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Lymphatic filariasis: knowledge, attitude and practices among inhabitants of an irrigation project community, North Central Nigeria

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ABSTRACT

Objective: To ascertain the knowledge of lymphatic filariasis among inhabitants of an irrigation project community in north central Nigeria.**Methods:** A descriptive cross sectional study which involved 285 participants ≥ 18 years who live in Omi and its surrounding communities was done. Data on socio-demographic characteristics and the knowledge, attitude and practices of the participants were obtained using pre-tested questionnaires. Data were analyzed using SPSS software version 16.0.**Results:** A greater proportion (82%) of the participants were not aware of lymphatic filariasis and the exact cause of the infection. Quite a good number (85%) reported pain and swelling as symptoms. The respondents generally had a fair understanding of prevention and management strategies of the disease. The results from this study showed that the association between awareness of lymphatic filariasis and gender, age, educational level and occupation of the participants was not significant ($P > 0.05$).**Conclusions:** Many of the participants had a poor knowledge of lymphatic filariasis, the mode of transmission and symptoms of the disease. For proper understanding of lymphatic filariasis in the community, there is need for effective and realistic health education campaigns targeted at the grassroots.

1. Introduction

Lymphatic filariasis due to infection with *Wuchereria bancrofti* is a chronic parasitic disease of huge public health concern and socio-economic significance in many tropical and sub-tropical countries of the world, where it currently affects an estimated 1.34 billion in 81 countries[1]. About 40 million people suffer from clinical manifestations of the disease which usually results into serious disfiguration and incapacitation of the body, where approximately 1.4 billion people are at risk of the infection[2]. Lymphatic filariasis, a neglected tropical disease presently affects the poorest of the poor

in most sub-Saharan African countries, Nigeria exclusive having a negative significant impact on the psychological, economic and social life of the affected populace. The concerted control efforts by the government and international bodies notwithstanding, lymphatic filariasis is still a disease of public health concern in Nigeria, with an estimated 106 million cases, placing the country as one with the highest prevalence in Africa[3].

In most rural areas undergoing ecological transformations, particularly as a result of dam construction and irrigation schemes, new breeding sites suitable for the proliferation of the mosquito vector are created. As a result of this, the transmission of lymphatic filariasis in such areas is expected to increase[4]. Other contributory factors to the increase in lymphatic filariasis disease transmission include unplanned urbanization, overcrowding and deteriorating sanitary conditions[5].

For a sound recommendation to be suggested for a given community, it is of the utmost importance to know how the inhabitants of that community perceive the disease and their responses as a result of the impression formed on those already

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The study protocol was performed according to the Helsinki declaration and approved by Kogi State Ministry of Health and the local government health authority. Informed written consent was obtained from Lower Niger River Basin Authority.

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affected. Ignorance and wrong beliefs can lead to negligence in preventive and control measures, therefore affecting the much needed appropriate treatment. Community awareness and involvement are considered vital tools for the success and sustainability of any disease control programme[5,6]. Evidence have shown that peoples' perception about disease risks such as transmission and health consequences do influence their attitudes and health seeking behaviors towards the disease concerned[6,7].

Data on the knowledge, attitudes and practices (KAP) of inhabitants of Omi dam irrigation project community towards lymphatic filariasis is not available hence the need for this study. This paper presented the results of detailed investigation into people's KAP regarding lymphatic filariasis in Omi irrigation community, North Central Nigeria. It is hoped that the results of this work will provide a guide towards the prevention and control of this devastating and disfiguring disease in Nigeria.

2. Materials and methods

2.1. Study area and population

This investigation was carried out in five communities of Omi dam irrigation project and surrounding communities namely, Ogga, Iddo, Ogbo and Ejiba located in Yagba West Local Government Area of Kogi State, Nigeria. The Local Government Area covers an area of 1 276 km² with a population of 149 023[8]. It is about 146 km from Ilorin, the capital of Kwara State. It lies between longitudes 6°37' and 6°42' E of Greenwich and latitudes 8°34' and 8°38' N of the equator[9]. The project is located in Omi village, a farming community of about 10 000 people[10]. The primary aim of establishing this dam is to promote agriculture through irrigation activities involving more than 5 000 farming households both within and outside Yagba West Local Government Area. Many persons especially fishermen have settled along the lake. This shows the huge fisheries potential of the lake. The dam is capable of irrigating about 4 100 hectares of land. The dam allows for agricultural production of maize, vegetables, sorghum and rice all the year round.

The study area has a high humidity with an annual mean temperature ranging between 28 °C and 35 °C. There are two main seasons in the area. The dry season starts from November to March while the rainy season starts from April and ends in October, though there could be fluctuations due to climate change. The vegetation is Guinea savannah while the soil is hydromorphic which contains a mixture of coarse alluvial and colluvial deposits. The annual rainfall is between 1 100 mm and 1 300 mm. Most of the inhabitants in the study area depend on the water body for drinking and for domestic activities within their rural dwellings since pipe borne water is lacking. The communities have schools, hospitals and dispensaries where the inhabitants seek treatment. Many of the houses have unscreened windows, holes in the walls, and large open eaves that provide easy entry for mosquitoes. The houses are separated from

one another either by agricultural land or small patches of natural vegetation.

This investigation was done between the months of March and November 2014. The study population consisted of all caregivers who attended the participating health centers within the study area during the survey period and gave their consent to be part of the study. In order to be eligible to be part of the study, respondents had to have stayed in the area for at least one year and had to be 18 years or older. A total of 285 respondents aged \geq 18 years who gave their consents participated in the survey.

2.2. Study questionnaire

A semi-structured questionnaire developed by the researchers was validated and pre-tested to ensure consistency, reliability and appropriateness of language before commencement of the field work. During the field work, questionnaires were administered with the help of medical doctors, nurses and health technicians who were indigenous to the research area to allow for proper translation and clear understanding by the respondents. For those who could neither read nor write, they were interviewed using "Okun" the local language of the people of the area to determine the extent of each participants knowledge of lymphatic filariasis, including causes, signs and symptoms, mode of transmission, preventive measures and management of the ailment. The questionnaire used in the survey was written in English language.

2.3. Ethical consideration

Permission to conduct the study was obtained from Lower Niger River Basin Authority, Ilorin. Approval was granted by the Kogi State Ministry of Health and the local government health authority. Meetings were held in the villages to explain the purpose of the study to the inhabitants. It was made clear that participation in the study was voluntary and that it was possible to withdraw from the study at will. The post-graduate committee board of the Department of Zoology and Environmental Biology, Michael Okpara University of Agriculture, Umudike, gave approval to the study. The community leaders gave their full support and cooperation.

2.4. Data management

The results of this work were analyzed with SPSS version 16.0 (Chicago, USA). The results were double checked to be sure of correctness of the imputed figures before the analysis. The demographic characteristics of the respondents were presented in percentages and frequencies. Association of the knowledge of filariasis with demographic factors of the respondents was assessed using *Chi-square* test. A *P*-value of less than 0.05 was considered to be significant in the determination of association between the variables.

3. Results

3.1. Socio-demographic characteristics of respondents

A total of 285 respondents were sampled using structured questionnaires to ascertain their levels of knowledge, attitudes and practices towards malaria and lymphatic filariasis. The respondents fell within the ages 20 years and above 70 years. They include 65 (22.8%) in the age group 20–29 years, 56 (19.6%) aged 30–39 years, 49 (17.2%) aged 40–49 years, 53 (18.6%) aged 50–59 years, 42 (14.7%) aged 60–69 years and 20 (14.7%) were aged 70 years and above. The males were 140 (49.1%) while 145 (50.9%) were females (Table 1).

Table 1

Socio-demographic characteristics of respondents ($n = 285$).

Characteristics		n (%)
Gender	Male	140 (49.1)
	Female	145 (50.9)
Age group	20–29	65 (22.8)
	30–39	56 (19.6)
	40–49	49 (17.2)
	50–59	53 (18.6)
	60–69	42 (14.7)
	70 and above	20 (7.0)
Marital status	Married	151 (53.0)
	Single	18 (6.3)
	Divorced	34 (11.9)
	Widow/widower	45 (15.8)
	Cohabiting	37 (13.0)

The occupations of the respondents included: traders 37 (13.0%), civil servants 25 (8.8%), fishermen 64 (22.5%), farmers 72 (25.3%), students 29 (10.2%), artisans 19 (6.7%), housewives 34 (11.9%) and others 5 (1.8%) (Table 2).

Table 2

Socio-demographic characteristics of respondents ($n = 285$).

Variables		n (%)
Educational level	Never attended school	24 (8.4)
	Primary	98 (34.4)
	Secondary	125 (43.9)
	Tertiary	38 (13.3)
Occupation	Trader	37 (13.0)
	Civil servant	25 (8.8)
	Fishermen	64 (22.5)
	Farmer	72 (25.3)
	Student	29 (10.2)
	Artisan	19 (6.7)
	Housewife	34 (11.9)
	Others	5 (1.8)

Regarding educational qualification, some of the respondents attained primary school status 98 (34.4%), secondary school status 125 (43.9%), tertiary status 38 (13.3%) while those with no formal education were 24 (8.4%) (Table 2).

Marital status showed that 151 (53.0%) were married, 18 (6.3%) were single, 34 (11.9%) were divorced, 45 (15.8%) were widows/widower while 37 (13.0%) were cohabiting (Table 2).

3.2. Respondents' knowledge about the causes of lymphatic filariasis

Many of the respondents had not heard about lymphatic filariasis (82.1%) while very few had heard about it (17.9%). Information about lymphatic filariasis were from varied sources such as mass media (76.8%), experience of previous lymphatic filariasis attack (62.5%), hospitals/dispensaries (39.6%) and community health workers (15.8%). Causes of lymphatic filariasis reported by respondents were mosquito bites 35 (12.3%), charms 222 (77.9%) sexual intercourse 180 (63.2%), trekking long distance 45 (15.8%), eating contaminated food 21 (7.4%), 93 (32.6%) attributed it to stepping on dirty water, 134 (47.0%) said it was curse from the gods, 17 (6.0%) attributed it to stressful work, 29 (10.2%) attributed it to inadequate personal hygiene while 5 (1.8%) did not know the cause (Table 3).

Table 3

Respondents' Knowledge about the causes of lymphatic filariasis.

Cause of LF		Frequency (%)
Heard of LF	Yes	51 (17.9)
	No	234 (82.1)
Source of information	Home/ neighbours /friends	0 (0.0)
	Mass media	2 (76.8)
	Hospital/dispensaries	24 (39.6)
	Community health workers	14 (15.8)
Causes	From experience of previous LF attack	178 (62.5)
	Mosquito bite	35 (12.3)
	Stepping on charm (juju)	222 (77.9)
	Sexual intercourse	180 (63.2)
	Trekking long distance	45 (15.8)
	Eating contaminated food	21 (7.4)
	Stepping in dirty water	93 (32.6)
	Curse from the gods	134 (47.0)
	Stressful work	17 (6.0)
	Inadequate personal hygiene	29 (10.2)
Do not know	5 (1.8)	
Total		$n = 285$

($\chi^2 = 604.34$, $P = 0.632$); LF: Lymphatic filariasis.

3.3. Signs and symptoms of lymphatic filariasis

Signs and symptoms of lymphatic filariasis reported were, fever 176 (61.8%), chills 139 (48.8%), pain 243 (85.3%), swellings 241 (84.6%), functional impairment 113 (39.6%), appearance of affected individual 126 (44.2%), physical discomfort 211 (74.0%) while 69 (24.2%) lacked knowledge of the signs and symptoms of lymphatic filariasis (Table 4).

Table 4

Respondents' knowledge about the signs and symptoms of lymphatic filariasis.

Signs and symptoms	n (%)
Fever	176 (61.8)
Chills	139 (48.8)
Pain	243 (85.3)
Swellings	241 (84.6)
Functional impairment	113 (39.6)
Appearance of affected individual	126 (44.2)
Physical discomfort	211 (74.0)
Do not know	69 (24.2)
Total	$n = 285$

($\chi^2 = 122.726$, $P = 0.000$).

3.4. Respondents' understanding of prevention and management of lymphatic filariasis

More than half of the respondents 176 (61.8%) reported that sleeping under mosquito nets was a way to prevent lymphatic filariasis, 142 (49.8%) reported the use of anti-filarial drug, 217 (76.1%) reported keeping the environment clean, 165 (57.9%) spraying with insecticides, 117 (41.1%) reported avoidance of sex with a woman during her menstruation, 215 (75.4%) reported staying off infected people and 73 (25.6%) had no knowledge of prevention and management of lymphatic filariasis at all (Table 5).

Table 5

Respondents' understanding of prevention and management of lymphatic filariasis.

Prevention of disease	n (%)
Sleeping under mosquito nets	176 (61.8)
Taking the prescribed drug (anti-filarial drug)	142 (49.8)
Keeping the environment clean	217 (76.1)
Spraying with insecticides	165 (57.9)
Never have sex with a woman during her period	117 (41.1)
Stay away from infected people	215 (75.4)
I don't know	73 (25.6)
Total	n = 285

3.5. Association between knowledge of lymphatic filariasis and some demographic factors of the participants

The association between the knowledge of lymphatic filariasis and some demographic factors of the participants was determined using *Chi-square* (Table 6). The association between the knowledge of lymphatic filariasis and examined demographic factors was not significant.

Table 6

Association between knowledge of lymphatic filariasis and knowledge and demographic factors of participants in Omi community.

Characteristics	Lymphatic filariasis knowledge			
	Prevalence (%)	Odds ratio	P-value	
Gender	Male	3.5	1.17 (0.897, 1.572)	0.130
	Female	2.8	1	
Age group	40 years	94.1	1.59 (0.816, 2.966)	0.102
	40 years	17.6	1	
Educational level	No formal education	25.6	1	0.138
	Primary education and above	74.4	1.18 (0.430, 2.065)	
Occupation	Employed	78.9	1.43 (0.960, 2.065)	0.711
	Unemployed/house wife	21.1	1	

4. Discussion

The study was carried out in Omi community and its environs, an area that has been reported to be lymphatic filariasis endemic. The data for this investigation were collected from inhabitants of Omi community and surrounding areas who attended health centers in the various study communities. The results showed an equal number of males and females of respondents which was free of bias. This however was not intentional from the start of the study, rather a coincidence. Experienced medical personnel who speak the local language of the participants were employed to assist in data collection. The work was done under the close supervision of the

researchers.

For proper health promotion campaign that is targeted at reducing any vector-borne disease, information on knowledge, attitude and management of any disease is indispensable for the formulation and implementation of effective and sustainable control programme against the disease[11,12]. KAP relating to lymphatic filariasis disease differed between communities. This was found to be linked to socio-cultural settings of different areas. Information relating to ways in which communities incorporate local knowledge into impacts of lymphatic filariasis is scanty.

The researchers are yet to encounter any published work relating KAP in the study area making this the first KAP study of lymphatic filariasis among residents of Omi community, Kogi State, North Central Nigeria. The study involved indigenous adults who had resided in the area for at least one year. The study was limited to those who visited the various health centers on health grounds. After proper training from public health experts, the researchers, medical doctors, nurses and health technicians administered the questionnaires to ensure unbiased reporting and responses from the subjects.

Our study showed that although the area is endemic for lymphatic filariasis, the majority of the participants were not aware of the ailment, which shows that information about the disease had not gotten to the grassroot. This reveals that so many people in the communities surveyed had poor or no knowledge of lymphatic filariasis. This agrees with the report of previous studies performed in endemic areas of Nigeria[11], Ghana[12], Tanzania[13] and Malaysia[14].

In the control or total elimination of a vector borne disease, the population is expected to have sound knowledge of the disease for the control to be effective and sustainable. Our study indicated that the major sources of information were mass media, hospital and experience which the respondents had from previous lymphatic filariasis attack. This is similar to the report of other researchers[14,15]. It is advocated that for a more effective and greater awareness of the disease in the community, house-to-house public health campaign is necessary.

In our study, the majority of participants did not know that mosquito is the vector of lymphatic filariasis. This is in consonance with the findings of other researchers elsewhere[16,17]. Contrary to this, studies in other parts of the country, showed that majority of respondents indicated that lymphatic filariasis is transmitted by mosquitoes[15]. Lack of knowledge by respondents could lead to inappropriate control measures by families, thereby disrupting any control measures targeted at the disease.

This study revealed that many of the participants recognized swellings, pains and fever were some of the common symptoms of lymphatic filariasis. This agrees with the findings of other researchers[14,18]. Contrary to the findings, it has been reported in a previous study that respondents could indicate proper symptoms of lymphatic filariasis[16].

With respect to prevention of lymphatic filariasis, our findings

revealed that participants had a misconception about its preventive measure. Majority of the respondents indicated that staying away from infected people could help prevent the disease. This attitude had profound detrimental psychological effect on the life of affected individuals, leading to social stigma. This has been previously reported by other researchers^[11]. Proper health enlightenment in the locality can help in bringing this attitude to a stop.

Relating to the management of the disease in the locality, many of the participants had a good knowledge of the need to keep the environment clean and clear of bushes, as they related clean environment to a major step to keeping rodents and insects away from homes.

In the present study, there was no correlation between knowledge of lymphatic filariasis, gender, occupation and level of education of the respondents. Our results revealed that male respondents who were older than 40 years, those with formal education and employed respondents had better knowledge of lymphatic filariasis. This observation contradicts the findings as performed in Malaysia^[14], where significant association was found between knowledge of lymphatic filariasis, age, gender and educational status of the respondents.

The present investigation revealed a very low knowledge about lymphatic filariasis by the participants in the study area. Just like any other neglected tropical diseases, the residents of Omi community do not know the dangers associated with the disease, its life cycle, control and preventive measures. The attitude about the disease is poor. Many of the residents associate the disease with witchcraft. Sensitization of people in the community on the mode of transmission of lymphatic filariasis, control and prevention methods is advocated.

Conflict of interest statement

We declare that we have no conflict of interest.

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