

Onchocerciasis: Perception and status of community members in non-ivermectin coverage areas of Ogun State, Nigeria.

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Abstract: With the global focus towards elimination of onchocerciasis especially in endemic countries like Nigeria, a study to determine the status of onchocerciasis and knowledge of people towards eliminating onchocerciasis was conducted in six riverine communities, namely Eyinwa, Aiyepe and Okun Owa in Odogbolu Local Government Area (LGA), and Akaka, Ilara and Orile-Oko in Remo Local Government Area of Ogun State, Nigeria. Utilizing the rapid epidemiological mapping for onchocerciasis (REMO) tool, 420 consented participants were physically examined for nodules and questionnaire administered to them to obtain information on knowledge and perception on the disease. Data obtained were analysed using SPSS version 16 into percentile and assessment of variables for significant relationships. The results showed a nodular rate of 17% and 30% in participants for the two LGAs. Most respondents (69%) and (87%) the two LGAs had knowledge of the disease. However, 50% respondents from Odogbolu, and 54% from Remo reported itching as the major symptom. Assessing the use of ivermectin as drug to control the spread of the disease, 72% of respondents in Odogbolu and 49% in Remo North are of the opinion that ivermectin could reduce transmission, howbeit 26% and 23% believes that control could be possible through good hygiene. The need for Government and health agencies to embark on massive health education about the disease is advocated so as to eliminate the negative effect of the disease with infected individuals.

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Introduction

Onchocerciasis, commonly called river blindness, is a parasitic disease of public health importance in endemic parts of the world, especially sub-Saharan, Africa where more than 90% of all cases occur (Adeleke *et al.*, 2010). It is caused by nematode worms, *Onchocerca volvulus* which mates and produce tiny juvenile worms that migrate throughout the skin and eyes, causing the various symptoms of the disease (Opoku 2000, Sam-Wobo *et al.*, 2012).

The disease is transmitted by a hematophagous vector called black fly of the genus *Simulium* (Benton *et al.*, 2002). This fly breeds in rapidly flowing streams and rivers, and thus the name river blindness. The most severe consequences of onchocerciasis is blindness, severe itching, impaired vision, physical scars from constant scratching, depigmentation and thickening of the skin (WHO 1995).

It is basically a rural and semi-urban disease often associated with long-term exposure to infection. It affects communities along fast-flowing rivers causing desertification of arable farmland, low yield in agricultural productivity and ultimately impacting on the socio-economic development of people concerned (Edungbola and Asaolu, 1984, Abiose, 1998; WHO, 1995).

Nigeria has been reported to have the highest incidence of onchocerciasis infection accounting for about 40% reported cases globally (Anosike *et al.*, 1994, WHO 1995; Opara *et al.*, 2008, Ojurongbe *et al.*, 2015). Distribution of the disease in Nigeria cuts across communities with precambrian rocks embedded in their river systems. With the long flight range of the vector ranging between 56km-79km (Thompson 1976), and human migration factor favoring the spread of infectious diseases (Nwoke

2015, Surakat et al, 2016); there is the possibility that some communities previously mapped holo-endemic may be harboring the disease. In considering the onchocerciasis elimination effort by World Health Organization, it is important to reaffirm disease status and assess the knowledge, and perception of community members in non-ivermectin treatment areas with a view to providing information for further intervention measures by health intervention agencies. This study reports the status of onchocerciasis using the REMO tool, and perception of community members to the disease in Odogbolu and Remo North Local Government Areas of Ogun State.

Materials And Methods

Study area

The study was conducted in six riverine communities, namely Eyinwa (latitude 06.7500556, longitude), Aiyepe (latitude 06.8339980, longitude 03.7534476) and Okun Owa (latitude 06. 8606899, longitude 03. 8319992) communities in Odogbolu LGA, and Akaka (latitude 06.9642843, longitude 03.7212467), Ilara (latitude 06.9317909, longitude 03.7269992) and Orile-Oko (latitude 07.0680899, longitude 03.7817525) communities in Remo North LGA of Ogun State.

Ethical clearance

Approval was sought and obtained from the ethical review committee of Odogbolu and Remo North local government. Written permission was obtained from the traditional rulers of each community for easy access and community mobilization. Informed consent was also obtained from the individuals that participated in the study. All participants positive for nodules were treated with ivermectin at the end of the study.

Selection of communities

The six communities located in non-intervention areas for Mass Drug Administration MDA were selected using a systematic grid sampling techniques for both LGAs. Using the primary health care house numbering, 70 respondents were randomly selected from each community and enlisted, and only participants 5 years and above participated.

Questionnaire design

Structured questionnaire were used to obtain information on knowledge and the perception of community members on the transmission of the

disease onchocerciasis. The questionnaire was designed to provide demographic information such as name of village, type of administrative level, name of nearest river, community participation under CDTI, name of first and second administrative level, educational institutions available (if any), health institutions and geographical coordinates of the village, as well as the knowledge and opinions of respondents about river blindness and its transmission.

Physical examination

Using REMO tool for nodule assessment, both men and women who were enlisted, and had resided in the community for at least 10 years participated in the physical examination. Participants were examined for nodules and all other clinical manifestation of onchocerciasis.

Data analysis

The questionnaires and nodule data were analyzed using SPSS version 16.0 and the results expressed in percentages and assessment of variables for significant relationships. Using a Global Positioning System (GPS) hand-held device, geographic coordinates were obtained for each community.

Results

Demographic characteristics of the respondent in Odogbolu and Remo North LGA.

Analysing demographic characteristics, the study observed that males were 96(46%) and 114 (54%) females for Odogbolu, while in Remo North, 89(42%) were males and 121(58%) were females, but not statistically significant ($p>0.05$). On the age range of respondents, the values are varied (table 1), with a significant difference between the age ranges ($p<0.05$). On the level of education, respondents with secondary school education 74 (35.2%) and 71 (34%) respectively were more than other levels of education in both LGAs, while farmers and artisans were more than other occupational status (table 1).

Nodules palpation among respondents

The results are presented in table 3. From the equal number of 210 participants who were examined for nodules in Odogbolu and Remo North respectively, 35 (17%) were positive in Odogbolu and 63 (30%) positive in Remo North. There were no reported cases of blindness.

Table 1: Demographic Characteristics of the Respondents.

Parameter	Odogbolu LGA		Remo LGA		
	No. of Respondents	%	Frequency	%	
Sex	Male	96	46	89	42
	Female	114	54	121	58
Age	11 – 15	13	6.2	20	10
	16 – 20	9	4.3	2	12
	21 – 25	11	5.2	17	8
	26 – 30	24	11.4	34	16
	31 – 35	27	13	35	17
	36 – 40	29	14	67	32
	Above 40	97	46.2	10	5
Education	Primary	60	29	43	21
	Secondary	74	35.2	71	34
	No Formal Education	46	30	53	25
Occupation	Farmer	70	33.3	35	17
	Trader	48	23	36	17
	Student	25	12	355	17
	Government Employee	12	6	54	26
	Artisan	55	26.2	50	24

Table 2: Community member's knowledge on onchocerciasis in Odogbolu and Remo North LGAs

Parameter	Odogbolu LGA		Remo North LGA	
	Frequency	%	Frequency	%
Have you heard about the disease River Blindness?				
Yes	145	69	183	87
No	65	31	27	13
Total	210	100	210	100
What do you think causes the disease onchocerciasis				
Bad Blood	32	15.2	13	6.2
Body Bleaching	1	0.5	1	0.5
Insect	24	11.4	46	22
Through Food	58	26	56	27
Farm Work	5	2.4	27	13
No Idea	90	44	48	23
How is the parasite transmitted				
Through blackfly bite	62	30	127	61
Through insect bite	20	10	36	17.1
Uhygienic environment	128	61	47	22.4
What are the symptoms of infection with the parasite				
Itching	104	50	113	54
Visual Impairment	75	36	9	4.3
Rashes	11	5.2	6	3
Weakness	18	9	9	4.3
No Idea	2	1.0	41	20
Nodules			8	4
Blisters on body parts			24	11.4
How do you think the disease can be prevented				
Hygiene	54	26	49	23
Use of ivermectin	152	72	102	49
Stay away from fast flowing river	4	2	59	28

Table 3: Physical Examination of Household for Nodules and Observations

LGA	No. Examined for Nodules	No. Positive	Cases of Blindness
Odogbolu	210	35 (17)	Nil
Remo	210	63 (30)	Nil

Discussion

This study presents investigation on community members' knowledge of onchocerciasis in non-intervention areas, considering also that intervention through the distribution of ivermectin in identified communities have been ongoing since 2002 in Ogun State. Since the disease cuts across age, sex and educational levels, it is important for community members to have a knowledge of the disease and the observed responses indicate that 69% and 87% respondents are knowledgeable about the disease in Odogbolu and Remo North LGAs respectively.

There were varied responses to the cause of the disease, however it is important to note that 43% of respondents in Odogbolu and 23% in Remo North had no inclination to the cause of the disease; in which some respondents had the opinion that choice of diet could be a predisposing factor to the disease. Body bleaching, farm work, bad blood and insects bites were implicated in the study as the causes of onchocerciasis. The reasons could be attributed to the dermatological effects of *Simulium* bites. This may be so as majority of participants agree that severe itching and skin rashes are symptoms of infection which also supports comments from previous studies (WHO 1997).

Furthermore, the general opinion that black fly bite is responsible for parasite transmission could be attributed to the appreciable secondary level of education of most respondents. A considerable amount of respondents believe that maintaining an unhygienic environment is a supporting factor in the distribution of the disease while some recognized that staying away from fast flowing rivers and use of ivermectin are ways of preventing the disease.

The study further revealed a nodule prevalence level of 17% and 30% in community members of Odogbolu and Remo North LGA, but with no recorded case of blindness. Presence of nodules are not totally suggestive of onchocerciasis, a confirmatory diagnosis is required.

Since CDTI intervention is not applicable to areas with prevalence less than 20% (WHO, 1993). Treatment of onchocerciasis in areas mapped hypo-endemic are carried out in the clinics, rather mass administration of drugs in communities. Hence, achieving elimination of the disease in Ogun State will involve strategic adjustments to the mix of tools

and interventions strategies in order to maintain the progress made in its current control effort.

Conclusion

Large scale nodulectomy, skin biopsy and use of newly developed diagnostic tool such as the Ov16 rapid assays are recommended to properly situate the results of nodule prevalence observed in the study. Also, health agencies are advised to do more in areas of public enlightenment on the biology and life cycle of the parasites involve.

References

1. Abiose, A. (1998). Onchocercal Eye Disease and the impact of Mectizan. *Annals of Tropical Medicine and Parasitology*, 92 Suppl 1: S11 – S22.
2. Adeleke MA, Mafiana CF, Sam-Wobo SO, Olatunde GO, Ekpo UF, Akinwale OP, Toe L. (2010). Biting behaviour of *Simulium damnosum* complex and *Onchocerca volvulus* infection along Osun River, Southwest Nigeria. *Parasit Vector* 3(93): 1–5.
3. Anosike, J.C, and Onwuluri, C.O.E. (1994). Studies on filariasis in Bauchi State Nigeria. 1 Endemicity of human Onchocerciasis in Ningi local government area. *Annals of Tropical Medicine and Parasitology*, 89 (2): 31-38.
4. Benton, B., Bump, J., Seketeli, A., Liese, B. (2002). Partnership and Promise. Evolution of the African River-Blindness campaigns. *Annals of Tropical Medicine and parasitology*; 96: 5-14.
5. Edungbola, L.D, and Asaolu, (1984). Parasitologic survey of onchocerciasis (river blindness) in Babana district, Kwara State, Nigeria. *American Journal of Tropical Medicine and Hygiene*, 33: 1149-1154.
6. Nwoke B.E.B (2015) The challenges of human migration in onchocerciasis elimination in Africa. *Nigerian Journal of Parasitology*, 36: 4-9.
7. Ojurongbe O, Akindele AA, Adeleke MA, Oyedeji MO, Adedokun SA, et al. (2015) Co-endemicity of Loiasis and Onchocerciasis in Rain Forest Communities in Southwestern Nigeria. *PLoS Neglected Trop Dis* 9(3): e0003633. doi:10.1371/journal.pntd.0003633.
8. Opara K. N., Usip L. P. and Akpabio E. E. (2008) Transmission dynamics of *Simulium*

- damnosum* in rural communities of Akwa Ibom State, Nigeria. *Journal of Vector Borne Disease* 45, 225–230.
9. Opoku, A. A. (2000). Some observations on the Ecology, biting activity and parasite infectivity of The blackfly (Simuliidae) and onchocerciasis prevalence in the River Birim catchment. *Ghana Journal of Science*; 40:65-73.
 10. Sam-Wobo, S. O., Adeleke, M. A., Jayeola, O. A., Adeyi, A. O., Oluwole, A. S., Ikenga, M., Lawniye, A., Gazama, J., Kagni, A., Kosoko, T. O., Agbeyangi, O., Bankole, S., Toe, L., Mafiana, C. F. and Yameogo, L. (2012) Epidemiological evaluation of onchocerciasis along Ogun River System, Southwest Nigeria. *Journal of Vector Borne Diseases*, 49: 101–104.
 11. Surakat, O. A., Sam-Wobo, S. O., Ademolu, K., Bankole, S.O., Adeleke, M. A., Adekunle, N.O., Awoyale, A.K., Egbeobauwaye, E., Akinsanya, A., Kuforiji, A. and Aremu, S. (2016) Implication of Human migration on onchocerciasis prevalence, *Nigerian Journal of Parasitology* Volume 37(1): 78-82.
 12. World Health Organization, (1993). Implementation of the global River blindness control strategy. Report on the World Health Organization study group on the implementation of the action for Onchocerciasis control.
 13. World Health Organization [WHO] (1995). Onchocerciasis and its control. In Fourth Report of the Expert Committee on Onchocerciasis. WHO Technical Report Series. 852 pp.
 14. World Health Organization (1997). Twenty years of onchocerciasis control in West Africa. Review of the work of the onchocerciasis control programme in West Africa. Ougadougou, Burkina Faso.

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