Field Report

Awareness and Treatment Methods of Ocular Onchocerciasis among Rural Dwellers in Amuro Community, Imo State, Nigeria

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Abstract

Background: Despite treatment and preventive interventions by international organisations and governments, ocular onchocerciasis still persists in endemic communities in Nigeria. This may be as a result of low awareness of the disease that leads to misconceptions held by large proportion of people about ocular onchocerciasis causation, transmission, treatment and prevention. This study therefore investigated ocular onchocerciasis awareness and treatment methods among rural dwellers in Amuro community.
Methods: Survey research design was adopted for this study. Questionnaires and in-depth interviews were the data collection instruments. Using Kish formula for a single proportion, 321 respondents were derived as the study sample size. For the qualitative data of the study, a total of six (6) in-depth interviews were conducted. Purposive and convenience sampling techniques were used to identify and select the actual study respondents. The study quantitative data were analysed using descriptive and inferential statistics. Thematic analysis method was used to analyse the qualitative data. Ethical clearance was gotten from Imo State Ministry of Health. Furthermore, informed consent was obtained from individuals at their place of residence.
Results: It was found among others that while the use of traditional medicine/herbs is high in Amuro community, the higher the peoples' level of education, the more they are likely to use ivermectin to prevent the disease.
Conclusions: Since educational level affect awareness of ocular onchocerciasis among rural dwellers, government and well-meaning individuals should encourage rural dwellers to acquire education by building more schools in Amuro community and making education free and compulsory.
Keywords: Ocular Onchocerciasis, Treatment, Awareness, Amuro

Introduction

Onchocerca volvulus is a chronic parasitic disease caused by spirurid nematode from the superfamily filarioidea. Blackfly simulium of the family simulidae is the only vector known that is responsible for transmitting the disease to human[1]. Onchocerciasis also known as river blindness is primarily a disease of the rural poor; affecting communities along flowing streams and rivers with symptoms particularly disturbing and incapacitating with prevalence often associated with long-term exposure to repeated bites by infected vectors. The general symptom of the disease includes itchy skin, rashes, skin nodules, and vision impairment. The eye symptoms include decreased vision, eye redness, and eye pain, light sensitivity and clouding of the normally clear front surface of the eye (the cornea), glaucoma, optic neuritis, punctuate keratitis, sclerosing keratitis, optic nerve atrophy and so on.

Globally, after trachoma, river blindness is the second leading cause of blindness and the fourth leading cause of preventable blindness [2]. In 2018, 218 million people in the world were already infected with the disease and in need of treatment [3]; 14.6 million of the infected people already had skin disease and 1.15 million had vision loss [4.] Nigeria accounts for the largest number of onchocerciasis infected persons in the world [7]. It is estimated that about 7 to 10 million Nigerians are infected with Onchocerciasis, with about 40 million at risk of the disease [8], and 120,000 cases of onchocerciasis-related blindness, with many suffering from disabling complications of the disease [4]. In a study on the prevalence and distribution of river blindness in three ecological zones (Cross River, Taraba and Kogi) the disease was the most prevalent cause of blindness; accounting for over 30 % of blindness in the research areas [9].

World Health Organisation recommended ivermectin (Mectizan) as a safe and effective treatment of onchocerciasis [2]. The community treatment, usually on an annual basis, continues for 10-15 years (which is the life cycle of the adult worm) to ensure that all the microfilariae in circulation and being produced by the adult worm are eliminated. Treatment with higher than recommended doses has an increased occurrence of side effects and may even be harmful [4]. Though ivermectin does not eliminate the macrofilariae, it does sterilize the adult female worms. Treatment with ivermectin can cause mild symptoms associated with death of the microfilariae,

such as increase itching, but there is no worsening of eye symptoms. Severe adverse reactions to ivermectin in the absence of *Loa loa* co-infection are rare.

Despite treatment and preventive interventions by international organisations and governments, a previous study had shown that ocular onchocerciasis still persist in endemic communities in Nigeria. This may be as a result of low awareness of the disease that leads to misconceptions held by large proportion of people in the disease endemic communities about onchocerciasis causation, transmission, treatment, prevention and risks [10]. This low awareness may be the reason why complete treatment and elimination of the disease has not been successful in Nigeria. It is in the light of the foregoing that this study investigated ocular onchocerciasis awareness and treatment methods among rural dwellers in Amuro community, Imo State, Nigeria.

Methodology

Research Design

Survey research design was adopted for this study. A sample was drawn from the study population and inferences made about the population; hence the unit of analysis is at the household level.

Study Area

The study was conducted in Amuro community. The area is a typical rainforest region of south-eastern Nigeria and are drained by fast flowing, black fly infested rivers which drain into Imo river; the breeding site of the vector (black fly) which repeatedly bite the residents and infect them with microfilariae that causes onchocerciasis.

Study population

The study population comprises of all male and female residence of Amuro community that are 10years and above and has stayed in the community for 10years and above.

Sample size

The sample size of the study comprise of 321 respondents. The sample size for the quantitative data was determined using the Leslie Kish formula for a single proportion [11], while 37% prevalence rate was adopted based on the result of a survey conducted in Okigwe Local Government Area of Imo State on the prevalence of onchocerciasis [12]. For the qualitative data of the study, a total of six (6) in-depth interviews were conducted. It will include 1 community Head, 1 Community Health Centre Worker,

4 adult community members (2 Male and 2 Females).

Sampling technique

A multi stage sampling technique was adopted for this study. First, based on hydrological, topographic, entomological factors [13] and epidemiological results [14] of communities along Imo River Basin area of South-eastern Nigeria, Amuro community was selected purposively from Okigwe Local Government Area, Imo State, Nigeria. Secondly, purposive sampling method will be used to select members of the community aged 10years and above. This is because it is expected that all members of the community in that age bracket know about onchocerciasis and is expected to have started taking the preventive treatment that is distributed to only people that are aged 10years and above. Finally, convenience random sampling method was used to select the actual respondents. This is to allow only those that are available and willing to be included in the research to participate.

Instruments of data collection

Structured questionnaires and in-depth interviews were used for data collection.

Data analysis

The quantitative part of the study was processed using the Statistical Package for Social Sciences (SPSS) version 20. The data was analysed using descriptive and inferential statistics. Thematic analysis method was used to analyse the qualitative data which was transcribed verbatim and translated. Deductive method was adopted to seek themes from the interviews transcripts which was identified based on the research objective.

Ethical considerations

Ethical clearance was sought and gotten from Imo State Ministry of Health. Also, advocacy visits to community leader, village heads and head of community health centre in the research area was carried out. This is to explain the objective of the study to them and to elicit their support. Furthermore, informed consent was obtained from individuals in various households and other stakeholders who took part of the survey before including them in the study.

Results

Table 1 shows that 266 (83.0%) of the respondents representing majority of the sample size answered yes while 55 (17.0%) said no. The implication is that a majority of

the respondents have heard of ocular onchocerciasis before. This high level of awareness may not be unconnected with the level of awareness creation, distribution of ivermectin by government and donor agencies to onchocerciasis endemic communities. One IDI respondent also affirmed this fact. According to her, *"I have heard about it. There was a time they said that some people brought drugs for eye problem though I did not go"* [Female, Farmer, Aged 54]. This was also corroborated by another participant who said: *"Yes I know it. We call it "Isi anyaocha"* [Male, Farmer, Aged 66]. The respondent demonstrates his knowledge of the diseases by mentioning its vernacular.

Table 2 shows that a majority 164 (51.1%) of the respondents indicated that it is through blackfly bites, while only 8 (2.4%) said the cause is poor dietary habits.

Table 3 indicates that almost half of the respondents 130 (40.6%) said the disease cause infected persons visual impairment while 3 (1.0%) respondents said it is light sensivitivity. Others identified severe itching, cloudiness, eye redness and eye pain. This was corroborated in IDI data. In the words of one of the respondents: *"Sometimes it causes eye itching with white patches"* [Female, Farmer, Aged 73]. Another respondent said: *"I know it because any person it bites it causes the person's eye redness and if that person did not get treatment on time, that person may lead to visual impairment later"* [Male, Herbalist, Aged 62]. The respondent tried to link the vector (black fly) that transmits the disease to human and the disease symptoms.

The wide ranging symptoms of ocular onchocerciasis identified by the respondents suggest that the rural dwellers are aware of the symptoms of the disease.

Table 4 shows that almost half of the respondents 211 (65.8%) rated high ocular onchocerciasis awareness level in their community while only 3 (.8%) respondents said it is low. This implies that many of the people are aware of ocular onchocerciasis in their community.

To determine whether there is a significant relationship between respondents' educational level and awareness of ocular onchocerciasis among rural dwellers, a chi-square test was conducted. The test revealed that the P-value = .000, X2 = 51.647 and df. = 3. This means that there is a statistical significant relationship between respondents' level of education and ocular

onchocerciasis awareness among rural dwellers in Amuro community.

Data from figure 1 shows that majority of the study respondents (46%) indicated that best method for treating ocular onchocerciasis is through orthodox means, while only few of the respondents (17%) noted that it is through spiritual means. The data also show that over a quarter of the study respondents believe that the best method of treating ocular onchocerciasis is through traditional means.

Furthermore, to determine the direction and relationship between respondents' onchocerciasis awareness level and use of Ivermectin to prevent the disease, Spearman's rho correlation test was conducted. The test showed a positive statistical significant correlation (*P*-value = .000, *r* = .155) between respondents' onchocerciasis awareness level and use of Ivermectin to prevent the disease in Amuro community of Okigwe LGA. This means that the higher the respondents' awareness level of ocular oncocerciasis, the more they are likely to use of Ivermectin to prevent the disease.

Discussion

The study showed that 83% of the respondents have heard of ocular onchocerciasis. However, only few of the respondents were aware that black fly is the vector that transmits the disease into humans. This indicates a high level of awareness of ocular onchocerciasis among the natives, but without corresponding knowledge of the correlation between the disease and black flies in the study area. Data from the qualitative component of the study also support the findings of the quantitative data. This is also supported by findings of previous studies conducted on level of awareness of locals on onchocerciasis in Achiagu, Adani, Aguobuowa and Achi communities in Enugu State, Nigeria. The authors revealed that natives were aware of the disease and the blackflies but were not aware of the association between them [15].

A significant statistical relationship between educational level of rural dwellers and awareness of ocular onchocerciasis was found in the present study. The study showed a statistical significant correlation (*P*-value = .000) between educational level of rural dwellers and awareness about ocular onchocerciasis. This means that educational

level of rural dwellers significantly impact on their level of awareness of the disease.

It was found that while 46% of the respondents use orthodox medical means to manage or treat ocular onchocerciasis, 37% of the respondents indicated that they use traditional means. Also, 17% of the respondents believe that ocular onchocerciasis can be treated using spiritual means. This shows that in the study area, many of the people believe that the disease can be treated using either traditional medicine or spiritual means. In addition, a statistically positive significant correlation (*P*-value = .000, *r* = .155) between respondents' onchocerciasis awareness level and use of ivermectin to prevent the disease in Amuro community was found. This means that the higher the respondents' awareness level of ocular oncocerciasis, the more they are likely to use ivermectin to prevent the disease.

Conclusion

The study provided insight into ocular onchocerciasis awareness level and treatment methods adopted among rural dwellers in Amuro community. While the use of traditional medicine/herbs was high among rural dwellers in Amuro community, this study has clearly shown that the higher the peoples' level of education, the more they are likely to use ivermectin to prevent the disease. Therefore, since educational level affect awareness of ocular onchocerciasis among rural dwellers, government and well-meaning individuals should encourage rural dwellers to acquire education by building more schools in Amuro community and making education free and compulsory.

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Tables

Table 1: Respondents views on whether they have heard of ocular onchocerciasis

Response	Frequency	% Frequency
Yes	**266**	**83**
No	**55**	**17**
Total	**321**	**100**

Table 2: Distribution of respondents by ways of contracting ocular onchocerciasis

Response	Frequency	Percentage (%)
Black fly bites	164	51.1
Contact with infected person	43	13.4
Punishment from the gods	106	33.1
Poor dietary habits	8	2.4
Total	321	100.0

Table 3: Distributions of respondents by ways of identifying ocular onchocerciasis victims

Response	Frequency	Percentage (%)
Severe itching	74	23.1
Impaired sight	130	40.6
Eye redness	45	13.9

Eye pain	23	7.0
Light sensitivity	3	1.0
Cloudiness	46	14.4
Total	321	100.0

Table 4: Rating of awareness of ocular onchocerciasis in Amuro Community?

Response	Frequency	Percentage (%)
Very high	100	31.2
High	211	65.8
Low	3	.8
Very low	7	2.2
Total	321	100.0

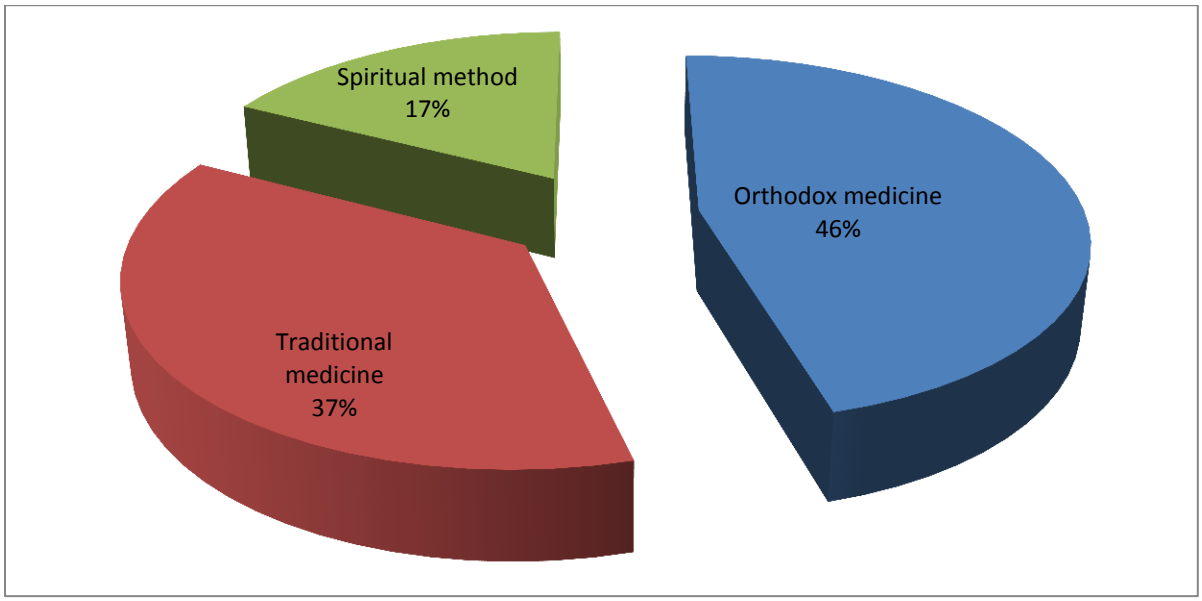

Figure 1: Distribution of respondents by best method of treating ocular onchocerciasis among rural dwellers in Amuro Community