
Profile and Prevalence of Oral and Maxillofacial Diseases Among Armed Forces Personnel and Their Families in Military Dental Centre, Cumilla

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ABSTRACT

Background: Oral and maxillofacial diseases encompass a wide range of conditions in and around oral cavity and in maxillofacial region. It includes maxillofacial trauma, cyst and tumour of jaw bones, conditions involving impacted wisdom teeth, oral premalignant and malignant lesions, fascial space infection around maxillofacial region, temporomandibular joint disorder, dental implantology, salivary gland disorder and congenital defects of jaw bones. Maxillofacial region is more vulnerable to sustain injuries in the battlefield. In peace time, various maxillofacial diseases reduce the overall performances of the troops. The aim of this study is to delineate rank wise distribution of armed forces personnel reported with maxillofacial diseases, gender distribution, types of maxillofacial diseases, different types of surgical procedures performed and types of anesthesia used.

Methods: A descriptive cross-sectional study was conducted to assess the prevalence of maxillofacial diseases among the armed forces personnel and their entitled family members during the period of 1st January 2019 to 31st December 2019 in Military Dental Centre, Cumilla. Purposive sampling technique and semi structured questionnaire was used to include the patients in this study. Data were analyzed by using Statistical Packages for Social Sciences (SPSS) version 25.

Results: A total of 170 cases were evaluated and treated. Male patients were 110(65%) and female were 60(35%). Among the military personnel numbers of sainik (privates) were highest 32(35%). Impacted wisdom teeth cases were mostly found 80(47%). In case of impacted teeth mesio angular impactions were most 35(35%). In case of maxillofacial pathological conditions cystic lesions were most in number 22(39%) (n=56). Maxillofacial soft tissue laceration cases were highest 05(29%) (n=17) among all trauma patients. Surgical extraction of wisdom teeth were mostly performed surgery 80(59%) (n=138). In regards to administration of anesthesia, 128(93%) cases were performed under local anesthesia and 10(7%) were under general anesthesia.

Conclusion: The present study imparts valuable perception about the types and prevalence of maxillofacial diseases and the treatment modalities among the armed forces personnel and their families in Cumilla area.

Keywords: Oral and maxillofacial diseases, Armed forces personnel, Military dental centre

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INTRODUCTION

Oral and Maxillofacial diseases among armed forces personnel reduces combat effectiveness and create great concern for the military commanders. It brings about adverse effects daily activities of troops, trainings and in summer and winter collective exercises.

Military Dental Centre Cumilla is a Type C Dental Centre. Its oral and maxillofacial surgery department treats a wide spectrum of diseases in and around oral and maxillofacial region amongst entitled armed forces personnel of greater Cumilla area. This unit also manages patients from Cumilla Cadet College, Feni Girls' Cadet College and entitled patients of Border Guard Bangladesh of this vicinity.

The extent of oral and maxillofacial surgery includes the management of traumatic condition of face, jaw bone and teeth, pathologic condition like cyst, tumour of jaw bones, oral mucosal lesion, premalignancy, oral malignancy, surgical removal of impacted teeth, dental implantology, temporomandibular joints disorder, space infections around head and neck region, salivary gland disorders and congenital defect of head and neck region.

Maxillofacial surgeons of coming days will have to maintain a high degree of proficiency, professional expertise and devotion to keep up with the evolving pattern of conflict and unusual injuries inflicted to the maxillofacial region.¹

The aim of this study is to describe rank wise distribution of armed forces personnel receiving treatment for maxillofacial diseases, gender distribution, types of maxillofacial diseases, different types of surgical procedures performed and types of anesthesia used. This study would help in improvement of patient care and also enrich the educational and research area in context of Bangladesh Armed

Forces and also other areas having similar characteristics.

MATERIALS AND METHODS

The present descriptive cross-sectional study was accomplished in Military Dental Centre Cumilla, Bangladesh, from 01 January 2019 to 31 December 2019. Ethical approval was acquired from ethical and research committee. All entitled patients diagnosed with oral and maxillofacial diseases were included in this study. The accumulated data were studied and analyzed to evaluate the rank wise distribution of maxillofacial diseases among armed forces personnel, gender distribution, types of disease, variants of impacted 3rd molar tooth, anatomical site distribution of maxillofacial trauma cases, modalities of treatment rendered and type of anesthesia used.

RESULTS

This descriptive cross-sectional study was involved in evaluation and treatment of 170 patients of oral and maxillofacial diseases from 01 January 2019 to 31 December 2019 in the department of oral and maxillofacial surgery at Military Dental Centre Cumilla. Among 170 patients there were 91 military personnel of different ranks and rest were from the entitled family members. Male patients were 110(65%) and female were 60(35%).

Table-I: Rank wise distribution of military patients (n=91)

Category	Frequency	Percent
Officers	05	6
JCO	10	11
Sgt	16	18
Cpl	15	16
Lcpl	13	14
Sainik	32	35
Total	91	100

Table-I shows that out of 170 patients 91 were military personnel of different ranks. Out of

military patients maximum 32(35%) were sainik and minimum were officers 5(06%).

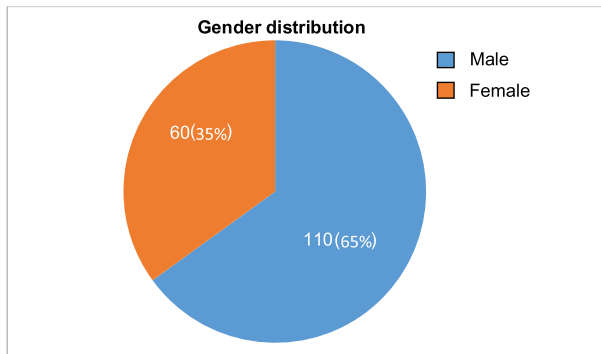


Fig-1: Gender distribution of patients (n=170)

Above fig-1 reveals that out of 170 respondents maximum 110(65%) were male and 60(35%) were female.

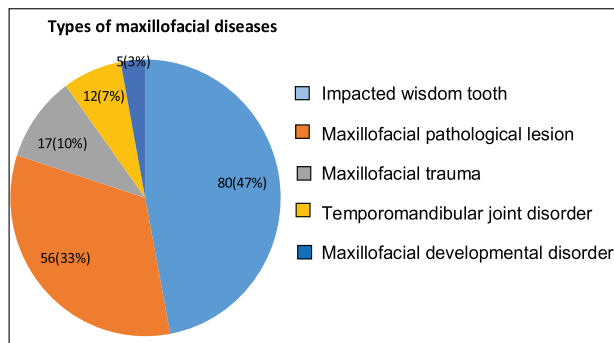


Fig-2: Distribution of patients with different types of maxillofacial diseases (n=170).

This fig-2 depicts that the highest number of patients 80(47%) had impacted wisdom tooth and lowest 5(3%) had maxillofacial developmental disorder.

Table-II: Distribution of the patients by types of impacted teeth in different gender (n=80)

Angulation of impaction	Male	Female	Total n(%)
Mesio angular	25	10	35(44)
Vertical	12	08	20(25)
Horizontal	08	07	15(19)
Disto angular	05	05	10(12)
Total	50	30	80(100)

Table-II indicates that maximum patients 35(44%) had mesio angular impaction and only 10(12%) had disto angular impaction.

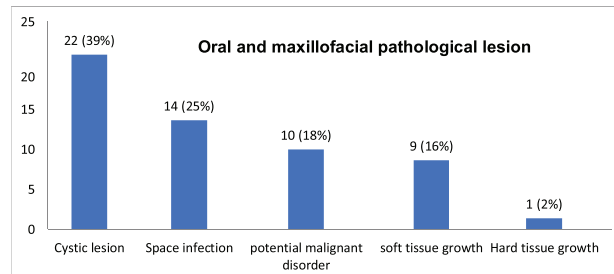


Fig-3: Categories of oral and maxillofacial pathological lesion (n=56).

Fig-3 demonstrates among maxillofacial pathological lesions cystic lesions were maximum in number, 22(39%) cases.

Table-III: Distribution of patients by anatomical site and pattern of maxillofacial trauma (n=17)

Anatomical site	Fracture state n(%)
Maxillo facial soft tissue laceration	05(29)
Dento alveolar fracture	04(23)
Zygomatico maxillary complex	04(23)
Mandibular fracture	03(18)
Panfacial fracture	01(06)
Total	17(100)

Table-III reveals that maximum patients 05(29%) reported with maxillofacial soft tissue laceration

Table-IV: Distribution of patients according to performed oral and maxillo facial surgical procedures (n=138)

Surgical Procedures	State of operations n(%)
Surgical extraction of wisdom tooth	80(59)
Enucleation of cystic lesion	22(16)
Incision and drainage of space infection	14(10)
Excision of soft tissue growth	08(6)
Open reduction and internal fixation	05(4)
Repair of the soft tissue laceration	05(4)
Arch bar fixation	04(3)
Total	138(100)

Table-IV shows that surgical extraction of wisdom teeth cases were mostly performed procedure 80(59%).

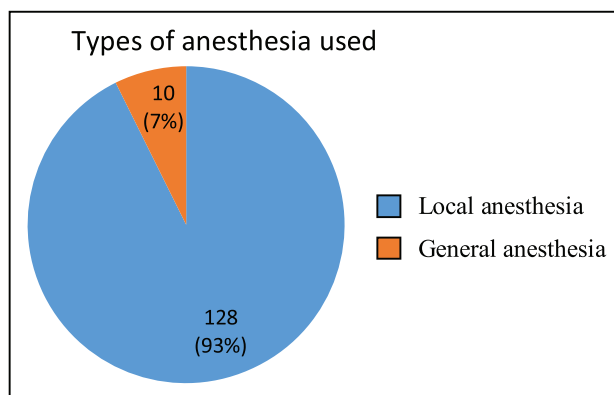


Fig-4: Distribution of patients according to the type of anesthesia administered.

Fig-4 indicates most of the procedures were performed under local anesthesia 128(93%).

DISCUSSION

Any study regarding profile and prevalence of maxillofacial diseases will definitely enhance the outcome of better patient management, improve the quality of treatment, the skill of the surgeons and also will help in proper utilization of health resources. As this study was conducted in Military Dental Centre Cumilla and most of the patients were from armed forces personnel hence the profile and prevalence was a bit different as compared to the other government civil hospitals. In this study among all the patients 110(65%) were male and 60(35%) were female. Among the reported military personnel, the number of sainik (privates) was the highest 32(35%) whilst officers were the lowest 05(6%). The numbers of other categories were nearly the same. A study conducted by Chowdhury et al. found that in counter proxy war posture (CPWP) among all patients of maxillofacial injuries other ranks (OR) were 209(64%) junior commissioned officers (JCO) were 22(6%) and officers were 15(4%).¹

Present study shows that impacted wisdom teeth cases comprised 80(47%) of the total

patients, temporomandibular joints (TMJ) disorders and maxillofacial developmental disorder accounted for 17(10%) of patients while maxillofacial pathological diseases accounted for 56(33 %) of cases. A study done by Ku found that extraction surgeries in department of oral and maxillofacial surgery of Armed Forces Capital Hospital in Seongnam, Korea accounted for 49.2% of total surgical patients.² In another study conducted by Chaffin et al. found that third molar related problems pain or pericoronitis were the second most often source of pain accounting for 89(18.5%) of all US Army dental emergency visits.³ Islam et al. in their study found that pathological lesions were 451(58.72%) followed by maxillofacial injury comprised of 266(35%) cases.⁴ A study led by Ahmed et al. found that benign tumour was the most common pathology 1574(27.8%) followed by malignant tumour 1217(21.5%) and jaw bone fracture was 1149(20.3%). Among the benign tumour ameloblastoma was the most common diagnosis 912(58%).⁵ Another study led by Adebayo et al. revealed that maxillofacial trauma cases made up 51(46%) followed by tumour and allied lesions 43(39%).⁶ In our study as the military personnel were mostly young in age the most of the patients thus visited with impacted 3rd molar teeth and trauma cases were less in comparison to few other studies because most of them reside inside the cantonment. Impaction of the wisdom teeth (third molar) is frequent. Over 72% of Swedish adult people between the ages of 20 to 30 years have at least one lower wisdom tooth that is impacted. The extraction of wisdom teeth that are impacted is a frequent procedure.⁷

In this study among 80 patients of surgical extraction of impacted 3rd molar tooth 50(62%) patients were military persons and rest were entitled families, among all the cases mesio angular impaction were highest followed by

vertical and horizontal impaction. Langsten, et al. in their study indicated that soldiers with partially or non-erupted third molars be aggressively addressed before being deployed, noting that a high percentage of third molar pain is not surprising given that the age of the majority of young airmen coincides with the age at which third molars erupt.⁸ Pepper et al. found in their study with 145(35%) patient had vertical impaction followed by mesio angular impaction 133(32%).⁹ In another study by Passi D et al found that mesio angular impaction was highest 123(49%) followed by vertical 60(24%).¹⁰

In this study among oral and maxillofacial pathological lesion (n=56), it is observed that there were 22(39%) cases of cystic lesion, 14(25%) cases of space infection and 10(18%) cases of potentially malignant oral mucosal lesions. A study led by Alhindi et al found that reactive/adaptive lesions were most common 245(20%) followed by cystic lesions 214 (17.6%) and infectious lesions were 152(12.5%).¹¹ Gambhir et al. in their study found that 101(22%) of their total study subjects (n=451) was diagnosed as potentially malignant disorder like lichen planus, leukoplakia, oral submucous fibrosis.¹² In this study this group comprised 10(18%), among those most were female. Among the cystic lesion most were radicular cyst 16(72%) followed by mucocele 5(22%). Huang et al. in their study of pediatric oral and maxillofacial pathology found mucocele were most common diagnosis 130(19.23%) followed by dentigerous cyst 38(5.62%) and hemangioma 37(5.47%).¹³

Despite the fact that maxillofacial injuries are quite common in civilian settings, there have been disagreements over the distinctions and parallels between the treatment of civilian and combat casualties. The manner of harm, kind of weapon, missile velocity, cavitation, degree of

tissue destruction, contamination, pre-hospital duration and the number of injured individuals who are admitted to the hospital at once are the main distinctions between these two.¹ In this study most of the patients got maxillofacial trauma due to road traffic accident and few were of sports injury (boxing, football and hockey). In this study patient with facial soft tissue laceration along with tongue laceration was highest in number followed by zygomatic bone fracture and dento alveolar fracture. Assiri et al. in their study found that RTA was the main cause of trauma and mandibular fracture were 223(44%) followed by zygoma fracture 116(23%).¹⁴ The above scenario may be changed in a war situation. Just over one-third of military visits to in-theater (Level III) military treatment facilities (MTFs) for battle injuries (BIs) were attributed to cranial and oral-maxillofacial injuries, according to Mitchener et al. in their study of oral and maxillofacial injury surveillance of US military personnel in Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF). Additionally, they looked into the 2003 and 2004 air medical evacuations (MEDEVACs) of army men from OEF and OIF due to OMF circumstances. Both battle injuries (BI) and non-battle injuries (NBI) had OMF injury MEDEVAC rates recorded by the study. The author observed a 0.4/1,000/year OMF BI injury MEDEVAC rate and a 0.3/1,000/year OMF NBI injury MEDEVAC rate.¹⁵

Surgical extraction of impacted 3rd molar teeth were mostly performed surgery 80(59%) followed by enucleation of cystic lesion 22(16%) and incision and drainage of maxillofacial fascial space infection cases were 14(10%), few patients were given conservative treatment and some others were referred to Military Dental Centre Dhaka for better management. Dento alveolar surgery accounted for 1,162 treatments (60.9%), making it the

most common treatment type in the overall patient population, according to a study done by Sukha et al.¹⁶ This higher operation type can be attributed to the rise in patients needing surgery for their third molars and other complex teeth extractions that were followed by facial fracture management 350(20%).¹⁶ A study led by Islam, et al found that the main modalities of treatment were maxillo-mandibular fixation or wiring for fracture management 266(34.63%). Closed reduction was used to manage the greatest number of patients 143(19%). 124(16.15%) of all cases were treated by enucleation of benign lesions or deflation and dredging in accordance with dredging technique for the treatment of ameloblastoma or odontogenic keratocyst.⁴

According to this study majority of the cases were performed under local Anesthesia 128 (93%) and 10(7%) cases were performed under general anesthesia. A study conducted by Sukha, et al found in their study local anesthesia was administered into 1248(71.3%) cases and 502(28.7%) were treated under general anesthesia.¹⁶

CONCLUSION

A huge number of uniformed personnel have reported with 3rd molar impacted tooth condition so all the young aged sainik (private) can be periodically checked up and if there are any impacted teeth those could be prophylactically extracted. It will definitely increase the performance of the troops. As most of the cases were done under local anesthesia so these patients can be monitored properly just after surgery if there are post-operative resuscitation facilities are attached with MDC. As surgical extraction were the mostly performed surgery, so to know the proximity of inferior alveolar nerve to impacted 3rd molar tooth CBCT (Cone Beam Computed Tomography) is required and it should be

available in all C type Military Dental Centre of Bangladesh Army. Among all the patients 60(35%) female patients have experienced with maxillofacial diseases, more female maxillofacial surgeons are therefore a dire need.

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