



## HOW KNOWLEDGE, ATTITUDE AND PRACTICES AFFECTS LYMPHATIC FILARIASIS IN PARTS OF OSE LOCAL GOVERNMENT AREA, ONDO STATE NIGERIA

Oladunni Nimota Adekunle<sup>1\*</sup> & Sammy Olufemi Sam-Wobo<sup>2</sup>

<sup>1</sup>Department of Zoology and Environmental Biology, Olabisi Onabanjo University, Ago-Iwoye, Ogun State, Nigeria

<sup>2</sup>Department of Pure and Applied Zoology, Federal University of Agriculture, Abeokuta, Ogun State, Nigeria

\*Author for Correspondence: [adekunle.oladunni@oouagoiwoye.edu.ng](mailto:adekunle.oladunni@oouagoiwoye.edu.ng)

### ABSTRACT

The level of knowledge possessed by community members determines the role it plays in preventing Neglected Tropical Diseases (NTDs) within the population. Our cross-sectional study assessed the knowledge, attitude and practices (KAP) towards Lymphatic Filariasis (LF) across three communities located in Ose Local Government Area (LGA) Ondo State, Southwestern Nigeria. Close-ended structured questionnaires on KAP towards LF were administered to 1,090 consented respondents who were between the ages of 15 and 80 with their responses graded and scored accordingly. Results were presented using descriptive statistics. Results revealed respondents' knowledge on LF was poor as only 7(4%) had correct knowledge on LF. However, 757(69.5%) and 147(13.9%) of the respondents admitted that LF patients could be non-productive and could marry an LF-chronic manifested person respectively. In relation to practices towards LF, 594(54%) of the respondents receiving drugs that had been distributed for preventive chemotherapy. Further analysis showed that although the ownership of Long Lasting Insecticide Nets (LLINs) was high with 862 (72%) respondents being in possession of LLINs, its utilization was low with only 267 (25%) sleeping under an LLIN. In conclusion, the poor knowledge on LF could have contributed to the presence of LF in the study area. Continuous efforts by educating community members in the need to fight against LF should be embarked on by the health stakeholders.

**Keywords:** Attitude, Knowledge, Lymphatic Filariasis, Neglected Tropical Disease, Practices

### INTRODUCTION

Lymphatic Filariasis (LF) caused by the nematode *Wuchereria bancrofti* is one of the neglected tropical diseases (NTDs) endemic in Nigeria with 121.7 million Nigerians at risk of getting infected with the disease (FMoH, 2019). It is transmitted by the infected female *Anopheles* mosquitoes in most parts of Africa (WHO, 2022). LF infection cuts across all ages groups in both females and males. Infection with the disease could be described to be asymptomatic in humans at the beginning in which later after numerous years the manifestation of the chronic stages (elephantiasis, hydrocele and lymphoedema) are gradually observed to be visible. According to FMoH (2019) with an annual loss of almost \$1 billion and impairing economic activities of up to 88%, LF has

shown that it has a social and economic impact worldwide. The current practices by the Global Program to Eliminate Lymphatic Filariasis (GPELF) created by the World Health Organization and private stakeholders in the year 2000 indicates that by pushing for the integrative control of NTDs which involves chemotherapy (Mass Drug Administration of Medicine (MAM) which is the administration of albendazole (ALB) and ivermectin (IVM) for at least five years annually to the population in an endemic area), morbidity management and disability prevention programme for those with visible chronic manifestations and controlling of vectors, eliminating LF by 2030 should be achievable.

The assessing of knowledge, attitude and practices (KAPs) of a community towards LF is one

way of understanding the disease as knowledge plays a critical role in the preventing LF (Al-Abd et al., 2014). The role of mosquitoes in transmitting LF is underestimated as awareness on the importance of reduction of contacts with the transmitting vector in order to prevent the disease is not encouraging (Wynd, 2007). In Nigeria, estimating the prevalence of LF and surveys on the levels of KAP in relation to the disease among the community members have been reported in the last two decades across some States; Bayelsa (Henry et al., 2023), Benue (Omudu and Okafor, 2008; Omudu and Okafor, 2011; Omudu and Ochoga, 2011), Ebonyi (Udujihet et al., 2012; Amaechi et al., 2013), Kano (Dogara et al., 2014; Hafizuet al., 2023), Ogun (Okorie et al., 2015; Oluwabiyi et al., 2016; Okonofua et al., 2021) Oyo (Jaiyeola et al., 2022), Plateau (Azzuwut et al., 2011) and Taraba (Bingbeng et al., 2018). Considering that according to FMOH (2019), 583 Local Government Areas (LGAs) out of the 774 LGAs in Nigeria are LF endemic, there is still paucity of information on KAP in the country and this might hinder efforts being made by the stakeholders in eliminating LF in the country by 2030.

Effective health education and involvement of community members and health stakeholders play significant roles in the success of eliminating LF so therefore there is the continuous need to evaluate the level of knowledge of the population about LF together with their attitudes and practices. In Ondo State, LF prevalence of 27% and presence of chronic manifestations in parts of Ose Local Government Area (LGA) indicates the study area to be LF endemic (Adekunle et al., 2016). For this reason, this study went ahead to assess the KAPs of the community members towards LF.

## **MATERIALS AND METHODS**

### ***Study Area***

The study area was located in Ose LGA with a land mass area of 1,465km<sup>2</sup> in Ondo State (located in the South-western Nigeria). Its head – quarters located at Ifon. It consists of twelve major towns and ninety – one adjoining villages surrounded by vegetation which consists of Okeluse, Ijagba, Umoru, Ute, Ifon in the North and the Irekari district. The rainforest is the vegetation found within the environment.

### ***Community Consent***

A consent letter was gotten from the Federal Medical Centre, Owo, Ondo State, Nigeria. An awareness visit was made in the company of the Health officers associated with the study area in the LGA. The study design which was cross-sectional was carried out in Idoani, Idogun and Imeri communities. All community leaders and members in these communities were sensitized on the study and what it entails in their local dialect and consented informal consents were obtained from them as dates were fixed.

### ***Questionnaire Administration***

A structured and close-ended questionnaire which had been pre-tested for reliability and validity was translated into Yoruba and used to obtain information from consented respondents who were between the ages 15 and 80 years old. Our questionnaire used in obtaining data included; knowledge of LF, attitude towards LF and practices towards LF. The knowledge on LF which had five questions that was scored were; ever heard of LF, the causes of LF, how it is transmitted, LF mode of treatment for elephantiasis and hydrocele and how it can be prevented. Five questions in relation to the attitude of the respondents towards LF that was scored were; do they think they can acquire LF, reside with LF patients, thinking that LF patients can be as productive as non-infected individuals, shower attention and care on LF patients and marry someone having elephantiasis or hydrocele. Lastly, practices of the respondents towards LF that was scored were; ever heard of Mass Administration of Medicine (MAM), ever received drugs during MAM, usage of Long Lasting Insecticide Net (LLIN) and if not using LLIN, how are mosquitoes prevented within their abode.

### ***Data analysis***

Data collected was entered into Microsoft Excel 2016 and transported into Statistical Package for Social Science (SPSS) software version 20. Descriptive statistics which includes; Frequency and finding percentages were presented in tables. For the questionnaire, following Adekunle and Asimiea (2018) scoring index, the score index was created in relation to the questionnaire administration part above. Each correct and incorrect answers were scored 1 and 0 respectively. The grades for scoring was Good = 4; Fair = 3 and

Poor = 2 (this was used for knowledge on LF and attitude towards LF). For practices towards LF, the grades for scoring was Good = 3; Fair = 2 and Poor = 1.

## RESULTS

### *Knowledge on LF amongst the respondents*

A total of one hundred and seventy-seven (16%)

claim to have heard of the LF disease. Out of the one hundred and seventy-seven people that had heard of the disease called LF with only 83 respondents (8%) having seven (7) different local names for it (Table 1). Respondents source of information was through the rural health workers which was highest 80(45%) and least been through the town criers (4%) (Table 2). A total of 85(48%) and 80(45%) of the informed respondents believed that the disease could be detected through physical examination and blood examination respectively (Table 2).

**Table 1: Respondents that had heard of LF and the local names they used in identification**

	Frequency (%)
<b>Ever heard of LF?</b>	
Yes	177(16)
No	913(84)
<b>Total</b>	<b>1090(100)</b>
<b>Local Yoruba Names</b>	
Arawu	2(0.2)
Ese-osofa	1(0.1)
Ese-wuwo	53(4.9)
Iba iponju	1(0.1)
Ipake	1(0.1)
Awuse/Iwuse	24(2.2)
Okele	1(0.1)
No response	94(8.6)
Non-applicable	913(83.8)
<b>Total</b>	<b>1090(100)</b>

LF - Lymphatic Filariasis; % - Percentage

**Attitude towards LF amongst the respondents**

The attitude of the respondents to the disease in the study area was shown in Table 3 below. Almost 91% of the respondents felt they were not at risk of being infected with LF. On living with an LF patient, most of the respondents said they could live in the same abode (79.1%) with an LF patient. As regards productivity of LF patients, majority of the

respondents (69.5%) thought that LF patients could never be as productive as non-infected individuals. A huge proportion of the respondents showed that LF patients deserved attention (97.9%) and encouragement (93%). Most (85.9%) of the respondents dismissed the idea of marrying someone with hydrocele and elephantiasis.

**Table 2: Respondents source of information and how it can be detected**

	Frequency (%)
<b>Source of information</b>	
Friend/ Neighbor	7(4)
Rural Health Workers	79(45)
Poster	26(15)
Television/Radio	35(20)
Relation	19(11)
In school	4(2)
Town Crier	7(4)
<b>Total</b>	<b>177(100)</b>
<b>How can the LF disease be detected?</b>	
Blood examination	80(45)
Physical examination	85(48)
Through prayers	3(2)
No response	9(5)
<b>Total</b>	<b>177(100)</b>

LF - Lymphatic Filariasis; % - Percentage

**Practices of respondents towards LF**

Of the 1090 respondents, 771(71%) had heard of the word Mass Drug Administration (MDA) while 29% were not of the MDA program (Table 4). More than half of the respondents (55%) reported that they had received drugs distributed during MDA while 46% claimed to have not received drugs (Table 4). It was observed in Table 5 below that although 862(79%) of the respondents possessed LLIN, 790(72%) of the respondents did not make use of the LLINs at all, while 3% said they made use of the nets but were not consistent with using them. Out of the 790 respondents that did not make use of LLINs, prevention of mosquito bites was through

spraying of mosquito insecticides 269(43%) with the least respondents 9(1%) saying they did absolutely nothing to prevent themselves from mosquito bites.

Lastly in Table 6, it was observed that respondents who had good knowledge on LF were just 7(4%) with majority (49.7%) of the respondents having poor knowledge of the disease. For the overall scoring on the attitude about LF disease, majority of the respondents (51.6%) indicated that their attitude towards the disease would be fair. Respondents who showed poor practices towards the diseases was the highest with 48.6% out of the 1,090 respondents.

**Table 3: Attitude of the respondents to LF**

	Frequency (%)
<b>Can you acquire LF?</b>	
Yes	99(9.1)
No	991(90.9)
Maybe	0(0)
Total	1090 (100)
<b>Can you reside with an LF infected person in the same house?</b>	
Yes	862(79.1)
No	115(10.6)
Maybe	113(10.3)
Total	1090 (100)
<b>Do you think LF patients are as productive as non-infected individuals?</b>	
Yes	329(30.2)
No	757(69.5)
Maybe	4(0.3)
Total	1090 (100)
<b>Can you shower attention and care on LF-infected individuals?</b>	
Yes	1067(97.9)
No	23(2.1)
Maybe	0(0)
Total	1090 (100)
<b>Can you marry someone with hydrocele/elephantiasis/lymphedema?</b>	
Yes	147(13.9)
No	934(85.9)
Maybe	9(0.4)

LF - Lymphatic Filariasis; % - Percentage

**Table 4: Respondents opinions on the awareness of Mass Administration of Medicine in the study area**

	Frequency(%)
<b>Awareness of Mass Administration of Medicine</b>	
Yes	771(71)
No	319(29)
<b>Total</b>	<b>1090(100)</b>
<b>Have you ever received drugs distributed during Mass Administration of Medicine?</b>	
Yes	594(54)
No	496(46)
<b>Total</b>	<b>1090(100)</b>
% - Percentage	

**Table 5: Respondents usage of LLINs and mosquito prevention**

	Frequency (%)
<b>Do you possess LLIN?</b>	
Yes	862(79)
No	228(21)
<b>Total</b>	<b>1090(100)</b>
<b>Do you sleep under the LLIN net?</b>	
Yes	267(25)
No	790(72)
Sometimes	33(3)
<b>Total</b>	<b>1090(100)</b>
<b>How do you prevent mosquitoes from biting you?</b>	
Close windows and doors by 6pm	82(11)
Spraying of mosquito insecticides	269(34)
Use of mosquito incense	203(26)
Use of broom to wipe down the walls	79(10)
Constructed window nets and door nets	78(9)
The use of hand fan	1(1)
There are no mosquitoes in my house	69(8)
I do nothing	9(1)
<b>Total</b>	<b>790(100)</b>

LLIN- Long Lasting Insecticide Treated Net; % - Percentage

**Table 6: Overall scoring of respondents on KAP towards LF in our study area**

Variables			
	Knowledge of Respondents on LF (%)	Attitude of Respondents towards LF (%)	Practices of the respondents towards LF (%)
Good	7(4)	32(3)	166(15.2)
Fair	82(46.3)	563(51.6)	394(36.2)
Poor	88(49.7)	495(45.4)	530(48.6)
<b>Total</b>	<b>177(100)</b>	<b>1090(100)</b>	<b>1090(100)</b>

LF – Lymphatic Filariasis; % - Percentage

### DISCUSSION

The knowledge of the LF amongst the populace of the study area was very poor with 16% saying they had at some point heard of the disease. This showed the general low awareness of the disease in the study area. The low awareness about the disease among respondents was similar to studies reported by Udujih et al. (2012), Okorie et al. (2015) and Jaiyeola et al. (2022) in Nigeria. Our finding was different from a study reported by Amaechi et al. (2013) in Ebonyi State where majority of the respondents had good knowledge of LF. Majority (45%) of the informed respondents attributed their source of knowledge on LF to the rural health workers, media and posters posted on the walls of the health-centres located in their vicinities. The increased efforts by the Primary Health Care workers in collaboration with health agencies/stakeholders in raising the awareness of LF by the use of posters which could be seen on the walls at the Health Centers. This also corroborated findings in part of Africa about the source of LF knowledge as reported in Jones et al.(2015) in Tanzania.

On the knowledge of LF, an overall 4% of the respondents had a good knowledge on LF infection rate which could be termed unsatisfactory. Also, Jaiyeola et al. (2022) and Hafizu et al. (2023) reported poor knowledge on LF amongst community members in Kano and Oyo States respectively. The low insight of knowledge on the disease in our study was in line with studies by

Okorie et al. (2015), Adhikari et al. (2022) and Hafizu et al. (2023) who reported low to absent knowledge on the transmission of LF by mosquitoes. This finding was not in line with studies reported by Al-Abd et al. (2014) Nzeako et al. (2016) and Jones et al. (2015) where more than 50% respondents indicated that mosquitoes transmitted LF. Adekunle and Sam-Wobo (2021) have established the presence of three genera of mosquito species (*Anopheles* spp, *Culex* sp. and *Mansonia* sp.) in the study area and reported that any of these mosquito species could serve as a vector in LF transmission. Respondents were of the opinion that LF could be prevented through; the use of MAM, vector control, being cautious with people in the course of interaction and lastly being prayerful. This was slightly different from Jones et al. (2015) where respondents reported that LF could be prevented by the use of MDA drugs and vector control only. Jaiyeola et al. (2022) and Udujih et al. (2012) have reported in parts of Nigeria a low to zero knowledge on the preventive measures of LF.

Regarding their attitude to LF disease, majority of the respondents felt they were not at risk of being infected with LF at all even as Adekunle et al. (2016) reported the presence of chronic manifestation such as leg lymphoedema and hydrocele in the study area. These findings were similar to report by Azzuwut et al. (2011) in Nigeria where a low perception of personal susceptibility to LF was identified among the people. In the study area, living and working with LF patients wholeheartedly was said to be consequential by the

respondents (79.1%) as they believed that LF patients needed love and care. This finding was similar to Azzuwut et al. (2011) where 85.1% said they could eat, live or work with LF patients. As regards productivity, a little above average (69.5%) of the respondents believed LF patients could never be as productive as healthy individuals due to stigmatization. However 0.3% were of the opinion that they could be productive but as time goes on they will become redundant. This was in contrary to the 60.3% reported by Azzuwut et al. (2011) in Nigeria who thought LF patients can be productive as healthy individuals. On marriage, majority (85.9%) of the respondents said they could never marry someone who exhibited such symptoms. This aligned with the believe that women and men with LF disease have limited prospects (Azzuwut et al., 2011; Omudu and Ochoga, 2011; Oducado, 2014). Very few respondents (0.4%) in this study said they could remain married to such a person as long as there was love; citing situations like people who did not exhibit symptoms during courtship and later on after so many years in marriage, symptoms now being visual and the opinion of abandoning such a partner at such a time would be cruel.

Impressively, 71% of the respondents had heard of MAM before at one time or more in their lifetime and 54% of them had received the drugs during the program. This was similar to Azzuwut et al. (2011) where more than half of the respondents had heard of the program and had received ALB. This was in contrast to Al-Abd et al. (2014) where knowledge on MAM was 35%. Most of the respondents who had received ALB and IVM were skeptical about drug use which concerned the side effects (body itching, fever, body swelling and drowsiness) they exhibited when these drugs were previously ingested. Few of the respondents said they did not see the need to take such drugs when they were not suffering from the disease. These findings were similar to studies by Azzuwut et al. (2011) and Oducado (2014) that identified factors that affect drugs uptake.

On Long Lasting Insecticide Nets (LLINs) that had been distributed in the study area, there was a high ownership with majority (79%) of the respondents acquired LLINs through government intervention with good knowledge of what the net is meant for. However, possession of LLIN did not translate to usage as a proportion of the net owners (25%) actually use the net. as it was observed that

respondents exhibited poor practices towards LF infection. The main reason given by the respondents was feeling heat while sleeping under the net, the high concentration of pyrethrum imbedded in the LLINs (as washing of the nets three consecutive times as advised by the health workers did not help) and they were of the opinion that inhalation of the pyrethrum was not good for their health. Mukhopadhyay et al. (2008) in India reported low ownership (16.79%) and low utilization (9.02%) of LLINs mosquito nets. Unlike Abebe et al. (2008) who reported high utilization by the (85.7%) of the respondents in Ethiopia.

On how they prevented mosquitoes, most of the respondents relied on behavioral practices which included; spraying of insecticides and the use of mosquito repellent incense in their various abodes, the applying of repellent creams to skin, closing of the doors and windows every day before 6pm and wiping down the walls with the help of a broom. The disturbing fact that a proportion of the respondents were of the opinion that they were no mosquitoes in their environment could be attributed to their ignorance on the role of the vectors in their environment.

In conclusion, low compliance to preventive measures which includes the use of LLINs could increase the risk of exposure to mosquito bites among the population. Constant Health education on LF should be embarked on by Stakeholders. Further studies on assessing the impact of levels of KAP before and after at least five series of rounds of MAM towards LF elimination should be embarked on.

## ACKNOWLEDGEMENTS

The authors appreciate all the efforts of the community members and health workers in the study area who helped made this study achievable.

## REFERENCES

- Abebe A, Teshome G, Girmay M, Mesheba B, Seife B, Aklilu S. (2008). Assessment of distribution, knowledge and utilization of insecticide treated nets in selected malaria prone areas of Ethiopia. *Ethiop J Health Dev.* 22(3): 268 - 274.
- Adekunle ON, Sam-Wobo SO, Adeleke MA, Ekpo UF, Davies E, Ladokun AO, Egbebauwaye E, Surakat OA. (2016). Prevalence and distribution of *Wuchereriabancrofti* in Ose Local Government Area, Ondo State, Nigeria. *Niger J Parasitol.* 37(1): 96 - 100.



- Adekunle ON, Asimiea AO. (2018). Prevalence of lymphatic filariasis and associated clinical morbidities among adolescents in three rural communities in Ondo State, Southwest Nigeria. *J. Trop Med Health*. 2: 1 - 6.
- Adekunle, O.N. and Sam-Wobo, S.O. (2021). Assessment of endophilic Mosquitoes and their parity status as continuous means of Lymphatic Filariasis transmission in selected communities, Ondo State, Nigeria. *FUW Trends in Sci. & Tech. J.* 6(2): 459-462.
- Adhikari R, Acharya D, Wagle A. (2022). Sociodemographic characteristics as predictors of knowledge regarding mode of transmission of lymphatic filariasis among population of Nepal. *PLOS Glob Public Health*. 2(10): e0000082. doi.org/10.1371/journal.pgph.0000082.
- Al-Abd NM, Nor ZM, Ahmed A, Al-Adhroey AH, Mansor M, Kassim M. (2014). Lymphatic filariasis in Peninsular Malaysia: A cross-sectional survey of the knowledge, attitudes and practices of residents. *Parasit Vectors*. 7: 545. doi.org/10.1186/s13071-014-0545-z.
- Amaechi AA, Nwoke BEB, Ukaga CN, Duru IF, Ajero CMU, Prince TO. (2013). Awareness and practices regarding factors associated with lymphatic filariasis and its vectors among the Ohaukwu people of Ebonyi State, Nigeria. *Glob Res J Sci*. 2(2): 1 - 8.
- Azzuwut MP, Sambo MN, Hadejia IS. (2011). Assessment of the knowledge, attitude and practices related to the treatment and prevention of lymphatic filariasis among the adult residents of Bokkos Local Government Area of Plateau State, Nigeria. *Jos J Medicine*. 6(3): 1-9.
- Bingbeng JB, Elkanah SO, Swemwua TC, Elkanah DS, Madara AA, Kela SL, Samaila AB, Ishuwa MN. (2018). Status of Lymphatic filariasis in five communities of Yorro Local Government Area, Taraba State, Nigeria. *Niger J Parasitol*. 39(1): 42 - 47.
- Dogara MM, Nock HI, Agbede RIS, Ndams IS. (2014). Survey of knowledge, attitudes and perceptions (KAPs) of lymphatic filariasis patients in Kano State, Nigeria. *Int Res J Pub Environ Health*. 1(10): 207 - 210.
- Federal Ministry of Health (2019). National Guidelines for Lymphatic Filariasis Assessment with a Framework for Human Capacity Development. Published by the Neglected Tropical Diseases Division. Department of Public Health, Federal Ministry of Health, Abuja, Nigeria. 58pp.
- Hafizu MS, Tukur Z, Junaid OQ, Dawaki S, Hamza AA. (2023). Lymphatic filariasis knowledge, attitude and practice among households in Kano Metropolis North-Western Nigeria. *Dutse J Pure and Appl Sci*. 9(1b): 167-174.
- Henry AB, Ebenezer A, Florence N, Eze NC. (2023). Prevalence, knowledge and perception of lymphatic Filariasis in Yenagoa Local Government Area, Bayelsa State, Nigeria. *J. Trop. Dis*. 11(3): 387. doi.org/10.35241/2329-891X.23.11.387.
- Jaiyeola TM, Udoh EE, Adebambo AB. (2022). Knowledge, attitude, and practice towards lymphatic filariasis among inhabitants of an endemic town in Oyo State, Nigeria. *J Epidemiol Soc Niger*. 5(1): 23-35.
- Jones C, Tarimo DS, Malecela MN. (2015). Evidence of continued transmission of *Wuchereriabancrofti* and associated factors despite 9 rounds of ivermectin and albendazole mass drug administration in Rufiji District, Tanzania. *Tanzania J Health Res*. 17(2): 1 - 5.
- Mukhopadhyay AK, Patnaik SK, Babu PS, Rao KN. (2008). Knowledge on lymphatic filariasis and mass drug administration (MDA) programme in filaria endemic districts of Andhra Pradesh, India. *J Vector Borne Dis*. 45: 73 - 75.
- Nzeako SO, Okunnuga OH, Nduka FO, Ezenwaka CO. (2016). Lymphatic filariasis and malaria awareness amongst residents of Port-Harcourt Metropolis. *Int J Appl Sci Res Rev*. 3(6): 6. doi.org/10.21767/2349-7238.100051.
- Oducado RMF. (2014). Knowledge and Attitude towards Lymphatic Filariasis and Compliance to Mass Drug Administration among Households in Two Rural Barangays. *Asia Pac J Educ, Arts Sci*. 1(5): 85 - 92.
- Oluwabiyi, B, Oyeyemi OT, Olorunlana A, Omiyeniyi N, Koleosho A. (2016). Lymphatic filariasis in southwestern Nigerian rural communities: A cross-sectional survey of the knowledge, awareness and predisposing factors. *Ann Glob Health*. 82(5): 1-7.
- Okonofua C, Akinsanya B, Idowu ET, Otubanjo AO. (2021). Parasitological and epidemiological studies of *Wuchereriabancrofti* in Imobi, Ijebu East, Local Government Area of Ogun State, South Western Nigeria. *JoBAZ*. 82: 49. doi.org/10.1186/s41936-021-00245-8.
- Okorie PN, Davies E, Omoniyi O, Ojurongbe O, Saka Y, Okoeguale B, Braide EI. (2015). Lymphatic filariasis baseline survey in two sentinel sites of Ogun State, Nigeria. *Pan Afr Med J*. 20: 397. doi.org/10.11604/pamj.2015.20.397.5686.
- Omudu EA, Okafor FC. (2008). Perception, Practices and Health Seeking Behaviour of Lymphatic Filariasis Patients in some Endemic Communities in Benue State. *Niger J Parasitol*. 29(2): 140 - 146.

- Omudu EA, Okafor FC. (2011). Gender Dimensions of Knowledge, Physical and Psycho-social Burden due to Lymphatic Filariasis in Benue State, Nigeria. *J Parasitol Vector Biol.* 3(2): 22 - 28.
- Omudu EA, Ochoga JO. (2011). Clinical epidemiology of lymphatic filariasis and community practices and perceptions amongst Ado people of Benue State, Nigeria. *Afr J Infect Dis.* 5: 47 - 53.
- Udujih HI, Nwoke BEB, Ukaga CN, Udujih GO, Nnodim JK, Onyeka PIK, Amaechi A, Dike J. (2012). Studies on some aspects of malaria and lymphatic filariasis transmission in Ohaukwu Local Government of Ebonyi State, Nigeria. *Cibtech J of Microbiology.* 1(1): 13-23.
- World Health Organization (2022). Lymphatic Filariasis. Fact Sheets. Retrieved on 11th April, 2023 from [www.who.int/news-room/fact-sheets/detail/lymphatic-filariasis](http://www.who.int/news-room/fact-sheets/detail/lymphatic-filariasis).
- Wynd S, Durrheim DN, Carron J, Selve B, Chaine JP, Leggat PA, Melrose WD. (2007). Socio-cultural insights and lymphatic filariasis control-lessons from the Pacific. *Filaria J.* 6(3): 21-29.