

## PATTERN OF PRESENTATION AND INDICATIONS FOR AMPUTATION IN NATIONAL ORTHOPAEDIC HOSPITAL, ENUGU.

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### ABSTRACT

**BACKGROUND:** Globally, an increase in the rate of amputation is noted and it could be attributed to the sudden surge in the incidence of non-communicable diseases especially diabetes and peripheral vascular disease which is a complication of hypertension. There has been some variation in the pattern of presentation in different climes and locality depending on the availability of expertise and the infrastructures available for limb salvage procedures.

**OBJECTIVES:** To determine the indications, demographic pattern and clinical presentation of patients that had amputation in National Orthopaedic Hospital Enugu (NOHE).

**METHODOLOGY:** All patients who had amputation in NOHE from 1<sup>st</sup> of September 2015 to 31<sup>st</sup> of August 2017 were recruited prospectively. The indications for amputation, demographic data and pattern of presentation of the patients were analysed with SPSS version 20.

**RESULTS:** A total of 137 patients were recruited concurrently. Male to female ratio was 1.6:1. Dual peak age range of 61-70 years (22.6%) and 21-30years (20.4%) were observed. There was relative preponderance of traders (27.7%) with secondary school education (39.4%) and left lower limb was mostly involved 52.6%. Commonest mode of presentation is darkish discolouration of the foot (45.9%), with duration of symptoms most commonly between 1-6 months (40.9%) and 39.4% had no prior treatment before presentation. Diabetes foot gangrene (in 39%) followed by trauma (24.1%) were the leading cause of amputation from our study and above knee amputation was more commonly done (44%).

**CONCLUSION:** There is dual peaks in age groups with male preponderance in the amputations done. It commonly involved left lower limb in traders with secondary education and the commonest indication being Diabetic Foot Gangrene. Public enlightenment on diabetes is important to reduce the incidence of amputation.

**KEYWORDS:** Amputation, indication, Pattern, Diabetes

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### INTRODUCTION

Amputation entails the removal of the whole or part of a limb by cutting through bone or joint. It is often done to salvage life or to improve the quality of life in cases of a useless limb. There has been a global increase in the prevalence of amputation in many hospitals and it has been noted to have assumed epidemiological dimension due to the increase in trauma and non-communicable diseases such as diabetes and hypertension<sup>1,2,3</sup>. Limb amputation has been practised for a long time in history. It is deployed in

diabetic foot gangrene, peripheral vascular disorders, congenital anomalies, severe traumatized lower limbs, infections etc.<sup>2,3,4,5</sup>

The incidence of different pathologies leading to limb amputation has been varying from one location to another. In developed countries, peripheral vascular disease is the leading cause with trauma, infection and uncontrolled diabetes in that order. It occurs mostly in people aged >60yrs and while in some developing countries, it could be seen in the younger population as a result of trauma. The reason is that most patients do present late and its difficult to attempt limb salvage.<sup>2,4,5,6</sup>

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The aim of the study is to determine the pattern of presentation and indication of limb amputation in National Orthopaedic Hospital, Enugu.

### PATIENTS AND METHODS

Study design was a cross sectional descriptive study involving all patients who underwent limb amputation in our facility between 1<sup>st</sup> September 2015 to 31<sup>st</sup> August 2017 at National Orthopaedic Hospital Enugu.

**Study setting:** This was conducted in the emergency as well as in the orthopaedic wards in NOHE which is situated in metropolitan city of Enugu the south-eastern part of Nigeria. It is the regional trauma centre covering the south-east, south- south and part of the north-central geopolitical zones in Nigeria.

**Study population:** The study population includes all patients of all age group and gender who were admitted and underwent limb amputation in our Hospital.

**Selection criteria:** All patients who primarily had amputation at our hospital and consented to the study.

**Recruitment of patient:** This was done after decision to amputate the limb has been made by the attending surgeon. The decision to amputate, indication and level of amputation was determined by the attending surgeon based on clinical evaluation with or without radiological and histopathologic investigations. Patients were informed of the study and those that consented were recruited for the study.

A proforma was used to obtain their demographic data as well as other relevant clinical information needed for the study.

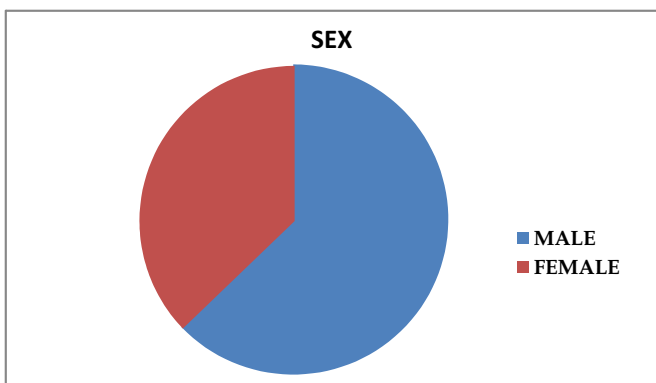
Analysis was done using the SPSS version 20 and approval for the study was granted by the ethical committee of National Orthopaedic Hospital Enugu.

### RESULTS

A total of 137 patients consented to the study within the period of study. There was male preponderance of 62.8% compared to female with ratio 1.6: 1 as shown in figure 1 below

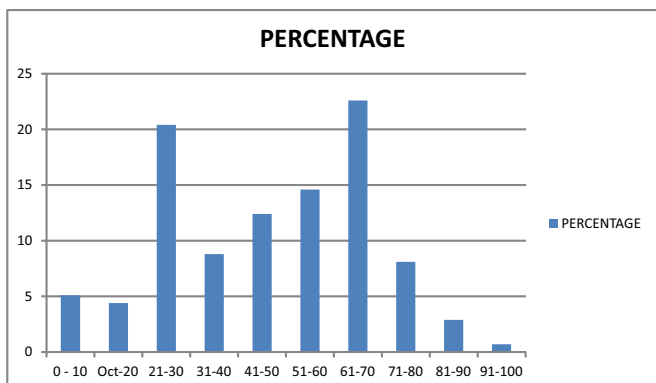
**Figure 1: Sex distribution**

The age ranges from 2yrs to 100yrs with approximately dual peak with majority (22.6%) around 61-70yrs and 21-30yrs (20.4%) as shown in figure 2 below:



**Figure 2: Age distribution**

Majority of the patients were married (67.2%). With regards to the occupation of the patients, 38 (27.7%) patients were traders who were in the majority, followed by students 23 (16.8%). As regards to educational status, 39.4% of the patients had secondary school education followed by 33.6% who had primary school education.



The major presenting complaint was darkish discolouration of the limb in 45.9% of the patients, followed by foot ulcer in 27% as shown on the table 1 below.

**Table 1: Presenting Complaints**

	Number	Percentages
Darkish limb dis colouration	63	45.9
Injury to the limb	18	13.2
Foot ulcers	37	27
Crush/Mangled leg	6	4.4
Burns	1	0.7
Gunshot injury	6	4.4
Swelling /mass	6	4.4
Total	137	100

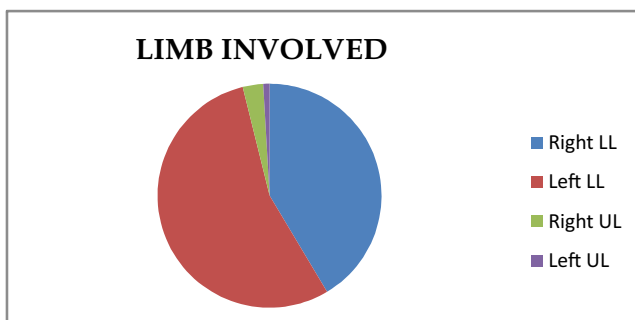
The duration of the symptoms was from 1 day to 15yrs with majority between a month to 6 months, closely followed by 2 weeks to 4 weeks as shown in table 2 below..

**Table 2: Durations**

	NO	PERCENTAGE
<24 Hours	9	6.6
1 day - 2 weeks	25	18.2
2 weeks – 4 weeks	28	20.4
1 month – 6 months	56	40.9
7 months – 12 months	3	2.2
1 year – 5 years	9	6.5
>5 years – 10 years	2	1.5
11 years – 15 years	2	1.5
>15 years	3	2.2
TOTAL	137	100

The left limb alone was commonly involved (56.2%) followed by the right limb in 42.3% of the patient, while the rest had bilateral amputation as shown in Figure 3 below.

**FIGURE 3 : LIMB INVOLVED IN AMPUTATION**



Diabetes mellitus alone was the commonest co-morbidity found in 43 patients while 8 patients had only hypertension. In addition, 15 patients had co-existing diabetes and hypertension.

Above knee amputation was commonly done in 44% of the patients followed by below knee amputation in 43% as shown in Table 3 below. However 8 patients had initial below knee amputation later converted to above knee amputation.

**Table 3: Level of Amputation**

	NO	PERCENTAGE
Hand Ray	3	2.2
Foot Ray	8	5.8
Above Knee Amputation	60	44
Below Knee Amputation	59	43
Trans-metacarpal	1	0.7
Mid-foot	1	0.7
Symes	1	0.7
Above Elbow	4	2.9
TOTAL	137	100

Most patients presented without prior intervention (39.4%) while 26.3% had undergone treatment by traditional bone setters (TBS) as shown in table 4 below. Majority (51.1%) of the patients presented with gangrene and 8.7% of them were as a result of the menace of TBS.

**Table 4: Previous Treatment (Where)**

	NO	PERCENTAGE
Private Hospital	34	24.8
TBS	36	26.3
Self medication	4	2.9
None	54	39.4
Govt Hospital (Tertiary)	9	6.6
TOTAL	137	100

Diabetic foot gangrene (39%) was the commonest indication for amputation followed by trauma in 24.1% and vascular disease in 13.1% of the patients.

## DISCUSSION

Limb amputation has been on the increase and majority of the indications are often preventable. In developing countries, there are myriads of challenges in management of these patients in terms of good rehabilitation services. In our study, there were predominantly males which is in keeping with the global trend and similar to the findings of other studies<sup>2,3,4,5,6</sup>. The male to female ratio of 1.6 is also comparable to the studies carried in other parts of Nigeria.<sup>3,6,7</sup> The most affected age groups were 61-70yrs, constituting 22.6% of the study population. This is as a result of an increase in the aging population as well as an increase in the incidence of non-communicable diseases like diabetes mellitus and hypertension in our environment. Majority (51.1%) of our patient were below 50yrs and 20.4% of them are within the age group of 21-30yrs. Studies has shown that this age groups are susceptible to trauma and trauma related complications.<sup>4,5,6</sup> This shows the dual peaks in age group commonly affected as the aetiology for amputation for these age groups differs as explained above.

In our study, the married ones were more affected than those that were single. This can be explained by the fact that married ones are preoccupied with a lot of socioeconomic challenges hence pays little attention to their medical problems.

However amputation were common among traders (27.7%), followed by students (16.8%). This

could be attributed to the fact that most traders are usually apprenticeship by training which usually involves adults with minimum of post-secondary school education and often with low socio-economic status.<sup>11,12</sup> This is similar to the findings recorded in study done in northwest part of the country by Oni Nasiru et al.<sup>12</sup> Those with tertiary education have more economical advantage for skilled labour and also patronise orthodox care early and compliant with medications to prevent the complications of non-communicable diseases.

The commonest indication for amputation was diabetic foot gangrene in 39% of the patients, followed by trauma 24.1%. This is in contrast to what was obtainable in our region where the menace of gangrene following treatment from traditional bone setters were regarded as the leading cause of amputation by previous studies done in south eastern part of Nigeria<sup>5,6,7</sup>. This paradigm shift can be attributed to the increasing awareness among the populace, improvement in information dissemination and accessibility to healthcare services. This is further buttressed by the fact that a significant proportion of the patients (39.4%), who presented to us during the study period, had no prior treatment from other alternative medicine practitioners while only 26.3% had prior intervention from traditional bone setters before presenting to the hospital.

Majority (51.1%) of the patient presented ab initio with gangrene of the limb with duration of symptoms mostly between 1-6 months. This further underlines the need for more attention to primary prevention and advocacy for early hospital presentation.<sup>8</sup>

Similar to what is found in other local studies, lower limb amputations were more commonly done compared to other region of the body<sup>8,9</sup>. Above knee amputation was slightly more commonly done from our study, which is in keeping with other studies, even though there have been variable reports and values have been close between below knee and above knee amputation.<sup>9,10</sup>

## CONCLUSION

The pattern of presentation of limb amputation from our study shows dual peaks in age groups with male preponderance. It commonly involves left lower limb in patients with secondary education and the commonest indication was

diabetic foot gangrene, followed by trauma. Considering the physical and psychological disability that is associated with amputation, prevention is paramount. Trauma prevention, public health education on non-communicable diseases (complications of diabetes and/or hypertension), training of traditional bone setters and advocacy for early hospital presentation are very useful preventive measures to reduce the incidence of amputation in our environment.

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