A survey of knowledge, attitudes and perceptions (KAPs) was conducted among twenty five patients with different symptoms of lymphatic filariasis (LF) in three endemic villages in Kano State, Nigeria. A pretested questionnaire was used in collecting the KAPs information from the patients. Out of the twenty five patients, twenty two (22) were males and three females. All the male respondents were farmers while the three females claimed to be full time housewives. The ages of the respondents ranged between 35-70 years. Out of the six questions on KAPs presented to the respondents, they responded to three of them. On how the disease is transmitted, one person believed that the disease is transmitted through inheritance, 8(32%) claimed they don’t know and 13(52%) saw it as an act of God. 3(12%) of the respondents thought that hydrocoele was a sign of lymphatic filariasis while 6(24%) felt elephantiasis is a sign of the disease. Only 3(12%) of the respondents had heard that mosquito is responsible for the spread of the disease and it was through the radio. All the respondents expressed the desire to see a control programme put in place and would be prepared to support it. It is recommended that peoples' KAPs about the disease especially among the infected persons be taken into consideration while planning and executing a control programme.

**Key words:** Lymphatic filariasis, hydrocoele, elephantiasis, respondents, endemic, community

**INTRODUCTION**

Lymphatic filariasis is a filarial infection caused by nematodes *Wuchereria bancrofti*, *Brugia malayi* or *timori* and is transmitted by species of mosquitoes of the genera *Aedes*, *Anopheles*, *Culex* and *Mansonia* (Nissen et al., 2002). The disease is endemic in seven countries in the Americas, four in Eastern Mediterranean region, eight in South East Asia and eight in Western Pacific region, in addition to thirty nine countries within the *W. bancrofti* areas of sub-Saharan Africa (WHO,1994). In the 39 countries where LF occurs in Sub-Saharan Africa, the greatest numbers of people at risk of infection live in Nigeria, followed by Democratic Republic of Congo, Tanzania, Ethiopia, and Kenya (Hotez and Kamath, 2009). Recent estimates suggest that 120 million people are infected worldwide; 107 million people are infected with *W. bancrofti* and 13 million with *B. malayi* (WHO, 1994). Filaria caused by *W. bancrofti*, *B. malayi* or *timori* is considered a major obstacle to economic development in endemic countries and in 1995 it was identified as a second leading cause of permanent and long-term disability (WHO, 1995). The estimated burden for the 1995 is four million Daily Adjusted Life Years (DALYS) - three million for men and one million for women (WHO, 1995). LF is also associated with huge economic losses, impairing economic activity up to 88% (Gyapong et al., 1996), and causes almost US$1 billion in annual losses, mostly resulting from the disability linked to hydrocoele in men (Haddix and Kesler, 2000; Mathieu et al., 2008). The acute symptom of filariasis is adenolymphangitis (filarial fever) which presents as recurrent attacks of pain and inflammation of lymph nodes and ducts often accompanied by fever and vomiting (WHO, 1997). The
chronic symptoms include; lymphoedema that progresses into elephantiasis that presents as gross enlargement of the limbs (mostly legs) affects 15 million patients, and hydrocele which presents as chronic swelling of the scrotum occurs in about 27 million people (WHO, 1997). Based on global estimates 12.5% of LF infections are estimated to result in lymphoedema and 20.8% in hydrocele (Ottesen et al., 2008), there are approximately 5 million cases of lymphoedema and 8 million cases of hydrocele in Sub-Saharan Africa. The economic burden of the disease mostly results from the chronic stage. Therefore, the disease causes loss of employment opportunities, stigmatization and reduction (WHO, 1997).

There is now a global effort to eliminate LF by the year 2020 through mass treatment of affected populations, vector control and case management (morbidity control). The mass treatment is through the administration of a combination of albendazole and ivermectin to the entire adult population of endemic communities with a prevalence of ≥ 1%. This is aimed at killing the microfilariae in infected persons, thereby helping to break transmission in endemic communities. The vector control component is also geared towards reducing transmission by controlling the vector population in the endemic communities. The case management aspect is purely to alleviate the suffering of persons with particularly chronic symptoms of hydrocele and elephantiasis through hydrocelectomy and hygienic practices/exercises respectively.

The success of any elimination programme depends largely on the knowledge, attitudes and perceptions of the affected populations about the disease. The present study which is part of a larger work was carried out to determine the LF related KAPs among infected persons in three endemic communities in Kano State, Nigeria with a combined lymphatic filariasis prevalence of 1.6%. It is hoped that this baseline information will assist in executing the current national LF elimination programme in these three communities.

**MATERIALS AND METHODS**

**The Study Area**

Kano State is located in the northwestern Nigeria. The State is situated between latitudes and longitudes North of the Equator and East of Greenwich respectively which is determined as follows: North 100° 37', North 100° 33', East 70° 34' and 90° 29' respectively. The state is bordered in the east by Jigawa State, on the west by Katsina State, to the south by Kaduna and Bauchi States. It covers a total area of 20,760sqKm with 1,754,200 hectares of arable land and 75,000 hectares of forest vegetation and grazing lands. The topography is generally flat. The main river is the Kano River on which the second largest dam, Tiga was built. Minor rivers include Challawa, Watari Tomas and Kafin-Chiri. It has an estimated population of about 9,383,322 million people.

The state is situated on the Sahel savannah region of West Africa and its climatic condition is tropical having rainy and dry seasons. The length of the wet season is about 100-150 days or five months (from mid-May to mid-October of each year). Rainfall pattern is unimodal with an average rainfall of 600mm. The dry season lasts for about seven months (from mid-October to mid-May of each year). However, there is the dominance of North Easterly winds, the Harmattan which is cold and dry that extends from November to February of each year. The average maximum and minimum temperatures fluctuate throughout the year. The annual mean ranges from 30°C to 35°C. High temperatures are recorded during March to May annually while the lowest 13°C (sometimes it goes down as low as 10°C) is from December to January.

**Method of Data Collection**

Information on the knowledge, attitudes and perceptions of the people with acute/chronic symptoms of lymphatic filariasis in the three endemic villages with a combined prevalence of 1.6% was investigated. The subjects for the survey were persons with acute/chronic symptoms of lymphatic filariasis in earlier detailed epidemiological study from three villages. The instrument used for the collection of data was a pretested questionnaire designed and validated by my supervisory team and a medical sociologist. The questionnaire consisted of two parts, the first sought the demographic information of the respondents while the second part comprising of eighteen questions was concerned with the finding out about the KAPs of the respondents.

The questions relating to KAPs were mostly of the closed ended type that required a yes or no response and even where the questions were open ended type the respondent was required to provide brief answers. The questions were designed with some modifications based on the work of Eberhard et al., (1996).

**Data Analysis**

The data generated was analyzed using simple frequencies and percentages, and then presented in tabular forms.

**Ethical Clearance**

Permission to undertake the work was obtained from the Kano State Ministry for Local Government. The purpose of the research work was clearly explained to the local government officials, village and ward heads in the three villages. Informed consent of each of the selected infected person was obtained before the data was collected.

**RESULTS**

The KAPs questionnaire was administered on a total of
Table 1. Frequency of symptoms manifested by the respondents

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADL</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>Hydrocoele</td>
<td>8</td>
<td>32</td>
</tr>
<tr>
<td>limb elephantiasis</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>ADL &amp; Limb elephantiasis</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>ADL &amp; Hydrocoele</td>
<td>8</td>
<td>32</td>
</tr>
<tr>
<td>hydrocoele &amp; Limb elephantiasis</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>ADL + Hydrocoele + Limb elephantiasis</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>25</td>
<td>100</td>
</tr>
</tbody>
</table>

ADL = Adenolymphangitis

Table 2. Frequency of the responses of the respondents on how people get lymphatic filariasis

<table>
<thead>
<tr>
<th>Options</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Act of God</td>
<td>13</td>
<td>52</td>
</tr>
<tr>
<td>Bite of an insect</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Witch Craft</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Inheritance</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Do not know</td>
<td>8</td>
<td>32</td>
</tr>
<tr>
<td>No response</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>25</td>
<td>100</td>
</tr>
</tbody>
</table>

twenty five persons with various symptoms of the disease (Table 1) in the three villages. Nine (9) were administered in Gunduwa, four (4) in Buda and twelve (12) in Marke. Of this number, twenty two (22) were males and three females. All the male respondents were farmers while the three females claimed to be full time housewives. The ages of the respondents ranged between 35-70 years. Of the six options presented to the respondents on how people get lymphatic filariasis, they opted for only three of them (Table 2). One person believed that the disease is transmitted through inheritance, 8(32%) claimed they don't know and 13(52%) said is just an act of God.

Only 3(12%) of the respondents thought that hydrocoele was a sign of lymphatic filariasis while 6(24%) felt elephantiasis as a sign of the disease. Only 3(12%) of the respondents had heard that mosquitoes were responsible for the spread of the disease and it was through the radio. All the respondents expressed the desire to see a control programme put in place and would be prepared to cooperate and support the programme with their time and resources. All the respondents were optimistic that the people in the community will support the programme. Only 2(9%) of the male respondents claimed that they found it difficult to get a married partner due to hydrocoele. Ten (40%) of the respondents said that they were prepared to give out their daughters in marriage to a person with hydrocoele or elephantiasis.

DISCUSSION

None of the respondent’s knowledge on the causes of lymphatic filariasis was in line with the scientific explanation of the disease. This is not surprising, as most of the respondents do not have western education. In addition, the deep-rooted belief by an average Hausa Muslim in this part of the country that things are caused by God may account for the lack of understanding of the disease process. Perhaps that is why many of the respondents did not share any reservation in giving out their daughters to individuals afflicted with either hydrocoele or elephantiasis. Equally, none of the respondents with either hydrocoele or elephantiasis experienced problem in getting married partners. A point of interest is that all the respondents were prepared to cooperate and support control programmes and all of them strongly feel members of their community will be most willing to support it. Surprisingly all the respondents did not see hydrocoele or elephantiasis as a most disturbing health problem in their community. This is perhaps due to low prevalence of the disease in the three villages. Therefore, a lot of advocacy is required in this direction whenever a control programme is mounted. This is further explained by the fact that only 3(12%) of the respondents claimed to have heard that the disease is spread by mosquito.

Conclusion

KAPs among infected individuals revealed that majority of them (88%) were not aware of how the disease is being transmitted. However, all of them were prepared to cooperate and support a control programme for the disease. The respondents claimed that there was low level
of stigmatization against them as only 2(9%) found it difficult to get married partners due to hydrocoele.

**Competing Interest**

The authors have no conflicts of interest.

**Authors’ Contributions**

MMD, HIN, RISA and ISN conceived and design the work. MMD drafted the manuscript while HIN, RISA and ISN proof read the manuscript. MMD conducted the data collection. All the authors read and approved the final manuscript.

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