
**Assessment of Strategies, Causes and Modes of Transmission of Lymphatic Filariasis
among Adult Men and Women in Emeroke and Okorote, Eastern Obolo Local
Government Area, Akwa Ibom State**

BY

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ABSTRACT

This study was carried out to assess the strategies, causes and modes of transmission of lymphatic filariasis among men and women in Emeroke and Okorote communities in Eastern Obolo Local Government Area. The research design adopted for the study was a descriptive survey design. The study area was Eastern Obolo with its headquarters at Okoroete. The population for the study, according to National Population Commission (2006) was 75,000; males are 36,600 and females are 38,400 representing 48.8 percent males and 51.2 percent females respectively. The target population for this study was people aged 20 years and above in Emeroke and Okoroete communities of Eastern Obolo, Akwa Ibom State, Nigeria. The researcher used the stratified random sampling method to sample out the subset of population A and B which represented the two communities in Eastern Obolo Local Government Area. A total of one hundred and twenty (120) respondents was the sample size for the study in the communities. The main instrument used for data collection was a structured questionnaire titled “Strategies, Causes and Modes of Transmission of Lymphatic Filariasis” Questionnaire (SCMTLFQ). Data were collected from the adult respondents in the community who attended the clinic on daily visit to the hospital. Data collected were collated, coded, and analyzed using statistical package for social science (SPSS version 2.0). SPSS was used because it was fast and flexible and provided more accurate analysis which resulted in dependable conclusions. The findings showed that greater percentage of respondents did not have the basic knowledge on the causes of lymphatic filariasis. Based on the findings, it was recommended that advocacy including awareness and sensitization about the disease including the causes and management at the community and national level be established.

KEYWORDS: Transmission, Lymphatic filariasis, Disabilities, Indigenous belief, Traditional drugs and Modern drugs

Introduction

Lymphatic Filariasis is one of the diseases of public health. Its consequences can lead to permanent or long term disabilities that may influence the social, economic, sexual and psychological aspect of individual’s life when infected with the disease (WHO, 2000). According to Junquterta (2009) Lymphatic filariasis (LF) is a parasitic disease caused by nematode namely; *Wuchereria bancrofti*, *Brugia Malayi* and *Brugia Timori*. The preferred

habitats of these parasites are the lymphatic vessels and lymph nodes where they induce the development of disfiguring and debilitating clinical symptoms. Lymphatic Filariasis is transmitted by a wide range of mosquitoes, depending on the geographical area (Centre for Disease Control, 2012). In Africa, the most common vector is Anopheles mosquitoes and in America, it is culex quinquefasciatus. Egyptian Aedes and Mansoria can transmit the infection in the pacific region and Asia which if left untreated can develop into a chronic disease called elephantiasis (Centre for Disease Control, 2010). The greater impact of lymphatic filariasis on older age groups is due to the fact that infection burdens are determined by the chronicity and intensity of exposure to infective stage of the organism, which cannot multiply in the mammalian host (Nutman, 2011).

According to Kazural and Bockarie (2010) Lymphatic filariasis is characterized by disfigurement of the limbs (elephantiasis) and genitalia (hydrocele and other anatomical change in male genitalia). It is often perceived as having adverse economic and psychosexual consequences. This is particularly evident in many tropical countries where physical labour is still the major mean of earning money. Indeed lymphatic filariasis is among the leading health related impediment to economic and social development in economically disadvantaged areas of the tropics. Lymphatic Filariasis can be transmitted in any region of the world where an appropriate mosquito vector breeds. It is currently a significant health problem in tropical Africa, Asia, Indian sub-conditional region, Island of western and southern pacific and focal areas of Latin America.

King (2011) asserted that lymphatic filariasis infection involved asymptomatic, acute and chronic conditions. These asymptomatic infections still cause damage to lymphatic system and the kidney and alter the body immune system. Currently, 20 percent of the total population of people in the above study area is infected with lymphatic filariasis. Most of them have undergone treatment by traditional medicine dealers, some people who were previously infected with the disease are now living with the disability which include lymphoedema and sores in the affected limbs. Lymphatic filariasis is not only prevalence in Eastern Obolo, but in other parts of Akwa Ibom State, like Ini, Uyo and Ibaka.

Statement of the problem

Lymphatic filariasis is commonly known as, elephantiasis in Africa. It is caused by threadlike worms called nematode of the family filariodea: Ninety percent of infections are caused by wuchereria bancrofti and the remainder by Brugia. The life cycle of these organisms is perceived as epidemiologically distinct from that in human. The major vector of W. bancrofti are mosquitoes of genus culex (in urban and semi-urban area) Anopheles (in rural areas of Africa and elsewhere) and aedes (Island of thee pacific (WHO, 2011).

Objectives of the study

- ❖ To examine the causes of lymphatic filariasis
- ❖ To examine the modes of transmission of lymphatic filariasis

Research questions

- ❖ What are the causes of lymphatic filaiasis?

- ❖ What are the modes of transmission of lymphatic filariasis?

Hypotheses

- ❖ There is no significant difference between the patients' knowledge and their attitude towards the causes of lymphatic filariasis in Emereoke and Okoroete community.
- ❖ There is no significant difference between the patients' socio-economic status and the transmission of lymphatic filariasis in the study area.

Health Sector Model

According to Helman (2008) this theory was developed by a psychologist named Arthur Kleinman in 1980. As based on the premise that looking at any complex society, one can identify three overlapping and interconnected sectors of health care that is the popular sector, the folk sector and the professional sector. Every sector has its own way of explaining and treating ill-health. The model also defines the interaction between the healer and the patient in a therapeutic encounter. The popular sector is the non-professional sector where the disease or ill-health is first recognized and health care activities are initiated. In this sector, all the therapeutic options that people utilize without consulting any professional are involved. They include self-medication, healing and natural care activities, consultation with a person who has experienced the same illness. Here, the main area of the health care is the family and most of the care-givers are women who diagnose most common ailment and treat them with the remedies at hand.

Helman (2012) opined that in this sector, people follow series of guidelines specific to each cultural group and are tied together by kinship, religion, friendship and other social groups. It is made up of informal and unpaid healing relationship. The Folk sector is made up of certain individuals, who specializes in some form of healing that is either sacred or secular. This healer occupies intermediate position between the popular and the professional sector. There are varieties of folk healers found in a society. They include bone setters, tooth extractors, herbalists and spiritual healers. Most folk healers share the basic cultural values and world view of the communities in which they live, including ill health. In societies where ill-health and other forms of misfortunes are the social cause (witchcraft, sorcery and evil eye) or spiritual cause (gods, spirits, ancestral ghost or fate). Sacred folk healers are particularly common. Their approaches on dealing with illness are usually holistic, that is they deal with all the aspect of a patient's life, including the relationship with other people, natural environment and supernatural force as well as any physical and emotional symptoms.

According to Helman, the professional sector is the biomedical sector, which comprises the legally organized health workers. Healing professionals include physicians, para-medics, nurses, mid-wives, occupational therapist and physiotherapists (Guapong, 2011). Other forms of practitioners recognized include herbalists or spiritual healers like Sangomas in South Africa.

Relevance of Health Sector Model theory to this Study

The health sector model was used to explain the care and practice that people with lymphatic filariasis undertake. This was determined by the sector of health care that one chooses, whether the popular, the folk or the professional sector or whether they used two or all the sectors of their self-care practices. This was done based on the perceived causes of the disease and the seriousness or severity of the disease. It was also determined by the perceived knowledge held by both the health specialist and non-specialist about the sickness and health. Each and every patient

will choose the sector that is fit for their condition or category of illness therefore, in order to understand the health seeking behaviour of an individual, we have to understand the social relationship they have and the cultural context in which the disease is being treated.

The Causes of Lymphatic Filariasis

According to a survey carried out by Eberhard and Lammie (2005) on knowledge, attitude and perception (KAP) of lymphatic filariasis, elephantiasis and hydrocoele among residents in an endemic area in Haiti. Questions focused on whether people understood the relationship between infection and disease; recognition of the role mosquitoes plays in transmission; perceived importance of hydrocoele diseases, and willingness of the community to participate in a control programme. Fewer than 50 percent of residents heard of filriasis and only 6 percent of those surveys knew that mosquitoes transmitted it. Prevalence of lymphangitis was significantly higher in males compared to that of females. Elephantiasis of limbs was the predominant chronic manifestation among females. Majority of lymphoedema and elephantiasis cases, in either sex had a lower limb involvement. The prevalence of lymphangitis was significantly higher in non-infected individuals. However, the prevalence of elephantiasis was significantly higher in microfilaria negative individual compared to infected persons. In adults above 20 years, the most common chronic manifestations were hydrocoele, lymphoedema and elephantiasis (Pani, 2009).

According to WHO (2012), in contrast, all persons with clinical conditions of hydrocoele and elephantiasis were thought to be caused by trauma (60 percent) or trapped (30 percent) while elephantiasis was thought to be caused by walking bare foot on soil or water (37 percent) or by use of chemical powder that has been sprinkled on the ground. Hydrocoele and elephantiasis ranked second to acquired immune deficiency syndrome as perceived health problem in the community. Findings showed that the prevalence of lymphoedema was significantly greater among females than males. In Pondicherry, the disease rate in male was higher than the female. Srividya (2008) studied the dynamic perception of the development of lymphatic disease in which it was assumed that individual progressed from infected to asymptomatic (without any symptom) microfilarial carrier and then become microfilariae negative as lymphatic pathology developed. Rauyajin, Kamthomwachara, and Yablo (2006) examined the contribution of socio-cultural and behavioural factors in mosquito-borne lymphatic filariasis transmission in southern Thailand. The factors examined include traditional knowledge and cultural beliefs concerning etiology, transmission and symptomatology, perceived susceptibility and severity, social stigma, social support in disease prevention and control; and behavioural risk factors in illness behaviours. Result showed that poor knowledge and indigenous tradition belief system contributed to high risk behaviour and appropriate preventive and treatment behaviour.

Ramaiah (2006) carried out a similar study in a rural area of south India. The aim was to identify the gaps in people's knowledge concerning lymphatic filariasis. The study showed that only 9 percent of those with and 20 percent of those without the disease knew that filariasis is caused by (or) transmitted through mosquito bite. The rest attributed it to many other causes. It was concluded that people's knowledge about transmission and prevention of filariasis was very poor and the misconception and ignorance adversely affected personal protective measure against mosquito bites and use of appropriate treatment (Ramaiah, et. al., 2014).

Symptoms

Lymphatic filariasis infection involves asymptomatic, acute and chronic conditions. Majority of infections are asymptomatic, showing no external sign of infection while contributing to transmission of the parasite. These asymptomatic infections will cause damage to the lymphatic system and the kidneys and alter the body immune system. When lymphatic filariasis develops into chronic condition, it leads to lymphoedema (tissue swelling) or (skin/tissue) thickening of limbs and hydrocele (scrotal swelling) involvement of breasts and genital organ is common. Such body deformities often lead to social stigma and sub-normal mental health, loss of income-earning opportunities and increased medical expense for patients and their caretakers. The socio-economic burdens of isolation and poverty are immense. Acute episodes of local inflammation involving skin, lymph nodes and lymphatic vessels often accompany chronic lymphoedema or elephantiasis. Most symptoms are as the result of secondary bacteria skin infection where normal defenses have been partially lost due to underlying lymphatic damage. The acute attack debilitating may last for weeks and are the primary cause of lost wages among people suffering lymphatic.

Pattern of the Disease

According to WHO (2012) the clinical manifestation of the disease is described in two types namely: acute and chronic. Acute filarial disease includes filarial fever, epididymo-orchitis, lymphangitis and adenolymphangitis (ADL). Chronic diseases include hydrocoele, and lymphoedema that can be reversible on elevation of the limb. The other chronic manifestation is elephantiasis which is irreversible with oedema of the limb and skin thickening, papillary and nodular growth (WHO, 2012). Though all the manifestations can occur in males, hydrocele appears to be more prevalent among males. Females can be affected with all the manifestation except hydrocele.

Mode of transmission on lymphatic filariasis

The adult worms live in the lymphatic vessels in the human body and produce embryos called microfilariae, which circulate in the bloodstream and are picked up by biting mosquitoes. After developing for several days in the mosquito, infective larvae enter the skin when the mosquito feeds, migrate to the lymph nodes and develop into adult worms in the lymph vessels. The chance of an infection being established from a single bite by an infected mosquito is very low. The adult worms can live for many years, giving rise to large numbers of microfilariae in the blood.

Bancroftian filariasis occurs in two forms. In the most common form, the microfilariae circulate in the blood at night, whereas in the second form they occur continuously in the blood but increase in number during the day. The vectors of the first form are *Culex quinquefasciatus* and certain *Anopheles* species (which bite at night). The second form is found in the South Pacific and in some rural areas in south-east Asia where the main vectors are daytime-biting mosquitos such as certain *Aedes* species. In rural areas, bancroftian filariasis is mainly transmitted by some *Anopheles* species that are also malaria vectors, and by *Aedes*. Urban bancroftian filariasis typically occurs in slums in developing countries.

It is transmitted by *Culex quinquefasciatus*, which breeds in polluted water in drains, cesspits and ditches. Brugian filariasis, caused by *B. malayi*, also occurs in two forms, of which the most common is transmitted at night and the other during both day and night. The first form occurs in

rural populations in rice-growing areas in Asia. It is transmitted by night-biting Anopheles species and by Mansonia species which breed in swamps and ponds with aquatic vegetation. The second form is mainly a parasite of monkeys living in swamps. Mansonia species breeding in swampy forests in Indonesia and Malaysia may infect people living nearby.

WHO (2020) Lymphatic filariasis is transmitted by different types of mosquitoes for example by the Culex mosquito, widespread across urban and semi-urban areas, Anopheles, mainly found in rural areas, and Aedes, mainly in endemic islands in the Pacific. Lymphatic filariasis is caused by infection with parasites classified as nematodes (roundworms) of the family Filariodidea. There are 3 types of these thread-like filarial worms:

- ❖ Wuchereria bancrofti, which is responsible for 90% of the cases
- ❖ Brugia malayi, which causes most of the remainder of the cases
- ❖ Brugia timori, which also causes the disease.

Adult worms live in the lymphatic vessels and disrupt the normal function of the lymphatic system. The worms can live for approximately 6–8 years and, during their life time, produce millions of microfilariae (immature larvae) that circulate in the blood. Mosquitoes are infected with microfilariae by ingesting blood when biting an infected host. Microfilariae mature into infective larvae within the mosquito. When infected mosquitoes bite people, mature parasite larvae are deposited on the skin from where they can enter the body. The larvae then migrate to the lymphatic vessels where they develop into adult worms, thus continuing a cycle of transmission.

Method

Research Design

The research design adopted for the study was the descriptive survey design which aimed at assessing the causes of lymphatic filariasis on the health of men and women in Emeroke and Okorote communities of Eastern Obolo and attitude of people towards this disease.

Area of the Study

The area of the study is Eastern Obolo with its headquarters at Okoroete.

Population for the Study

The population of Eastern Obolo according to National Population Commission (2006) is 75,000; males are 36,600 and females are 38,400 representing 48.8 percent males and 51.2 percent females respectively. The target population for this study is all adults of both sexes of aged 20 years and above in Emeroke and Okoroete community of Eastern Obolo. Akwa Ibom State, Nigeria.

Sampling Technique

A stratified random sampling technique was used to select the subset of population A and population B which represented the two communities in Eastern Obolo Local Government Area. A total of one hundred and twenty (120) respondents was the sample size for the study.

Instrument for Data Collection

The main instrument used for data collection was the structured questionnaire titled Strategies Causes and MODES of Transmission of Lymphatic Filariasis Questionnaire (SCMTLFQ).

Reliability of the Instrument

The suitability and stability of the instrument was determined by administering a 10 researcher-developed questionnaire once to 20 participants who were not part of the study. Kuder Richardson Formula 20 was used to calculate the coefficient value which was 0.80 indicating that the instrument was good for the study.

Validity of the Research Instruments

Validity of the instrument was done by some lecturers in the Department of Educational Foundation in University of Uyo, Akwa Ibom State

Data Collection

Data were collected from the adult men and women in the community who attended the clinic on daily visit to the hospital.

Data Analysis

Data were collated, coded, entered and analyzed using statistical package for social science (SPSS version 2.0). SPSS was used because it was fast and flexible and provided more accurate analysis resulting in dependable conclusion.

Research Question One

What are the causes of lymphatic filariasis?

i. Knowledge of Lymphatic Filariasis in the Community

The community had a good knowledge of lymphatic filariasis and had examined for the two chronic manifestation of the disease. The Okpuk Ukot for elephantiasis meaning big leg, and Okpuk Edim for hydrocele meaning big scrotum.

ii. Knowledge of Aetiology

The respondents were asked to list out the cause of lymphatic filariasis, 8 of the causes were listed. The most frequently mentioned cause was walking barefooted during rain 20 (16.7%) followed by stepping on charm 30 (25.0%), cold 6 (5%), witchcraft 34 (28.3%), poor environment 10 (8.2%) contact with a victim 3 (2.5%) mosquito 12 (10%) and the other 5 (4.2%).

Table 1: Causes of Lymphatic Filariasis

Variables	Frequency	Percentage
Walking barefooted during rain	20	16.7%
Stepping on charm	30	25.0%
Cold	6	5%
Witchcraft	34	28.3%
Poor Environment	10	8.3%
Contact with a victim	3	2.5%
Mosquito	12	10%
Other	5	4.2%
Total	120	100%

Research Question Two

What are the modes of transmission of lymphatic filariasis in the study area?

Table 2: Showing means of transmission of lymphatic filariasis

Variables	Frequency	Percentage
Walking barefooted during rain	10	8.3%
Mosquito bite	20	16.7%
Witchcraft	24	20%
Stepping on charm	48	40%
Other	18	15%
Total	120	100%

Description:

One hundred and twenty respondents answered this questionnaire as shown in table 4.5. Majority of the respondents did not know how lymphatic filariasis is transmitted, the highest percentage of respondents 48 (40%) said stepping on charm transmits the disease, followed by witchcraft 24 (20%) mosquito bite 20 (16.7%) walking barefooted during rain 10 (8.3%) and other routes

which include sitting on the place where infected persons have been sitting, body contact and eating with infected person 18 (15%).

Discussion of the findings

Analysis of findings indicated that in research question one, greater percentage of the respondents did not have basic knowledge on the causes of lymphatic filariasis. Highest percentage of respondents based their notion on witchcraft 34 (28.3%) followed by stepping on charm 30 (25.0%) walking barefooted during rain 20 (16.7%) and mosquito which is the main cause of lymphatic filariasis were mentioned by few which made up 12 (10%) in whole study .poor environment 10(8.2%), contact with a victim 3 (2.5%) mosquitoes bites 12(10%) and others 5(4.2 %)

Research questions two showed that higher percentage of respondents were not aware of the means of transmission of lymphatic filariasis. Highest percentage 48(40%) responded that stepping on charm transmitted the diseases, followed by witchcraft 24 (20%), mosquito bite 20 (16.7%) walking barefooted during rain 10 (3.3%) while other routes mentioned were 18 (15%) which were body contact, sitting on the place where infected person have seated and eating with infected persons.

Conclusion

This study showed that majority of the respondents were ignorant about the cause and mode of transmission of lymphatic filariasis. Majority use of traditional drug in management of lymphatic filariasis and paid little or no attention to the modern drug. In conclusion, very few respondents agreed that albendazole were effective in the treatment of lymphatic filariasis while large proportion did not agree.

Recommendations

Based on the findings of this study, the following were recommended:

1. There is a need for advocacy including awareness and sensitization about the disease including the causes and management at the community and national level.
2. The health sector should also commence a lymphatic filariasis eliminating programme through mass chemotherapy of Albendazole using a community directed treated strategy. The massive willingness of the people to take Albendazole for the control of lymphatic filariasis should form a firm basis for commencement of such programme.

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