

## Profile of limb amputations in UNIOSUN Teaching Hospital, South-Western, Nigeria

\*Adedire A.<sup>1</sup>, Olarewaju S.<sup>2</sup>, Yusuf A.O.<sup>3</sup>, Oluwabukola A.A.<sup>3</sup>

### Abstract

**Background:** Limb amputation constitute a public health challenge by it's shared burden, aside from the socioeconomic and psychological distress including discriminatory effects on the patients and thier families. This study was done to determine epidemiological pattern of amputation at Uniosun Teaching Hospital, Osogbo.

**Methodology:** This was a retrospective study of the amputations carried out by the Orthopaedic Unit of Surgery department at UNIOSUN Teaching Hospital, Osogbo between July, 2021 and May, 2022. All records of patients were retrieved and selected data collected were the indications, level, side and type of amputations and the patients' religion, age and sex.

**Results:** The mean age of the 38 patients was 50.5±18.1 years. Male to female ratio was 4 to 1. The commonest indication for amputation was Diabetic foot Ulcer (DFU) grade iv (60.5%) followed by RTA (28.9%) and 10.6% from limb Malignant tumour and peripheral vascular disease. In terms of affected limb, more than half of respondents had their left leg affected i.e 20 (52.6%) and majority of amputations done were above the knee 21 (55.3%).

**Conclusion:** DFU grade iv and RTA were the commonest causes of amputation in our center which can be prevented by early presentation, early detection and appropriate management.

**Key words:** Amputation, DFU, Malignant tumor, peripheral vascular disease

### \*Corresponding author

Adedire A.

ORCID-NO: <https://orcid.org/0000-0002-3941-3270>

<sup>1</sup>Department of Orthopedic Surgery, UNIOSUN Teaching Hospital, Osogbo, Nigeria.

<sup>2</sup>Department of Community Medicine, UNIOSUN Teaching Hospital, Osogbo, Nigeria.

<sup>3</sup>Dept of Internal Medicine UNIOSUN Teaching Hospital Osogbo, Nigeria.

Received: June 16, 2022

Accepted: September 4, 2022

Published: December 15, 2022

Research Journal of Health Sciences subscribed to terms and conditions of Open Access publication. Articles are distributed under the terms of Creative Commons Licence (CC BY-NC-ND 4.0). (<http://creativecommons.org/licenses/by-nc-nd/4.0>).

<http://dx.doi.org/10.4314/rejhs.v10i4.4>

## Profil des amputations de membres à l'hôpital d'enseignement UNIOSUN, sud-ouest, Nigéria

\*Adedire A.<sup>1</sup>, Olarewaju S.<sup>2</sup>, Yusuf A.O.<sup>3</sup>, Oluwabukola A.A.<sup>3</sup>

**Contexte de l'étude :** L'amputation d'un membre constitue un défi de santé publique par son fardeau partagé, au-delà de la détresse socio-économique et psychologique incluant des effets discriminatoires sur les patients et leurs familles.

**Objectif de l'étude :** Cette étude a été réalisée pour déterminer le schéma épidémiologique d'amputation à l'hôpital universitaire d'UNIOSUN, Osogbo.

**Méthode de l'étude :** Il s'agissait d'une étude rétrospective des amputations réalisées par le département de l'unité orthopédique de chirurgie de l'hôpital universitaire UNIOSUN, Osogbo entre juillet 2021 et mai 2022. Tous les dossiers des patients ont été récupérés et les données sélectionnées collectées étaient les indications, le niveau, le côté et type d'amputation et la religion, l'âge et le sexe des patients.

**Résultat de l'étude :** L'âge moyen des 38 patients était de  $50,5 \pm 18,1$  ans. Le rapport hommes/femmes était de 4 pour 1. L'indication d'amputation la plus courante était L'ulcère du Pied Diabétique (UPD) de grade iv (60,5 %), suivi de l'RTA (28,9 %) et 10,6 % d'un membre Tumeur maligne et maladie vasculaire périphérique. En termes de membre atteint, plus de la moitié des répondants avaient leur jambe gauche touchée soit 20 (52,6%) et la majorité des amputations réalisées étaient au-dessous du genou 21 (55,3%).

**Conclusion :** UPD grade iv et RTA étaient les causes les plus fréquentes d'amputation dans notre centre qui peuvent être évitées par une présentation précoce, une détection précoce et une prise en charge appropriée.

**Mots-clés :** Amputation, UPD, tumeur maligne, maladie vasculaire périphérique

### \*Corresponding author

Adedire A.

ORCID-NO: <https://orcid.org/0000-0002-3941-3270>

<sup>1</sup>Department of Orthopedic Surgery, UNIOSUN Teaching Hospital, Osogbo, Nigeria.

<sup>2</sup>Department of Community Medicine, UNIOSUN Teaching Hospital, Osogbo, Nigeria.

<sup>3</sup>Dept of Internal Medicine UNIOSUN Teaching Hospital Osogbo, Nigeria.

Received: June 16, 2022

Accepted: September 4, 2022

Published: December 15, 2022

Research Journal of Health Sciences subscribed to terms and conditions of Open Access publication. Articles are distributed under the terms of Creative Commons Licence (CC BY-NC-ND 4.0). (<http://creativecommons.org/licenses/by-nc-nd/4.0>).

<http://dx.doi.org/10.4314/rejhs.v10i4.4>

## INTRODUCTION

Amputation is one of the oldest surgical procedures with a history of over 2500 years ago before the time of Hippocrates, who first described amputation in 460-377BC (1). Amputation is a surgical procedure for the removal of part or the whole limb through bone with intact sensation and remaining stump is fit for prosthesis and residual function. It is indicated when limb recovery is impossible or when the limb is dead or non-functional risking the patient's life (2). It is a major public health problem both on the patients and their family members associated with economic, social and psychological effects (3). Major limb amputations are defined as any level of amputation above the foot and hand (4). This operative procedure is one of the least attractive gestures for a surgeon because of the psychological effect and the handicap it causes for the patient (4). Hence, amputation has been used for both punitive and therapeutic measures. The therapeutic indication varies from one country to the other (4,5). There is also variation from one state or city to the other (4). The predominant therapeutic indications in a locality are the products of some local factors and changes with the dynamics of the local factors (6). In developing countries; trauma, diabetic mellitus and malignancy are the leading cause of amputation whereas diabetic mellitus or peripheral vascular diseases rank first in the developed countries (7,8,9). The pattern of limb amputation in descending order are transtibial, transfemoral, transradial and transhumeral (10,11).

The objective of this study was to determine pattern of amputation at UNIOSUN Teaching Hospital, Osogbo and to identify indications and types of amputation in order to develop a meaningful preventive measure.

## MATERIAL AND METHOD

The case notes of all patients that underwent limb amputation between June 2021 and May 2022 in UNIOSUN Teaching Hospital, Osogbo were retrieved and studied retrospectively from the log books in the operating theatre all patients were selected and their charts were retrieved based on the hospital number and names. Lost or incomplete charts were excluded. A proforma was used to collect data which were entered and cross checked before the final analysis. The data was entered twice to verify its accuracy for analysis on SPSS window version 21

## RESULT

A total of 38 patients over a period of 12 months underwent limb amputation during the study period, of which the mean age in years was  $50.5 \pm 18.1$  and the range was 18 to 80 (Table 1). Modal age group of the patients were between 61-80 years of age (39.5%), while 31.6% were between 18 and 39 and 28.9% were between 40 and 60 years of age. Majority of the respondents were male (71.1%) while 28.9% were female with a male to female ratio of 4:1 (Table 2). The indication for amputation are shown in table 3 of which diabetic foot Ulcer (DFU), grade IV was the commonest (60.5%) indication for doing Amputation followed by Road Traffic Accident (RTA) (28.9%) and 10.6% was from limb Malignant tumour and peripheral vascular disease. In terms of the affected limb, more than half of the respondents had their left limb affected (52.6%) and the majority of amputations done were above the knee 21 (55.3%). Of the type of amputation done, 35 (92.1%) were closed while 3 (7.9%) were opened (Table 4).

## DISCUSSION

Amputation is one of the oldest surgical procedures. First described by Hippocrates in 460-377BC (1). It is a therapeutic tool in the hand of orthopaedic surgeon to save the life of patients (2). The indication for amputation varies from one country or state to the other (6). Major limb amputations are carried out at any level above the hand and foot and it is described based on the level of the amputated stump to the elbow and knee joint (4). Hence, this study was done to determine the pattern of amputation at UNIOSUN Teaching Hospital, Osogbo and to identify indications and types of amputation in order to recommend to the responsible stakeholders the meaningful preventive measures.

In this study, the mean age was  $50.5 \pm 18.1$  years. The elderly and middle age were more affected which is similar to the study done in Ghana with high occurrence in 7<sup>th</sup> decade (12). In contrast to ours, the study done in Tanzania and Sudan show higher frequency in the younger age group (13,14). This can be explained by different indications and pattern of the amputation. The male to female ratio is 4:1. The percentage of the male in this study was 71.1%. Similar results were also reported in Ethiopia (78.2%), Tanzania (66.7%), Sudan (76%) and Iran (79.62%) (13,14,15).

In several studies, diabetic foot ulcer was the commonest indication for limb amputation

(16,17), which is in agreement with this study in which diabetic foot ulcer was the commonest indication (60.5%) followed by RTA 28.9%

Also in this study, the lower limb amputation were more common (97.4%) than the upper limb amputation (2.6%) which is similar to those previously carried out in Nigeria and those ones done in Tanzania and Sudan (8,13,14,18). In this study, the above knee amputation was 55.3% but the previous studies in Nigeria and that of Tanzania show that below knee amputation was more common (13,18). This can be explained by different time of presentation. Most of the patients in this study presented late at grade 4 of diabetic foot.

### CONCLUSION

Diabetic foot ulcer and RTA were the common indications for amputation in UNIOSUN Teaching Hospital, Osogbo. Most of these conditions are potentially preventable if patients present and treated earlier

**Conflict of interest:** There is no conflict of interest

**Acknowledgement:** We really appreciated the efforts of the staff in the operating theatre and record department for making this study a success.

### REFERENCES

1. Paundel B, Strestha BK, Banskota Ak. Two faces of Major Lower Limb Amputations. Kathmandu Univ Med J. 2005; 3(3):212-216
2. Van der M, Wi KN. No leg to stand on: Historical relation between amputations. Surgery and Prostheseology J. 1995; 1:1-256
3. Akhator A. Pattern of Lower Limb Amputation in Eku. Ebonyi Medical Journal. 2007; 6(1):18-20
4. Diao S, Masse A, Diouf J, Sane J, Thiam B, Diallo M, et al. Major Limb Amputation: Etiological and Clinical profile in a Hospital in Sub- Sahara Africa. Open Journal of orthopaedic. 2021; 11: 40–46
5. Thann LO, Tade AO. Extremity Amputation in Nigeria- a review of indications and mortality. Surgeon. 2007; 5(4): 213–217
6. Amaefule KE, Dairu IL. Profile of Major Limb Amputation in Zaria North West Nigeria: an Emerging Trend in a Dynamic Nation. Nigeria Journal of Orthopaedic and Trauma 2015; 14: 2
7. Abou-Zamzam AM, Teruya TH, Killeen JP, Ballard JL. Major Lower Extremity amputation in an academic vascular center. Annn Vasc Surg. 2003; 17(1): 86-90
8. Olasinde AA, Oginni LM, Bankole JO, Adegbehingbe Y, Oluwadiya KS. Indication for Amputations in Ile-Ife, Nigeria. Niger J Med. 2002; 11(3): 118-121
9. An Introduction to Orthopaedic, Department of Orthopaedic Surgery. AAU – Medical Faculty. 1994: Pp 1-77.
10. National Limb loss Information Centre fact sheet , Amputation Statistics by Cause Limb Loss in the United State, Revised 2008 (Reviewed on October 14, 2011)
11. Soomro N, Bibi R, Ahmed SI, Kamran B, Minhas MA, Siddiqui MY. Epidemiology of Amputation: low resource Community: Sindh Province, Pakistan. Professional Med J 2013; 20(2):261-265
12. Naaeder SB. Amputation of the Lower Limb in Korle- Bu Teaching Hospital, Accra. West Afr J Med. 1993; 12: 21-26
13. Chalya PL, Manila JB, Dass RM, Ngayomela IH, Chandika AB, Mbelenge N. Major Limb Amputation: A Tertiary hospital experience in North Western Tanzania. Journal of Orthopaedic Surgery and Research. 2012; 7: 18
14. Doumi EA, Ali AJ. Major Limb Amputation in Ei Obeid Hospital, Western Sudan. Sudan JMS. 2007; 2(4):237-239
15. Servestani AS, Azam AT. Amputation: A Ten-Year Survey. Traums Mon. 2013 December; 18 (3): 126–129
16. Traulner C, Haasten B, Spraul M, Giani G, Berger M. Unchanged incidence of lower limb amputations in a German city, 1990 -1998. Diabetic Care J. 2001; 24: 855
17. Dangelser G, Beson S, Gatina J, Blickle I. Amputations among diabetes in Reunion Island. Diabetes Metab. 2003; 29: 628-34
18. Thanni LO, Tade AO, Extremity Amputation in Nigeria- A review of indications and mortality. Surgeon J. 2007; 5: 213-217

**Table 1:** Age group of respondents

Variable	Frequency	Percentage
<b>Age group</b>		
18-39	11	28.9
40-60	12	31.6
61-80	15	39.5

**Table 2:** Gender of respondents

Variable	Frequency	Percentage
<b>Gender</b>		
Male	27	71.1
Female	11	28.9

**Table 3:** Indication for surgery

S/N	Variable	Frequency	Percentage
1	Fracture complicated with gangrene secondary to RTA	4	10.5
2	Severe Crush injury secondary to RTA	7	18.4
3	Gangrenous foot secondary to Peripheral vascular disease	1	2.6
4	Malignant leg ulcer	3	7.9
5	Diabetic foot	23	60.5

**Table 4:** Limb affected, level and type of amputation

Variable	Frequency	Percentage
<b>Limb affected</b>		
Right leg	17	44.7
Left leg	20	52.6
Left arm	1	2.6
<b>Level of Amputation</b>		
Above the knee	21	55.3
Below the knee	16	42.1
Guillotine amputation (below elbow)	1	2.6
<b>Type of amputation</b>		
Closed	35	92.1
Opened	3	7.9