

Self-Reported Orofacial Sports Injury at a Nigerian Medical Students University Games

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1. Abstract

1.1 Introduction: Sports related accidents are a cause of oro-facial injuries. This study assessed the self-reported orofacial sports injuries among medical students involved in sports in Nigeria.

1.2 Method: This was a descriptive cross-sectional study of medical students who took part in the Nigerian Medical Students Games hosted by the University of Benin. Data was collected by means of a self-administered questionnaire. Data collected was analysed using IBM SPSS 21.0. With statistical analysis in the form of descriptive statistics cross-tabulations, independent sample t-test and Chi-Square.

1.3 Results: A total of 110 medical students took part in the study. Most (69.7%) of the participants engaged in only a single sporting activity with football alone accounting for 34.3% and football in combination with other sports accounted for 18.2%. Self-reported prevalence of oro-facial injury in the previous 12 months was 36.4% with 33.3% of the injuries involving multiple orofacial tissues. The mean number of injuries sustained by the females (2.5 ± 2.12) was higher than that sustained by the males (1.32 ± 0.54) and this was statistically significant ($p < 0.0001$). The most frequently injured orofacial tissue was the lip (55.6%) with body contact with other sports men and women being the most common cause of injury (61.1%). Lacerations accounted for more than half (52.8%) of the injuries. The sport most associated with orofacial injury among the respondents was football.

1.4 Conclusion: Self-reported sports related oro-facial injuries is common among medical students involved in sports with the lip being the most traumatised orofacial tissue.

2. Introduction

Sports related injuries have been reported in adolescents and young adults [1]. Despite varying statistics, dental and orofacial injuries are reported to occur regularly with sports participation accounting for a substantial number [2,3]. Sports related orofacial injuries include fracture of the facial bones, TMJ injuries, tooth intrusion, tooth extrusion, crown and root fractures, avulsions [4-7], lip lacerations, tongue lacerations and cheek lacerations [5].

Participating in sports and sports related activities is for several reasons which includes pleasure and relaxation, competition, socialisation, maintenance and improvement of fitness and health [7]. Notwithstanding these perceived benefits of sports partici-

ipation, it carries the risk of orofacial injuries [8]. Occasionally other parts of the body are severely affected by such injuries. The growing incidence of orofacial injuries in sports has led to greater concern for emergency and long-term care of orofacial injuries as well as the usage of preventive measures like helmets and mouth guards in sport [7].

The type of sport, condition of the playing fields and fit of safety equipment have been reported to affect the amount of risk to oro-facial injuries [9] with contact sports believed to pose a relatively high risk for dental and orofacial injuries [10].

Evidence abound that dental and orofacial injuries can be signifi-

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cantly reduced with the use of mandatory protective equipment [11] such as mouth guards [4, 12-15], helmets and face mask/guards [4, 13,14,] in addition to the teaching of appropriate skills such as tackling techniques [16] in all contact sports.

Worldwide, there is a rapid growth in sports participation; whether for exercise, competition or sheer joy of participating, an increasing number of health conscious and sports-minded individuals are finding their way onto the playing fields and into gymnasiums [7]. In a developing economy like Nigeria, sports participation is driven by the financial reward among other reasons [16]. In recognition of the growing demand on health professionals occasioned by the ever-increasing reports of orofacial injuries; dentistry has a pivotal role in providing good oral care and preventing orofacial injuries in athletes who are at risk [7].

Several studies have assessed orofacial sports injuries in Nigeria [17-19] among amateurs and professional sportsmen; however, this present study assessed orofacial sports injuries among medical students involved in sports.

3. Methodology

This was a descriptive cross-sectional study of medical students who took part in the Nigerian Medical Students Games hosted by the University of Benin in 2016. Participants for this study were randomly selected on the final day of the games at the venue of the games. Every third student involved in the games and gave informed consent to participate in the study was recruited for the study as they exited the venue of their event. The participant was given the questionnaire and asked to drop it at a designated point in their hostel of residence.

The data collection tool was a modified version of the questionnaire used in a previous study by Saheeb and Sede [19]. The self-administered questionnaire consisted of 4 sections. The first section sought information on age, gender and type of sport the participant took part in during the competition. The second section sought information on prevalence of sports related orofacial injury in the last 12 months, the orofacial tissues injured, cause of the injury and the sport associated with the injury. Section 3 sought information on the use of preventive measures and availability of dental care during the games. Section 4 sought information on the self-reported incidence of orofacial trauma during the just concluded games tournament and the associated tissues and injury.

All returned questionnaires were screened for completeness with only questionnaires properly filled included in the study. Data collected was analysed using IBM SPSS 21.0. statistical analysis in the form of descriptive statistics (mean, range and standard deviation), frequency distribution, cross-tabulations, independent

sample t-test and Chi-Square were carried out. $P < 0.05$ was considered statistically significant. Results were presented as statements, percentages, tables and bar chart.

4. Results

A total of 120 medical students participating in the games were recruited for the study. One hundred and ten questionnaires were returned giving a response rate of 91.6%. However, after screening for completeness only 99 questionnaires were used for the study.

Majority (65.7%) of the respondents were less than 25 years of age. There was a male preponderance (84.8%) with a male: female ratio of 5.6:1 (**Table 1**). The number of sporting activities the respondents were involved in ranged from 1 to 5 with a mean of 1.46 ± 0.83 sporting activities.

Most (69.7%) of the participants engaged in only a single sporting activity with football alone accounting for 34.3% and football in combination with other sports accounted for 18.2%. Other out-door games (athletics, volleyball, lawn tennis, basketball, hand-ball, cricket, hockey, shot put, high jump, table tennis and long jump) collectively accounted for 41.4% of the sporting activities.

Table 1: Age and gender distribution of the respondents

Characteristic		Frequency	Percent
Age	< 25 years	65	65.7
	25-29 years	31	31.3
	≥ 30 years	3	3
Gender	Male	84	84.8
	Female	15	15.2
Total		99	100

Self-reported prevalence of orofacial injury in the previous 12 months was 36.4% with 33.3% of the injuries involving multiple orofacial tissues. The mean number of injuries reported in the previous 12 months ranged from 1-4 injuries with a mean of 1.39 ± 0.69 injuries. The mean number of injuries sustained by the females (2.5 ± 2.12) was higher than that sustained by the males (1.32 ± 0.54) and this was statistically significant ($p < 0.0001$)

(**Table 2**) shows the orofacial tissues that sustained injuries as well as the cause and nature of the injuries. The most frequently injured orofacial tissue was the lip (55.6%) with body contact with other sports men and women being the most common cause of injury (61.1%). Lacerations accounted for more than half (52.8%) of the injuries.

The sport most associated with orofacial injury among the respondents was football accounting for 63.9% of the injuries sustained in the previous 12 months and this was followed by basketball (16.7%) (**Table 3**). The self-reported incidence of orofacial injury in the current competition was 5.1% with the injuries affecting the tongue and lips.

Table 2: Pattern of self-reported sports related orofacial injuries in the previous 12 months among the respondents

Pattern of injury	Frequency	Percent
Orofacial tissue injured		
Teeth	6	16.7
Tongue	8	22.2
Lip	20	55.6
Jaw	6	16.7
Eyes	2	5.6
Nose	4	11.1
Chin	3	8.3
Scalp	1	2.8
Nature of injury		
Joint dislocation	1	2.8
Laceration	19	52.8
Bleeding	17	47.2
Swelling	8	22.2
Fractured teeth	3	8.3
Cause of injury		
Fall	14	38.9
Body contact with others	22	61.1
Contact with sporting equipment	5	13.9
Fights	2	5.6
Respondents gave multiple responses		

Table 3: Distribution of sporting activity in which respondents sustained injury

Sporting activity	Number of respondents that sustained injury	Percent
Athletics	1	2.8
Football	23	63.9
Karate	2	5.6
Taekwando	3	8.3
Hockey	1	2.8
Gymnastics	1	2.8
Basketball	6	16.7
Handball	2	5.6
Volleyball	2	5.6
Cycling	1	2.8
Badminton	1	2.8
Lawn tennis	2	2
Respondents gave multiple responses		

The mean number of sporting activities was slightly higher (1.56±0.91) for those who sustained orofacial injury in the previous 12 months than those who did not (1.41±0.78). However, this was not statistically significant (p=0.13). The mean number of sporting activities undertaken by the males was higher (1.49±0.84) than the mean number of sporting activities undertaken by the females (1.33±0.72) but this was not statistically significant.

There was statistically significant association between gender and orofacial injuries with more males (40.5%) sustaining injuries compared to females (13.3%) as depicted in (Table 4) (p=0.044).

Majority (69.7%) of the respondents claimed they were not provided with any protective devices. All those who were provided

with protective devices claimed to use them. Of those provided with protective devices shin guard was the most common protective device provided (36.7%), and this was followed by head gear (33.3%) (Figure 1). Although not statistically significant, a higher proportion (37.7%) of those who do not use protective devices tend to sustain orofacial injuries compared to those who use (33.3%) (Table 4).

Less than a quarter (22.2%) of the respondents claimed they were screened by a medical doctor before commencement of the current competition while only 4.0% claimed they were screened by a dentist. Only 11.1% of the respondents claimed to have a dentist as part of their medical team. There was no statistically significant association between screening by a medical doctor and incidence of orofacial injury in the current competition as well as being screened by a dentist (Table 5).

Table 4: Association between occurrence of orofacial injury in the previous 12 months and gender, age group and use of protective devices.

	Occurrence of orofacial injury in the previous 12 months		Total n (%)
	Yes n (%)	No n (%)	
Gender			
Male	34 (40.5)	50 (95.5)	84 (100.0)
Female	2 (13.3)	13 (86.7)	15 (100.0)
Age group			
<25 years	22 (33.8)	43 (66.2)	65 (100.0)
25-29 years	12 (38.7)	19 (61.3)	31 (100.0)
≥30 years	2 (66.7)	1 (33.3)	3 (100.0)
Use of protective device			
Yes	10 (33.3)	20 (66.7)	30 (100.0)
No	26 (37.7)	43 (62.3)	69 (100.0)
Total	36 (36.4)	63 (63.6)	99 (100.0)

Table 5: Association between incidence of orofacial injury in the current competition and being screened by a medical doctor and dentist

Screened by	Sustained orofacial injury		Total n (%)
	Yes n (%)	No n (%)	
Medical doctor			
Yes	2 (9.1)	20 (90.9)	22 (100.0)
No	3 (3.9)	74 (96.1)	77 (100.0)
Dentist			
Yes	1 (25.0)	3 (75.0)	4 (100.0)
No	4 (4.2)	91 (95.8)	95 (100.0)
Total	5 (5.1)	94 (94.9)	99 (100.0)

5. Discussion

Dental injuries have been observed to be the most frequent type of orofacial injuries that may occur during sporting activities [14]. Sports related orofacial and dental injuries have been observed to impact on an individual's contest and sports career [20,21] as well as life outside sports [10]. All over the world sporting activities are capturing the attention of adolescents and young adults [1, 22], so it is not surprising to find most of the respondents in this study less than 30 years of age. The findings of this study are in tandem

with findings of previous studies with regards to gender variation in sports with the male gender being more preponderant [17].

There has been an expanding arena of vigorous physical activities and organised sports [23] associated with a high level of competitiveness with resultant significant number of dental and facial injuries [24,25]. Therefore, it is not unexpected to find people involved in multiple sporting activities in such student competitions. The multiple sporting activities seems to increase the risk of orofacial injuries as the mean number of sporting activities was slightly higher for those who sustained orofacial injury in the previous 12 months than those who did not.

A gender difference was observed in the mean number of injuries with females reporting a significantly higher mean. A previous study reported a male preponderance in sports with mean number of injuries in the previous 12 months reported to be 3.7 ± 1.8 [17], a finding different and higher than that observed in this study.

Rates of traumatic dental injuries tend to differ with regards to the athlete's level of competition with less-professional athletes exhibiting a higher prevalence of sports-related injuries [26]. This was not the case in this study as the prevalence of orofacial injuries reported was lower than that reported among professionals [17]. This may be because, orofacial sports injury has been shown to be positively correlated with increased sports time [27].

All sporting activities tend to be associated with risk of orofacial injuries occasioned by falls, collision, contact with hard surfaces and contact from sports-related equipment [11]. The findings of this study support this previous observation as orofacial injuries reported in this study were occasioned mainly by contact with other sports participants, falls and contact with sporting equipment.

Majority of sport-related dental and orofacial injuries affect the upper lip [17,22,28], maxilla and maxillary incisors [22,28] as well as the gingiva [17] a finding similar to that detected in this study. This maybe because the maxilla is prominent on the face and easily traumatised.

Baseball and basketball have been shown to have the highest incidence of sports-related dental injuries in children 7 to 17 years of age [29]. However, the sport most associated with orofacial injury among the respondents in this study was football corroborating a previous report that demonstrated football presents a high risk of oral and craniofacial injury [30].

It has been observed that majority of sports injuries occur in adolescents and young adults with the risk of injury decreasing with increasing age [31,32]. This is in contrast to findings of this study where the proportion of those who sustained orofacial injuries in

the previous 12 months increased with increasing age. This may be because the injuries were self-reported with more severe injuries easily perceived while less severe ones may have been under-estimated [6].

Orofacial injuries have been reported to occur with non-use of protective mouth guards [33]. A study in Illinois confirmed that soccer players do not encounter orofacial injuries as often as other athletes due to the mandatory use of face guards and mouth protectors [1]. Furthermore, the incidence of dental injury was demonstrated to be low among rugby players who used mouth guards [34]. Despite the long history of mouth guard use in sports [6], its use is still not common worldwide [6,35] as seen in this study where only a few respondents used mouth guards. This may be due to previous reasons adduced for non-use of mouth guard which include: ignorance, non-availability and non-affordability [17].

The AAPD encourages coaches/sport administrators to consult a dentist with expertise in orofacial injuries prior to initiating practices for a sporting season [11]. In this study, only a few respondents were screened prior to commencement of the competition. Although, there was no statistically significant association between screening by a dentist and incidence of orofacial injury, dentists have a critical role to play in informing athletes and coaches about the importance of prevention, treatment and diagnosis of orofacial injuries in sports [13,15]. Dental trauma in sports is the major linking channel between sports and dentistry [7]. The great need for "team dentist" from high school to professional teams has been emphasized [37]. With the role of team dentists including assistance of athletes and incorporation of knowledge into their private practices in three main ways, i.e. by conducting preseason oral health screenings, fabricating custom-made mouth guards and being available for emergency care [38]. Dentistry is needed for a practical side of health care as well as for the emotional consequences of facial and dental trauma [7].

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