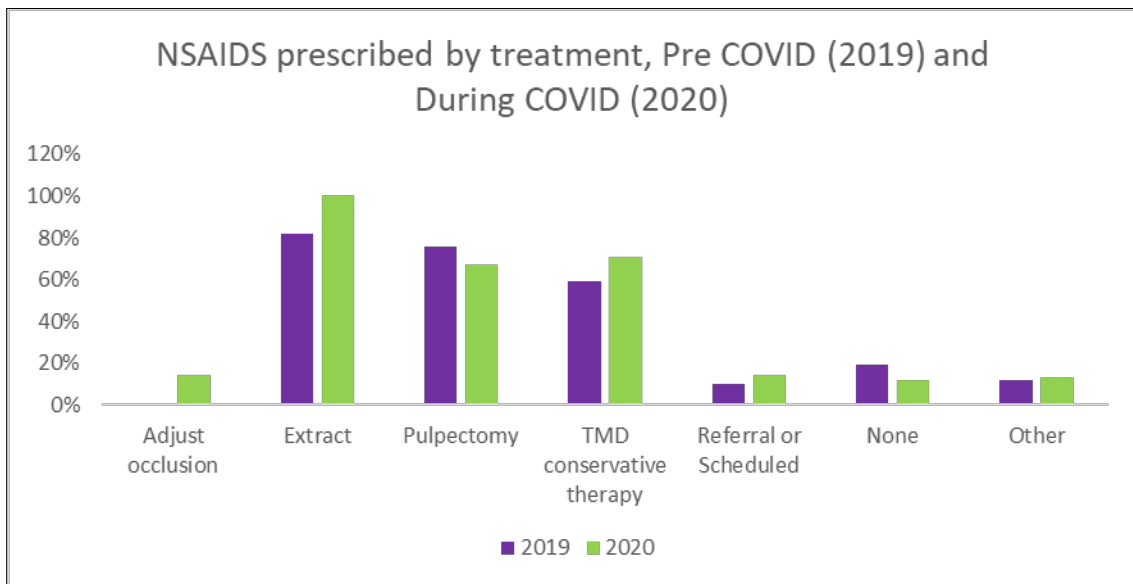


Figure 8: The distribution of prescriptions for NSAIDs by diagnosis pre COVID-19 (2019) and during COVID-19 (2020)

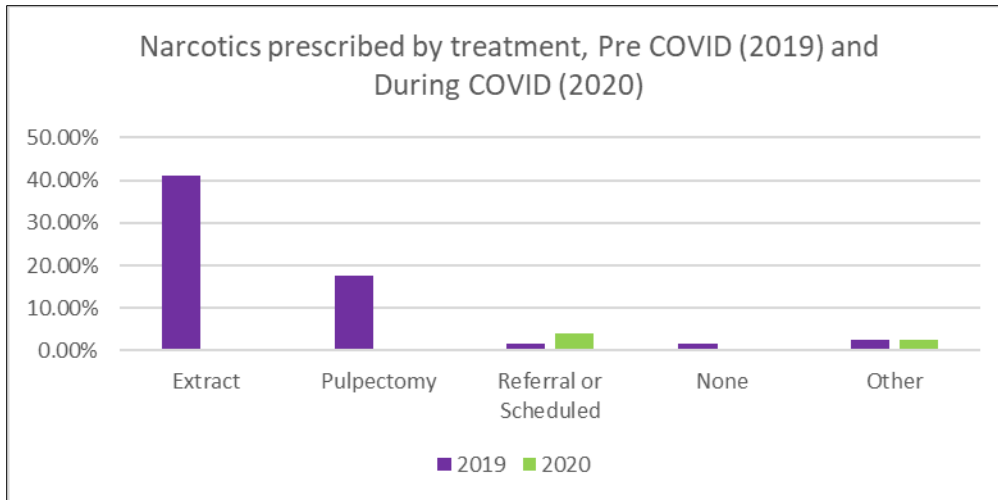


Figure 9: The distribution of prescriptions for NSAIDs by treatment pre COVID-19 (2019) and during COVID-19 (2020)

DISCUSSION:

The purpose of this study was to retrospectively compare the demographic characteristics of active duty military patients presenting to sick call along with their diagnosis and treatment prior to and during the SARS-CoV-2 pandemic. This study looked at the sick call visits at Schofield Barracks Dental Clinic, Hawaii. SARS-CoV-2 was declared a pandemic in March 2020 and following the guidelines by the US Army Health Protection Levels and the American Dental Association, dental services were limited to providing emergency dental care only [1, 6, 12]. This allowed time for the dental clinic to develop new infection control and mitigation plans to limit the spread of COVID-19. This study compared sick call from September – December 2020, which corresponds to when the clinic was once again offering the full array of dental services, with the same four month time period in 2019 prior to the COVID-19 pandemic. From March 2020 to September 2020, the dental clinic was continually providing more services as infection control protocols were developed and implemented, starting with emergency dental care, followed by annual dental examination, urgent dental needs such as large carious lesions, pulpitis, and third molar pain, and finally more elective procedures and dental prophylaxis.

Compared to pre-COVID (2019), fewer sick calls were seen in the COVID group, 480 compared to 332 respectively. This result is similar to previous studies that compared dental emergencies prior to and during COVID lockdown periods [7-9, 11]. This study examined the period of time immediately following the period of time that suspended all but emergency dental care, so it is expected that the number of dental visits would be greatly decreased. This difference could be attributed to that Soldiers were not aware that the dental clinic was fully operational, Soldiers were nervous or unwilling to come to dental clinic due to concerns about COVID-19, or Soldiers may have called the dental

triage telephone line rather than coming in person. Of the people that did come to dental sick call, there was not a significant difference in gender from pre and during COVID.

25 percent of sick call visits in 2020 were from female Soldiers, while 75 percent were male. Women make up approximately 15.5 percent of the Army active duty population, suggesting that women proportionally use the dental sick call at higher rates than their male colleagues [16]. The during COVID group also was a bit older with the average age of 30.0 years compared to in the pre-COVID group, the average age of patients was 28.3 years.

In both the pre-COVID and during COVID groups defective restorations and fractured tooth were the two most common diagnosis. This differs from other studies that found pulpitis and abscess the most common dental emergencies during lockdowns and early COVID time periods [8-11]. In the during COVID group, pulpal diseases were the third most common diagnosis while third molar pain was more common in 2019. Also, in pre-COVID (2019) post extraction pain and post restorative pain were more common compared to during COVID (2020) time period. This result would be expected as leading up to September 2020, the dental clinic was primarily focused on providing emergency dental care, and far fewer dental restorations and extractions were being completed in the lead up to the during COVID timeframe. It is also expected to see an increase in the amount of sick call visits related to pulpal diseases since dental procedures were largely postponed allowing dental diseases to progress and cause more pulpal involvement. Wu et al. examined dental emergency visits further into the COVID pandemic, and saw an increase in dental emergencies compared to pre-COVID [10]. The most common dental emergencies Wu et al found were acute pulpitis, acute apical periodontitis, acute gingivitis and acute pericoronitis [10]. This study supports the hypothesis that as the COVID-19 pandemic progresses, it is likely that dental emergencies will increase due to the delayed treatment of dental diseases in the early months of COVID-19.

The primary purpose of sick call is to triage and provide palliative care to patients in pain. In the during COVID group (2020), a higher proportion of treatment was referred or scheduled for later treatment or no treatment was provided compared to the pre-COVID (2019) group. This may be due in part that during COVID, COVID testing was required prior to any aerosol generating procedures. An interesting finding is in both the pre and during COVID groups, approximately 12 percent of the time the dentist placed a definitive restoration. This would greatly benefit the Soldier being treated, as they would not have to return for further treatment and limit the time away from their unit.

In both the pre and during COVID groups, there was no statistical difference in the medications prescribed. Eggmann, et al. found an increase in the use of pharmacologic management of dental emergencies during COVID lockdown compared to pre-COVID [8]. In very few sick call encounters were narcotics or antibiotics prescribed. NSAIDs were most common medication prescribed with 16 percent of sick call encounters being given an NSAID prescription in 2019 and 14 percent in 2020. This is likely an underestimate of the NSAIDs recommended by providers. Data collection was limited to the narrative written by the treating dentist. If the dentist recommended using an NSAID,

but did not prescribe it or write it in the note, it would not have been captured during data collection.

A major limitation of this study is the researcher had to manually review the CDA dental schedule for each day included in the study and identify which appointments were for sick call. If an appointment was not scheduled as a sick call it was not captured in this study. Also, if a dentist has left the military system, their appointments would not be visible. The author is aware of one doctor, who was present for both pre and during COVID time periods whose records could not be extracted. As a result, the overall number of sick call visits for both time periods is an underestimate. Also, the research was relying solely on the appointment narrative for data extraction. If a dentist did not include information in their narrative there would be no way to collect this information. As a result, the author suspects NSAID use is under reported as dentists may not have made a notation when they recommended, but did not prescribe a NSAID. Finally, this study overall had a small sample size and large number of diagnosis and treatment groups, which limited the statistical significance of the difference seen.

Future areas of research could include expanding the time periods reviewed as it is expected that as the COVID-19 pandemic developed and changed, there could be potential impacts on dental sick call. Another potential research area would be to examine the pharmacy records throughout the pandemic to better understand prescribing trends.

CONCLUSION:

Within the limitations of this study, there was a reduction in sick call visits in the early months of the COVID-19 pandemic following the suspension of dental activities compared to pre-COVID sick call visits. Once the dental clinic fully opened, there was no difference in male and female sick call patients, but patients coming to sick call tended to be slightly older compared to pre-COVID. While defective restorations and fractured teeth were the most common diagnosis pre and during COVID and increase in pulpal diseases was seen in the during COVID group. This suggests that the delay in treatment during the initial COVID shutdown was having an effect. Military clinics will need to monitor and plan for an increase in sick call visits to ensure dental readiness as patients experience the effects of delayed treatment and become more comfortable returning to the dental clinic.

REFERENCES

1. WHO. *WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020*. March 11, 2020 June 2, 2021]; Available from: <https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020>.
2. CDC. *Scientific Brief: SARS-CoV-2 Transmission*. 2021 May 7, 2021 May 18, 2021]; Available from: <https://www.cdc.gov/coronavirus/2019-ncov/science/science-briefs/sars-cov-2-transmission.html>.
3. Ather, A., et al., *Coronavirus Disease 19 (COVID-19): Implications for Clinical Dental Care*. J Endod, 2020. **46**(5): p. 584-595.
4. Banakar, M., et al., *COVID-19 transmission risk and protective protocols in dentistry: a systematic review*. BMC Oral Health, 2020. **20**(1): p. 275.
5. Checchi, V., et al., *COVID-19 Dentistry-Related Aspects: A Literature Overview*. Int Dent J, 2021. **71**(1): p. 21-26.
6. ADA. *ADA recommending dentists postpone elective procedures*. ADANews 2020 May 20, 2021]; Available from: <https://www.ada.org/en/publications/ada-news/2020-archive/march/ada-recommending-dentists-postpone-elective-procedures>.
7. Rodriguez, P.A., et al., *Dental Emergency Admissions in Emergency Oral Health Care Centers during COVID-19 Pandemic in Buenos Aires, Argentina*. Int J Environ Res Public Health, 2022. **19**(3).
8. Eggmann, F., et al., *Impact of the COVID-19 pandemic on urgent dental care delivery in a Swiss university center for dental medicine*. Clin Oral Investig, 2021: p. 1-11.
9. Salgarello, S., et al., *Urgent Dental Care During Italian Lockdown: A Cross-sectional Survey*. J Endod, 2021. **47**(2): p. 204-214.
10. Wu, K., et al., *Changes in the characteristics of dental emergencies under the influence of SARS-CoV-2 pandemic: a retrospective study*. BMC Oral Health, 2021. **21**(1): p. 174.
11. Kumar, U., et al., *Impact of covid-19 pandemic on characteristics of dental emergencies and treatment services at tertiary care centre*. Saudi Dent J, 2021. **33**(8): p. 1018-1023.
12. Defenese, D.o. *HPCON: Understanding Health Protection Condition Levels*. 2020 April 9, 2022]; Available from: <https://www.defense.gov/News/Inside-DOD/Blog/article/2128863/hpcon-understanding-health-protection-condition-levels/>.
13. Meng, L., F. Hua, and Z. Bian, *Coronavirus Disease 2019 (COVID-19): Emerging and Future Challenges for Dental and Oral Medicine*. J Dent Res, 2020. **99**(5): p. 481-487.
14. Falahchai, M., Y. Babae Hemmati, and M. Hasanzade, *Dental care management during the COVID-19 outbreak*. Spec Care Dentist, 2020. **40**(6): p. 539-548.

15. Leientecker, T., *The Department of Defense oral health and readiness classification system*. Mil Med, 2008. **173**(1 Suppl): p. 1-2.
16. Defense, D.o. *2020 Demographics Profile of the Military Community*. 2020 04/09/2022]; Available from: <https://download.militaryonesource.mil/12038/MOS/Reports/2020-demographics-report.pdf>.