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PATTERN AND AETIOLOGY OF MANDIBULAR FRACTURES AT KENYATTA NATIONAL HOSPTAL.

ABSTRACT

Objective:**To determine the aetiology and pattern of mandibular fractures among trauma patients at the oral surgery clinic of Kenyatta National Hospital (KNH).**
Design: **A retrospective hospital based study.**
Setting: **Kenyatta National Hospital (KNH).**
Subjects: **250 trauma patients referred to the oral surgery clinic at KNH for the management of mandibular fractures.**
Methods: **From the daily work register of the oral surgery clinic at KNH, names of patients presenting with mandibular fractures were sought from 31st May 1998 backwards till a sample size of 250 was attained. The outpatient and inpatient records were retrieved and the information relevant to this study including aetiology, sex, occupation and the pattern of mandibular fractures was obtained and recorded in a specially designed data collection form.**
Results:**Interpersonal violence was the leading cause of mandibular fractures (61%). The body of the mandible was more affected by fractures (26%) and the peak age of incidence was 21-40 years. The left side was more affected than the right side and males were more affected than females (4.6:1).**
Conclusion: **Interpersonal violence was the leading cause of mandibular fractures with a peak age of incidence of 21-40 years. Preventive measures should be aimed at reducing interpersonal violence by ensuring the public is protected by the government through the police department. Road traffic accidents should also be reduced by road safety campaigns and by active input from the traffic police department.**

INTRODUCTION

Ever since the birth of specialized treatment for maxillofacial injuries during the Second World War, there has been an increasing demand for such treatment. However, prevention and assembling of a team for proper management of such injuries requires a clear understanding of the aetiology and pattern of the clinical presentation. The causes of maxillofacial bone fractures vary from country to country according to socio-economic and cultural states[6]. Little has been done on aetiology and pattern of mandibular fractures in Kenya, and only two districts have reported on this subject. In Nairobi's KNH (1984-1986) and Kisii district hospital (1993), interpersonal violence (IPV) was the leading cause of mandibular fractures[1,2,3]. The peak age of incidence was 21-30 years.and the body of the mandible was the most common site of fracture[1,2,3].

The objective of this study was to describe the pattern of mandibular fractures among patients seen at KNH and to determine the aetiologic factors associated with these fractures.

SUBJECTS AND METHODS

This was a retrospective descriptive study using hospital-based patients records. Records of patients who presented at the hospital with mandibular fractures were systematically retrieved beginning with those attended to on the last day of May 1998 and going backwards till the desired sample size was attained. The records were examined and the required information including age, gender, occupation, residence, site of fracture and side of mandible affected was extracted and recorded in specially designed data collection forms. Records with incomplete information were excluded. To avoid loss of records during the study, an inventory of records was maintained.

RESULTS

A total of 200 records of patients treated for mandibular fractures were examined among which 164(82%) were males while 36(18%) were females giving a male to female ratio of 4.6:1. Among both male and female subjects the most commonly affected age group was 21-40 years, which constituted 57% of all patients. The extreme age groups, 10 years or less and those above 50 years, were the least affected by mandibular fractures (Table 1).

Table 1. Distribution of fractures according to age and sex.

Age group (yrs)	Male	Female	Total	Percent (%)
1-10	11	5	16	8.0
11-20	24	5	29	14.5
21-30	59	13	72	36.0
31-40	35	7	42	21.0
41-50	18	3	21	10.5
Above 50	17	3	20	10.0
Total	**164**	**36**	**200**	**100**

IPV was the leading cause of mandibular fractures (61%) followed by road traffic accidents (23%). IPV was the leading cause of mandibular fractures in the 21-40 years age group accounting for 42.6% of the total number of patients. Road traffic accident (RTA) was the major cause of fractures in patients above 50 years (7%). Falls were the main cause of fractures in patients below 10 years accounting for 5.5% of the total number of patients (Table 2).

Table 2. Aetiology of mandibular fractures.

AGE IN YEARS	AETIOLOGY IPV	RTA	FALLS	OTHERS	*TOTAL
1-10	2 (1%)	1 (0.5%)	11 (5.5%)	2 (1%)	16
11-20	14 (7%)	11 (5.5%)	2 (1%)	2 (1%)	29
21-30	53 (25.6%)	10 (5%)	9 (4.5%)	0 (0%)	72
31-40	34 (17%)	6 (3%)	0 (0%)	2 (1%)	42
41-50	15 (7.5%)	4 (2%)	1 (0.5%)	1 (0.5%)	21
>50	4 (2%)	14 (7%)	0 (0%)	2 (1%)	20
TOTAL	**122 (61.0%)**	**46 (23:0%)**	**23 (11.5%)**	**9 (4.5%)**	**200**

*Total number of patients.

The body of the mandible (26%) and the dentoalveolar process (25.3%) were the most commonly affected sites, with the ascending ramus of the mandible being the least affected site (Table 3).

Table 3. Site distribution of mandibular fractures.

SITE	NUMBER OF FRACTURES	PERCENTAGE OF TOTALNUMBER OF FRACTURES%
Condyle	17	6.3
Ascending ramus	13	4.8
Angle	46	17.2
Body	70	26.0
Parasymphisis	33	12.3
Symphisis	22	8.1
Dentoalveolar	68	25.3
TOTAL	**269**	**100.0**

The left side was more affected than the right side in cases of fractures caused by IPV with a ratio of 1.2:1 respectively. The left and right sides were equally affected in cases of mandibular fractures caused by RTA, falls and other causes (Table 4). Irrespective of the aetiology of mandibular fractures the body of the mandible was the most preferred site followed by dentoalveolar process (Table 5).

Table 4. Distribution of fractures according side of the mandible affected.

AETIOLOGY	LEFT SIDE	RIGHT SIDE	MID LINE
IPV	88	72	10
RTA	21	21	7
Falls	11	13	7
Others	3	3	3
TOTAL	**123**	**109**	**25**

Table 5. Association between fracture site and aetiology

AETIOLOGY	MANDIBULAR SITE AFFECTED Condyle	Ramus	Angle	Body	parasym -phisis	Symphis -is	Dentoalv -eolar-	*TOTAL
IPV	10 (3.7%)	11 (4.1%)	28 (10.4%)	43 (16.0%)	25 (9.3%)	13 (4.9%)	40 (14.9%)	170 (63.2%)
RTA	5 (1.9%)	1 (0.4%)	10 (3.7%)	18 (6.7%)	6 (2.2%)	3 (1.1%)	16 (5.9%)	59 (21.9%)
Falls	2 (0.7%)	0 (0%)	7 (2.6%)	8 (3%)	2 (0.7%)	4 (1.5%)	8 (3.0%)	31 (11.5%)
Others	0 (0%)	1 (0.4%)	1 (0.4%)	1 (0.4%)	0 (0.7%)	2 (0%)	4 (1.5%)	9 (3.3%)
TOTAL	**17 (6.3%)**	**13 (4.8%)**	**46 (17.2%)**	**70 (26.0%)**	**33 (12.3%)**	**22 (8.1%)**	**68 (25.3%)**	***269 (100%)**

* Total number of fractures recorded.

DISCUSSION

The cause of maxillofacial bone fractures differs from country to country according to socioeconomic and cultural states[6]. Whilst in Nairobi, Kenya and Harare, Zimbabwe, IPV was the main cause of mandibular fractures RTA was the main cause in Ibadan, Nigeria and Benghazi, Libya[7]. The overall most common cause of mandibular fractures was IPV. However, this is not true for all ages since, while IPV was the major cause of mandibular fractures amongst the 21-40-year age group, RTA was the main cause of such injuries in patients over 50 years old and falls the most common cause in children between 1-10 years.

The most commonly affected age group was 21-40 years with males being affected more than the females. These findings are in agreement with other series[1,2,3,4]. IPV was the major cause of fractures in this age group and alcohol abuse may have been a contributing factor. Site distribution is similar to that found in other series[2,3,5]. The body of the mandible was the most common site of fracture followed by the dentoalveolar region. Site distribution is a factor of the degree of

violence, direction of impact and the relative weakness of the mandible at the various sites. The long root of the canine weakens the body of the mandible making it the most prone site of fracture. The left side of the mandible was more affected than the right side, in cases of IPV. This could be explained by the fact that most people are right handed and when they hit their opponent more often than not the fist lands on the left side. Left and right sides of the mandible were equally affected in RTA. The impact during RTA is usually directed at the symphyseal region, especially when emergency brakes are applied or during collision. This could lead to bilateral body or condylar fractures.

Collection of nationwide data on facial trauma is not only important for appropriate healthcare planning but also in the institution of preventive measures based on aetiologic factors. Intervention measures should be directed at the most common cause of fractures. IPV can be prevented by members of the public working hand in hand with the police department in identifying and reporting any suspicious persons to the police. Increased police patrols both in the city center and in the residential areas could also help in curbing IPV. In case of road traffic accident, injuries can be minimized or even prevented by introducing certain safety features as standard equipment in all vehicles especially public service vehicles (PSV). Such features would include seatbelts and air bags fitted in all passenger seats. PSV passenger seats should also be placed at a safe distance from each other unlike the congested seat arrangement in Kenyan PSV transport where operators want more seating space at the expense of safety.

Incomplete records and missing radiographs constituted the main limitation in this study. Information on patients' occupation, residence or whether the patient was under the influence of alcohol was missing. Loss of daily register immediately preceding the one that was being used to retrieve the patients in this study meant that the required sample size could not be attained. The recommendations are that a national survey is required on this subject because risk factors vary from region to region, for example, depending on the mode of transport. The association of alcohol abuse and facial trauma should be investigated. Future studies should also investigate the pattern of mandibular fractures in RTA patients.

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