

## Epidemiology of Hand Injuries Seen at Two Teaching Hospitals in Southern Nigeria.

O. Oluwafemi Awe<sup>1</sup>, O. Ayodeji Oladele<sup>2</sup>, J. Kayode Olabanji<sup>2</sup>,  
E. Emmanuel Esezobor<sup>1</sup>.

<sup>1</sup>Department of Surgery, Irrua Specialist Teaching Hospital, Irrua, Edo State and Department of Surgery, Faculty of Clinical Sciences, Ambrose Alli University, Ekpoma, Edo State, Nigeria.

<sup>2</sup>Department of Surgery, Faculty of Clinical Sciences, College of Medicine, ObafemiAwolowo University, Ile-Ife, Osun State, Nigeria.

**Correspondence to:** Dr. Awe OluwafemiOlasupo, E-mail: [olasupoawe06@yahoo.com](mailto:olasupoawe06@yahoo.com),  
[olasupoawe06@gmail.com](mailto:olasupoawe06@gmail.com)

**Background:** Hand injuries are very devastating to the patients and can ruin patient's ability to function as an independent human. This could also lead to depression and social isolation. It is a very common presentation at the emergency room. The incidence is on the increase worldwide.

**Methods:** This is a retrospective clinical audit of patients with hand injuries to the Plastic Units of both Irrua Specialist Teaching Hospital (ISTH) and ObafemiAwolowo University Teaching Hospital (OAUTH) from September 2011 and August 2014. All data were obtained from the patients' case-files and analyzed.

**Results:** 235 hand cases presented to the two Teaching Hospitals during the period studied and hand injuries account for 54.4%. Male to female ratio was 4.5:1 with right-hand dominance. Hand injuries due to assault were high in this study

**Conclusion:** We observed that the incidence of hand injuries, was high in these hospitals especially those due to assault. Behavioral change and re-orientation of the people will reduce the presentation. There is need for hand unit in this region.

**Keywords:** Hand injuries, presentation, assaults, Nigerian hospitals.

### Introduction

The hand is very vulnerable to injury because it is involved in almost all activities of daily living. It is at risk of severe injury from a number of causes. Examples are road traffic accidents, occupational hazards, sporting and domestic activities, and assaults. The hand injuries pattern in a community commonly reflects their commercial, industrial, social, occupational or recreational activities<sup>1-4</sup>. A seven year prospective study of 136 children and adolescents with hand injuries in Saudi Arabia, observed that the most common type of injury was crush injuries by doors at home and recommended hydraulic automatic door closure to prevent this injury<sup>5</sup>. There was also a study of 560 workers with traumatic hand injuries treated in 11 hospitals in three economically active cities in the People's Republic of China over a two year period. They concluded that working in manufacturing industries and using powered machines were primary sources of severe hand injuries<sup>6</sup>.

An injury to the hand can immediately compromise and chronically debilitates the patient's ability to perform the activities of daily living. The prevention of these injuries will help in reducing disability and hence increasing productivity of the individual, family and the society as a whole. Most of the hand injuries from the developing countries are usually preventable while those of the developed world are mostly congenital or as result of heavy machines mishaps. It is important that an acutely injured hand is managed adequately to prevent infections, salvage the injured parts, promote healing and restore function<sup>7</sup>. This required ingenious surgical skills for correction, such as provided by reconstructive hand surgery.

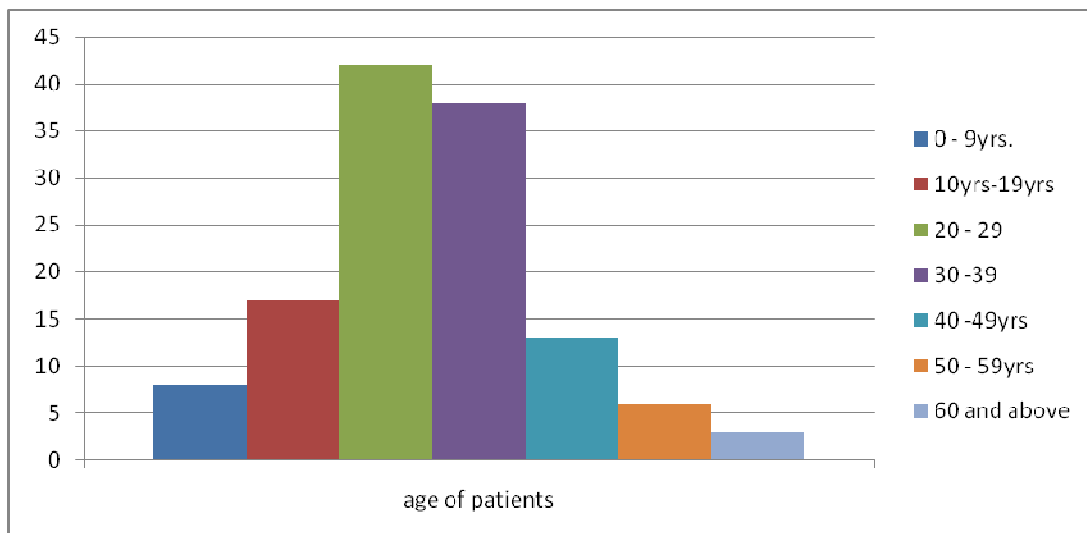
## Patients and Methods

This is a retrospective clinical audit of patients with hand injuries that presented to the Plastic Units of both Irrua Specialist Teaching Hospital (ISTH) and ObafemiAwolowo University Teaching Hospital (OAUTH) from September 2012 and August 2014. These two teaching Hospitals are selected because both of them are situated in sub-urban areas of Nigeria. Irrua Specialist Teaching Hospital (ISTH) is situated in Ekpoma, Edo State in the South-South Region of the country. Ekpoma has only the Teaching Hospital and the State University (Ambrose Alli University) as the main establishments. Others are few small and medium scale enterprises and farmers. This is almost perfectly similar to that of ObafemiAwolowo University Teaching Hospital (OAUTH) in Ile-Ife Osun State in the South- West Region of the country. Ile- Ife also has only the Obafemi Awolowo University and its Teaching Hospital as main the establishments. However, the Plastic surgery unit of the OAUTH has been operational since 1997 while that of ISTH is just above five years in operation. All patients with traumatic injuries distal to the wrist entered into the study. Data were retrieved from the patients' case-notes from the Medical Records Department of both Teaching Hospitals involved, and thereafter analyzed with SPSS version 16 (SPSS, Chicago).

## Results

A total of 235 patients presented to both institutions with hand cases during the period under review. However, only 54.4%(n = 127) of these patients were due to trauma from these institutions. Their ages range from 1- 65 years; the mean age was 32.4yrs  $\pm$  4.8 (SD). The age distribution is as shown below (Figure 1). The majority of the patients, 63% (n = 80) were in the third and fourth decades. The right hand was the dominant hand in about 90% and the dominant hand was involved in about 75% of these cases.

Of these patients with hand injuries, 104 (82%) were males while 23 (18%) were female. The male to female ratio was 4.5:1. The hand injuries cases were classified on the basis of the etiology of injury (Table 1). Gunshots accounted for 32 (25.2%) of the hand injuries. The type of injury (wound) presented by these patients varies from minor laceration to crush injuries and amputations. This is very important because the treatment modality for these patients depend type of the injury and the duration before presentation.



**Figure 1.** The Age Distribution of the Patients with Hand Injuries

The modalities of treatment range from dressing only, Kirschner's wire, split thickness skin graft to flap cover which was used in both institutions for similar type of injury. The modality used depends on the type of the injury and the severity which was classified according to Buchler and Hastings [8] as follows;

1. Isolated injury (single hand structure)
2. Combined /Complex injury (more than one important hand structure)

**Table 1.** Etiology of Hand Injuries

Etiology of Injury	No of Patients	Percentage (%)
Gunshot	32	25.2
Machine	33	26.0
Road traffic injury	40	31.5
Machete/ bottle	18	14.2
Human bite	3	2.3
Snake bite	1	8.8
Total	127	100



Fig. 2



Fig. 3



Fig. 4



Fig. 5

## Discussion

The importance of the hand for survival and economic purposes called for appropriate and efficient care for all hand injuries to limit dysfunction to the barest minimum. These injuries require the application of principle of reconstruction presently in the armamentarium of the plastic and reconstructive surgeon. It is also known that any delay in presentation and, or initial inappropriate treatment will almost invariably worsen the outcome. It is preferable that all hand injuries should be referred to specialist as soon as haemostasis is secured with aid of pressure parking<sup>9</sup>. The presence of many delicate structures in the hand, demand for early and appropriate treatment or manipulation, if a desirable outcome is going to be achieved.

In this study, the incidence of hand injuries is high though the incidence of injuries due road traffic accident is still the main cause.. The age ranges of the patients were from 1 to 65 years with mean age of 32.4yrs  $\pm$  4.7 (SD). The majority of these patients were in their third and fourth decade of life, which accounted for 63.0% (n = 80). This age group actually represents the active young adults in the most productive period of their life. This is tandem with the studies in China, Sweden and Ghana<sup>4,6,7</sup>.

The road traffic accident has been the leading cause of hand injuries in most studies from the developing countries, which is the same in our study. Reports from the developed world have different factors as leading cause of these injuries, depending on the level of industrialization. This is closely followed by machine injuries, because of the use of locally fabricated cassava milling machine in this area where the most staple food is cassava meals which predisposed them hand injury<sup>3</sup>.

The other causes of injury include gunshot, machete cuts and human bites which were usually due to assault. There were five cases of hand injury following gunshot which resulted from personal guns while firing cannons during burials<sup>10,11</sup>. Most of the machete cuts and human bites in the hand follow trivial quarrels between friends, colleagues or rivals. When all these are put together, as hand injuries resulting from assault, it becomes the single most important cause of hand injuries in this study (41.7%, n = 53). The only patient with snake bite was a 7-year old girl who carried a live snake with bare hand and had extensive myo-necrosis of the affected hand with renal failure<sup>7</sup>.

Lacerations are the commonest type of injury in patients with hand injuries<sup>12</sup>, they are usually manage with primary closure if presented early and subsequently dressing on alternate day basis except in cases when the dressing become soaked earlier. This is closely followed by crush injuries. Both close and open fractures of the hand were stabilized with Kirschner's wire which is maintained for at least two weeks.

Serial wound excision were done for patients with crush injuries, until all the dead tissue had been excised and delay primary soft tissue cover either with skin grafts or flaps. This has been documented as standard mode of treatment in previous studies. It is apparent from this study that the hospital incidence of hand injuries is common in teaching hospitals and the proportion due to assaults is of much significance.

## Conclusion

The high incidence of hand injuries, especially those due to assaults in the southern Nigeria actually called for reorientation of the populace in this area. The society should encouraged people to report any offence to the law-enforcement agents, rather than getting involved in jungle justice. There is need to reduce the unemployment rate, so as to reduce incidence of armed robbery.

Every hand injury should be managed with utmost care so as to reduce residual morbidity to the barest minimum. It is advised that all hand injuries as much as possible and as early as possible be referred to a specialist (hand) surgeon.

### Reference

1. Ahmed E, Chaka T. Prospective study of patients with hand injury in TikurAnbessa University Teaching Hospital, Addis Ababa. *Ethiop Med J* 2006; 44: 175-81.
2. McMinn RM. Upper limb in: Last's Anatomy, Regional and Applied 9<sup>th</sup> Ed. Edinburgh. Churchill Livingstone 1997.
3. Esezobor EE, Awe OO, Onuminya JE, Dongo AE, Nwokike OC, Abikoye FO, Edomwonyi EO, Aigbonoga QO. Hand injuries from cassava milling machine in sub-urban Nigeria. *Afr J Trauma* 2014; 3: 30-34.
4. Rosberg HI, Dahim IB. Epidemiology of hand injuries in a middle sized city in Southern Sweden.: a retrospective comparison of 1989 and 1997. *Scand J PlastReconstrSurg Hand Surg* 2004; 38: 347-55.
5. Mirdad T. Pattern of hand injuries in Children and Adolescents in a Teaching Hospital in Abha, Saudi Arabia. *J R Soc. Promot Health* 2001; 121: 47-49.
6. Jin K, Lombardi DA, Courtney TK, Sorock GS, Li M, Pan R, Wang X, Lin J, Liang Y, Peny MJ. Pattern of work-related traumatic hand injury among hospitalized workers in People's Republic of China. *InjPrev* 2010; 16: 42-49.
7. Adu EJK. Management of Hand injuries: a six year experience from KomfoAnokye Teaching Hospital, Kumasi, Ghana. *Postgr. Med. J Ghana* 2013; 2(2):
8. Buchler U, Hastings H. Combined injuries in: Green DP (ed) *Operative Hand Surgery* 4<sup>th</sup> Ed. Churchill Livingstone 1631-1651.
9. Philip E, Wright II. Acute hand injuries in: Canale ST (ed) *Campbell's Operative Orthopeadics* 9<sup>th</sup> Ed. St Louis Mosby 1999: 65.
10. Turker T et.al. Management of Gunshot wound to the hand: a literature review. *J Hand Surg Am* 2013; 38(8): 1641-50.
11. Awe OO, Edomwonyi EO, Esezobor EE, Aigbonoga QO. Multiple wounds to both Upper Limbs from Accidental discharge of a personal gun: A case report. *Ann Med Res* 2015;
12. Trybus M, Lorkowski J, Brongel L, Hladki W. Causes and Consequences of Hand injuries. *Am J Surg* 2006; 192: 52-7.