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Facial lacerations: Etiology and patterns in Delta State, Nigeria

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***Abstract*---**The face is particularly vulnerable to injuries as it is an exposed part of the body The usual causes of facial lacerations include fight, fall, assault, road traffic or boat accidents ,gun shots and other frequent traumatic episodes. Lacerations could be associated with other more severe injuries like facial fractures. Untreated or improperly treated facial lacerations result in facial scarring which can have negative psychological impact on the patient.The aim of this study is to determine the etiology and patterns of facial lacerations in Delta State, Nigeria. The study was carried out in Abraka, Eku, and Obiaruku in Delta State, Nigeria. The study participants included both females and males who attended the Government hospitals for the treatment of facial lacerations from 2016 to 2020. Ethical clearance was obtained prior to the study. Data obtained was subjected to the Statistical Package for the Social Sciences (SPSS), version 22 for the purpose of analysis. This study utilized 247 subjects (126 females and 121 males). Most of the study subjects were within the ages of 23-35 years and were from the Urhobo ethnic group. Most common cause of facial laceration was fall, followed by road traffic accident, assault, fight, impact, animal injury, and slash injury. Most of the sites of facial laceration were >4, followed by 1, 2, 3, and 4 sites. Most common anatomical site for facial laceration was the forehead,

followed by cheek, chin, eyebrow, upper eyelid, upper lip, lower lip, lower eyelid, and nose. There was a significant gender difference in the causes of facial laceration ($p<0.05$). Other injuries sustained by the study subjects were orbital fracture, zygomatic fracture, missing teeth, frontal fracture, mandibular fracture, and nasal fracture. In conclusion, the most common cause of facial laceration was fall and slashed injury was the least common cause. The most common anatomical site for facial laeration was the forehead and the nose was seldomly affected. There was a significant gender difference in the causation of facial laceration.

***Keywords*---**facial, laceration, etiology, injuries, treatment, patterns.

Introduction

The face is predominantly vulnerable to injuries as the most exposed part of the body (Olusanya *et al.,* 2015). Facial laceration is a common soft tissue injury faced in the management of trauma patients, and the ideal treatment is essential for minimal occurrence of complications (Lee 2015; Khare and Galinde, 2015). Facial injury has been verified in different literature and indeed portrayed in records in diverse locales (Bhattacharya, 2012; Gaur *et al.* 2016). The degree and type of facial injury is influenced by the etiology (Adi *et al.*, 2010). The causes of facial injuries differ between countries and in same country depending on the socio-economic, environmental and cultural factors (Adeyemo, 2005). Causes of facial wounds consist of road traffic accidents, fights, falls, gun-shots, occupational induced wounds, sports injuries, animal injuries and iatrogenic traumas (Olayemi, 2013).

Laceration repair is done to reach hemostasis, dodge infection, re-establish function of affected tissues, and to attain ideal cosmetic outcomes with negligible scarring (Forsch, 2008; Lee, 2015). The treatment of laceration is guided by features which include time elapsed, the degree and the place of the injury, the materials needed to repair the laceration and physician's expertise (Forsch, 2008). Facial structural damage occasionally has disastrous consequences on the affected person (Dhungana, 2015), since most wounds that occur on the face leave scars (Lee *et al.,* 2015). Road collisions, falls, robberies, sports, firearms and industrial traumas are the major causes of facial injuries worldwide (Tugaineyo *et al.*, 2012). Motorway accidents are the leading sources of facial lacerations, next are fights, sports, occupational-related injuries, and falls (Motamedi *et al.*, 2014). Road traffic accident is the common cause of facial trauma in the Gulf Cooperation Council (GCC) countries (Almasri, 2013). Majority of facial injuries occur in 21 to 30 year old males, with female: male ratio ranging from 11:1 to 2:1 (Motamedi *et al.*, 2014). Facial trauma is often linked with extensive indisposition, malformation, and huge management fee (Koeser *et al.*, 2012).

Oral and Maxillofacial Surgeons treat injuries of the teeth, facial skeletons, and orofacial soft tissues known as maxillofacial wounds (Majambo *et al.*, 2013). These injuries are closely related to traumatic brain injuries and thus are softly treated. Awareness of face injury epidemiology helps to recognize the frequency,

cause, and history of injury, thus helping clinicians to diagnose and prepare rehabilitation, as well as contributing to Government's formation of effective policies (Padamanabam *et al.*, 2017).

The mandible, followed by maxilla, and alveolar processes include the most common facial fractures seen (Boffano *et al.*, 2015). Some authors recorded zygoma as more sensitive than the maxillary bone (De Gioanni *et al.*, 2000). A combination of two or more face bones can be involved in fracture. Parasymphysis, body, angle, condoler zone, symphysis and coronoid processes are the most favorable sites for fracture (in descending order) (Oruc *et al.*, 2016). Age and sex were cited as main factors that affect facial wounds. The 20-40 years age range manifest with the highest occurrence. In those older than 60 years and below 5 years the lowest incidence occur. Most patients are male: the male-female ratio is about 3:1 (Singaram and Udhayakumar, 2016). The goal of this study is to determine the etiology as well as patterns of facial lacerations in Delta State, Nigeria. The outcome of this scrutiny will serve as a guide for the Oral/ Maxillofacial Surgeons in their quest to manage patients with facial injuries.

Materials and Methods

This study adopted the retrospective study design. The study sample consisted of female and male patients who attended the Government Hospitals in Abraka, Eku, and Obiaruku for the treatment of facial lacerations from January 1st 2016 to December 31st 2020. Prior to inception of the study, ethical clearance was obtained from the Research and Ethics Committee of Human Anatomy Department, Faculty of Basic Medical Sciences, Delta State University, Abraka. Permission was also gotten from the Outpatient Departments in the Government Hospitals at Abraka, Eku, and Obiaruku, Delta State before the onset of data collection. Data was collected by the use of hospital records which were properly documented on a data collection sheet. The file numbers of the subjects were traced to the clinic registers. Their case notes were retrieved from the Medical Records Department of the hospital and the age, gender, year of visitation, aetiology of facial laceration, and the treatment done were recorded. Data obtained was subjected to Statistical Package for the Social Sciences (SPSS), version 22. The descriptive statistics (mean, frequency and percentage) were calculated. Chi-square test at the 95% confidence interval was used for inferential statistical scrutiny and p value lesser than 0.05 was reckoned as significant.

Results

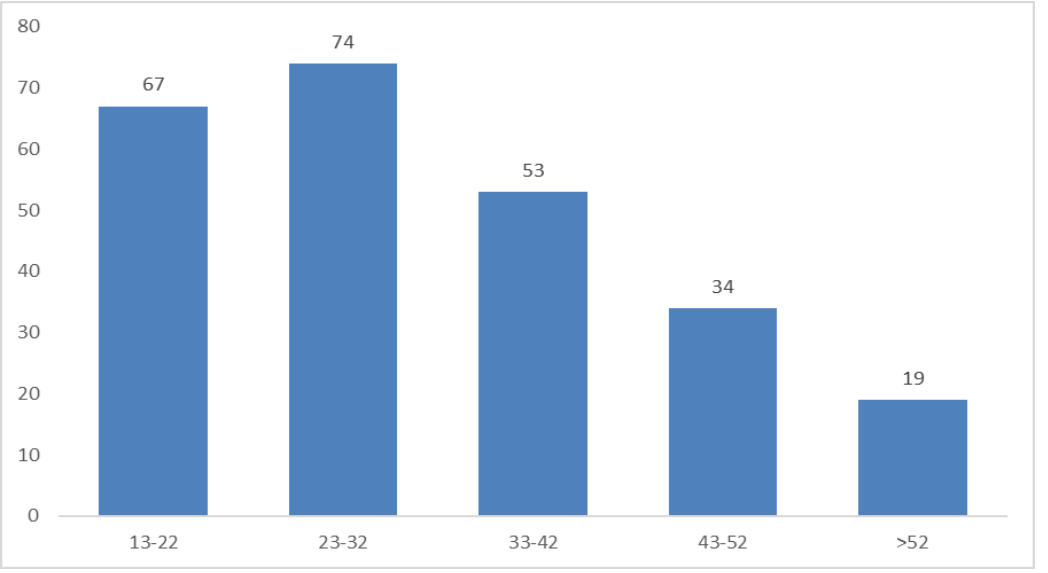

Figure 1. Age group distribution of subjects

Figure 1 showed that most of the study subjects were within the ages of 23-32 years, followed by 13-22 years, 33-42 years, 43-52 years, and >52 years.

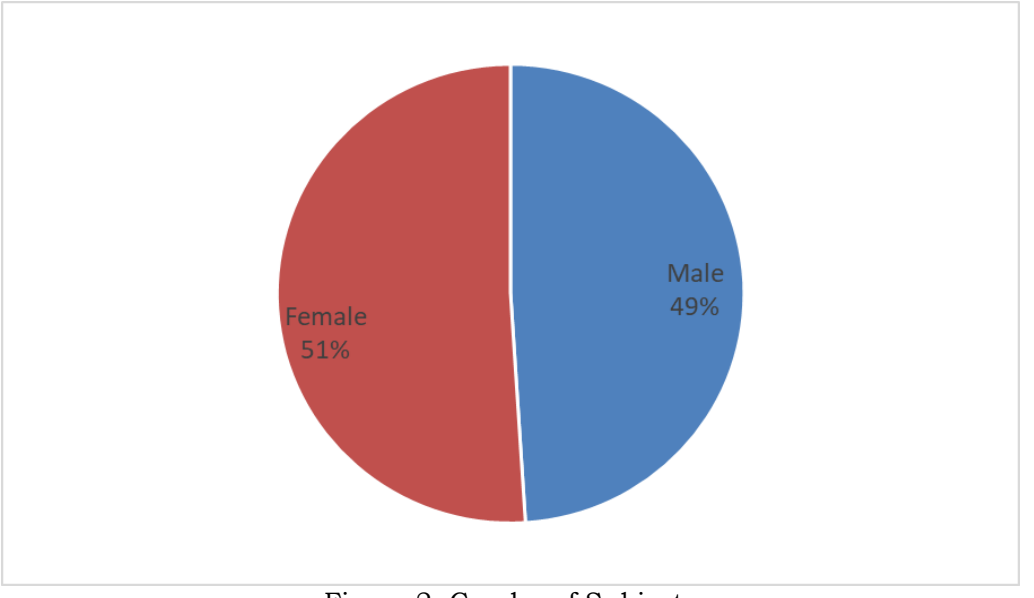

Figure 2. Gender of Subjects

Figure 2 showed that more of the study subjects were female (n=126, 51%) and less, specifically 121 (49%).were male.

Table 1
Ethnicity of the study populace

Ethnicity	Frequency	Percentage (%)
Bini	9	3.6
Esan	11	4.5
Igbo	8	3.2
Ijaw	6	2.4
Ika	5	2.0
Isoko	40	16.2
Itsekiri	22	8.9
Ndokwa	14	5.7
Urhobo	132	53.4
Total	247	100.0

Table 1 showed that most of the study subjects were Urhobos, followed by Isoko, Itsekiri, Ndokwa, Esan, Bini, Igbo, Ijaw, and Ika people.

Table 2
Occupation of the study subjects

Occupation	Frequency	Percentage (%)
Civil servant	26	10.5
Engineer	11	4.5
Hair dresser	1	0.4
Mechanic	6	2.4
Plumber	9	3.6
Self-employed	92	37.2
Student	79	32.0
Teacher	22	8.9
Wielder	1	0.4
Total	247	100.0

Table 2 shows the occupation of the subjects. Most were self-employed, followed by students, civil servants, teachers, engineers, plumbers, mechanics, hair dressers and one wielder.

Table 3
Causes of facial laceration

Cause	Frequency	Percentage (%)
Animal injury	4	1.6
Assault	11	4.5
Fall	26	10.5
Fight	10	4.0
Impact	9	3.6
Road traffic accident	17	6.9
Slashed injury	4	1.6
Others	166	67.2

Total	247	100.0

Table 3 showed that the most common cause of facial laceration was fall, next was road traffic accident, assault, fight, impact, animal injury, and slashed injury.

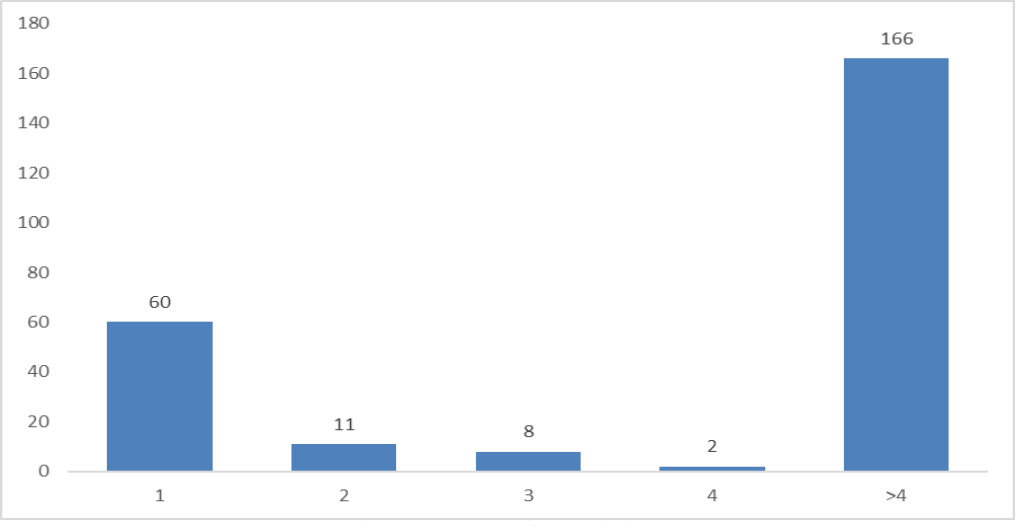

Figure 3. Number of sites

Most of the sites of laceration were >4, then came 1, 2, 3, and 4 sites as shown in the figure 3.

Table 4
Anatomical sites of facial laceration

Site	Frequency	Percentage (%)
Cheek	14	5.6
Chin	14	5.7
Eyebrow	8	3.2
Forehead	26	10.5
Lower eyelid	3	1.2
Lower lip	4	1.6
Nose	2	0.8
Upper eyelid	5	2.0
Upper lip	5	2.0
Combined	166	67.2
Total	247	100.0

Table 4 showed that the most common anatomical site for facial laeration was the forehead, next was the cheek, chin, eyebrow, upper eyelid, upper lip, lower lip, lower eyelid, and nose.

Table 5
Other injuries sustained by the study subjects

Injuries	Frequency	Percentage (%)
Frontal fracture	2	0.8
Mandible fracture	1	0.4
Missing teeth	4	1.6
Nasal fracture	1	0.4
Orbital fracture	5	2.0
Zygomatic fracture	5	0.8
None	66	26.7
Others	166	67.2
Total	247	100.0

Table 5 divulged that other injuries sustained are orbital fracture, zygomatic fracture, missing teeth, frontal fracture, mandibular fracture, and nasal fracture.

Table 6
Complications experienced by the subjects

Complications	Frequency	Percentage (%)
Dehiscence	4	5.0
Inappropriate repair	3	3.7
Infection	10	12.3
Necrosis	2	2.5
Unspecified	62	76.5
Total	81	100.0

Table 6 showed that the prevalent complication was infection, followed by dehiscence, inappropriate repair, and necrosis.

Table 7
Treatment given to subjects

Treatment	Frequency	Percentage (%)
Antibiotic	18	22.2
Suturing	63	77.8
Total	81	100.0

As shown in table 7, the most common treatment was suturing (77.8%) while the least was antibiotic (22.2%).

Table 8
Association between causation of facial laceration and gender

Causes	Female	Male
Animal injury	2 (1.6%)	2 (1.7%)
Assault	8 (6.3%)	3 (2.5%)
Fall	6 (4.8%)	20 (16.5%)

Fight	6 (4.8%)	4 (3.3%)
Impact	2 (1.6%)	7 (5.8%)
Road traffic accident	8 (6.3%)	9 (7.4%)
Slashed	4 (3.2%)	0 (0%)
Others	90 (71.4%)	76 (62.8%)
Total	126 (100%)	121 (100%)

P value = 0.008

Table 8 bared a remarkable gender inconsistency in the causativeness of facial laceration ($p<0.05$). Assault, fight and slashed injury affected more female subjects. Fall, impact and motorway mishap affected more male subjects.

Discussion

This study utilized 247 subjects (126 females and 121 males). Most of the study subjects were within the ages of 23-35 years and were from the Urhobo tribal clique, followed by Isoko, Itsekiri, Ndokwa, Esan, Bini, Igbo, Ijaw, and Ika ethnic sets. The findings of this study was not in line with that of Mohanavalli *et al.*, (2016) who reported that the mean age was 35.0±11.8 years and the male to female ratio was 3:1. This scrutiny also differed from that of Joon *et al.*, (2015) who reported that there were more males than females. The current inquiry also varied from that of Hwang *et al.,* (2013) who reported that most of their study subjects were within the ages of 13 to 15 years. Also, Santanu *et al.*, (2020) reported that the mean age was 6.77±3.25 years. These differences could be due to differences in the study area, methodology and demographic features.

In this study, the most common cause of facial laceration was fall, followed by road traffic accidents, assault, fight, impact, animal injury, and slashed injury. Most of the sites of facial laceration were >4, followed by 1, 2, 3, and 4 sites. The most common anatomical site for facial laceration was the forehead, next was the cheek, chin, eyebrow, upper eyelid, upper lip, lower lip, lower eyelid, and nose. David *et al.*, (2009) found that blunt assault injury was the most common injury and thus disagreed with this study. Joon *et al.,* (2015) who concluded that the head was affected most often and the pervasive injury mechanism was via falling down, supported this study's outcome. This study finding was also supported by the work of Bolt and Watts (2004) who reported that fall was the prevalent reason behind laceration. Likewise, Santanu *et al.*, (2020) also reported that fall was the dominant causal source of laceration.

In this present study, other injuries sustained by the patients were orbital fracture, zygomatic fracture, missing teeth, frontal fracture, mandibular fracture, and nasal fracture. Infection was a recurrent complication, followed by dehiscence, inappropriate repair, and necrosis. This study's finding was not like that of Safai and Ashutosh (2020) who reported that soft tissue injury followed by facial bone fracture were recurrently associated injuries. Santanu *et al.*, (2020) reported that dentoalveolar wounds and delicate tissue wounds were more frequent. This scrutiny established a remarkable gender variance in the causation of facial laceration ($p<0.05$). Assault, fight, and slashed injury affected more female subjects. Fall, impact, and motorway traffic mishap were more common

among male subjects. Mohanavalli *et al.*, (2016), David *et al.*, (2009) and Bolt and Watts (2004) reported a considerable gender dissimilarity in causality of facial lacerations (P <0.05) and thus supported this study's result.

Conclusion

Facial laceration results from frequent causes of trauma and is also associated with some facial fractures. Often times, facial laceration is due to fall and seldomly due to slashed injury. The anatomical site for facial laeration is predominantly the forehead and the nose is seldomly affected. The gender variance in the causativeness of facial laceration is significant.

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