International Journal of Community Medicine and Public Health
Woromogo SH et al. Int J Community Med Public Health. 2025 Feb;12(2):639-645
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20250293

Original Research Article

Assessing people's perception of onchocerciasis control in forest and savannah areas of the Central African Republic in 2023: a cross-sectional analytical study

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Received: 15 March 2024
Accepted: 18 April 2024

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ABSTRACT

Background: Onchocerciasis or river blindness is a parasitic disease caused by the filarial Onchocerca volvulus. People living in savannah and forest areas of Central African Republic (CAR) are exposed to onchocerciasis due to the increased presence of the transmissible agent. In order to achieve the objective of mass distribution of Ivermectin, the community must join in the fight against the disease.
Methods: A multicentric KAP analytical study took place in two endemic sub-prefectures, one in the savannah zone and the other in the forest in the CAR. All persons aged 15 years and over who agreed to participate were included. Variables relate to community knowledge, attitudes and practices regarding onchocerciasis. Once variables were classified, logistic regression was used to establish the influence of knowledge and attitudes on practice.
Results: Slightly more than ¾ of the respondents had primary or secondary education. Herders and farmers made up half of our respondents. Almost half of respondents had a good knowledge of the disease, its main clinical signs and mode of transmission. Around 80% of respondents had a favourable attitude towards onchocerciasis control. People with a satisfactory level of knowledge practised onchocerciasis control well (ORa=03.82, (2.33-5.41), p=0.001).
Conclusions: Factors associated with a satisfactory level of knowledge were: age, gender and profession. Knowledge had no effect on attitude. However, it does have a positive effect on practice. The national onchocerciasis control programme needs to step up awareness of the disease.

Keywords: CAR, Forest, Onchocerciasis control, Perception, Savannah

INTRODUCTION

Onchocerciasis or river blindness is a parasitic disease caused by the filarial Onchocerca volvulus.[1] In 2017, it was estimated that at least 220 million people needed preventive chemotherapy against onchocerciasis. According to the 2019 global burden of disease study, an estimated 19.1 million people are infected, with the disease responsible for 1.23 million disability-adjusted life years. Over 99% of cases occur in sub-Saharan Africa.[2] The global health community, under the leadership of the World Health Organization (WHO), recently published a roadmap on neglected tropical diseases (NTDs) for the period 2021-2030, which aims to eliminate (interrupt) the transmission of onchocerciasis, with 12 countries (around a third of all endemic countries).

This objective is inspired by sustainable development goal 3 (SDG 3), which aims to ensure the health and well-

being of all, the principle of leaving no one behind, the London Declaration on NTDs and the recent Kigali Declaration on NTDs.[3–6]

In the Central African Republic (CAR), four out of seven health regions are endemic for onchocerciasis and WHO estimates that by 2020, 2,662,937 people will be living in these areas and will therefore need care, with a mass treatment coverage of 50%.[7-10] People living in savannah and forest areas of CAR are exposed to onchocerciasis due to the increased presence of the transmissible agent.[11]

To combat Onchocerciasis, the Ministry of Health and Population has set up an Onchocerciasis control programme. The problem is how to prevent and treat the disease so that the population adheres to the control strategy. The aim of this study is to contribute to the elimination of onchocerciasis, which is a public health problem in CAR.

METHODS

Study design

This was a multicentric study of the analytical KAP type, which took place in two endemic sub-prefectures, one in the savannah zone and the other in the forest. It took place from 02 November 2022 to 30 June 2023.

Study population

The CAR is divided into 7 health regions. Onchocerciasis is endemic in 4 health regions: N° 3, 4, 5 and 6. All persons aged 15 years and over who agreed to participate in the study and who had resided in the selected endemic areas for at least two years were included. All persons who had agreed to participate in the study but who for various reasons decided to withdraw were excluded.

Sampling technique

This is a stratified multi-stage probability sample.

Our sample size was estimated using Daniel Schwartz's formula: $N=z^2p.q/d^2$ where N=required sample size, z=1.96 at the 5% threshold, p=prevalence of onchocerciasis in endemic areas of CAR 16.85%, q=1-0.1685=0.8315 and d, precision=5%. This gave us N=327, taking into account 10% for non-respondents. We therefore retained the 327 respondents for each sub-prefecture, for a total of 654 respondents.

We drew lots from the list of all the sub-prefectures making up health regions 3, 4, 5 and 6. In the sub-prefectures selected, we used the 2-stage stratified sampling technique. The 1st step consisted of selecting the rural and urban neighbourhoods of these towns and the 2nd step consisted of visiting households in the neighbourhoods identified. In each neighbourhood, targets were obtained step by step until the required number of people were reached.

Variables

Our variables were the socio-demographic characteristics of the participants; variables relating to knowledge of onchocerciasis (clinical signs and mode of transmission); variables relating to attitude and practice.

Data collection tools

We used a pre-tested, anonymous questionnaire. The interviewers were medical and sociology students trained in the administration of the questionnaire.

Data analysis

We used Epi-Info 7.2.1.0 software. For socio-demographic characteristics, the mean with standard deviation was used for quantitative variables and the proportion for qualitative variables.

Level of knowledge, attitudes and practices among residents regarding onchocerciasis control

Level of knowledge

We first coded each correct answer to the knowledge variables by one point, for a total of eight points.

Then the 'level of knowledge' variable was classified into four levels (modalities): 'very poor' for people with a total between zero and two points, 'poor' for people with a total of three or four points, 'good' for people with a total of five or six points and 'very good' for people with a total of seven or eight points, to finally estimate the percentages for each level of knowledge.

Level of attitude and practice

We coded our variables in the same way as for the level of knowledge.

Effects of socio-demographic and professional characteristics on level of knowledge

The "level of knowledge" variable is categorised into two modalities: "unsatisfactory level of knowledge", i.e. very poor knowledge and poor knowledge and "satisfactory level of knowledge", i.e. good knowledge and very good knowledge.

Dependent variables are level of knowledge and explanatory variables are: gender, age, level of education and occupation. The odds ratios (OR) with 95% confidence intervals, p value<0.05, to assess the strength of associations between 'satisfactory level of knowledge' and these variables.

Influence of the level of knowledge and attitude on practices in endemic areas with regard to Onchocerciasis control.

The "level of attitudes" variable was broken down into two modalities: "favourable attitude", which corresponds to the level of slightly negative attitudes and the level of negative attitudes and "favourable attitude", which corresponds to the level of positive attitudes and the level of very positive attitudes. Multiple logistic regression was used for this purpose. Odds ratios (OR) adjusted for certain socio-demographic characteristics and their 95% confidence intervals, with p-value<0.05, were computed to assess the strength of associations between knowledge and attitude.

Statistical analysis

Pearson's chi-square and Wald's chi-square tests will be used to calculate the Odds Ratio (OR) with their 95% confidence intervals (CI).

RESULTS

Baseline characteristics of participants

The average age of the participants was 28±08 years. Men accounted for 58.10% and women 41.90%. Slightly more than ¾ of the respondents had primary or secondary education. Seventy-eight people had not attended school. Herders and farmers made up half of our respondents (Table 1).

Knowledge

Almost half of respondents had a good knowledge of the disease, its main clinical signs and mode of transmission (Table 2). A total of 264 people or 40.37%, had a satisfactory level of knowledge of onchocerciasis. Socio-demographic and occupational characteristics have some influence on the level of knowledge among people living in endemic areas.

Thus, people aged over 31 had a better rating of satisfactory knowledge than those aged under 31 (OR=1.71 (1.11-2.66), p=0.006). In these areas, women were 1.17 times more likely to have satisfactory knowledge of onchocerciasis control than men.

On the other hand, people with a higher level of education or who are civil servants or similar are more likely to have satisfactory knowledge than those with primary or secondary education, as well as the other socio-professional categories (Table 3).

Attitude and practice

About 27.37% of those surveyed thought that onchocerciasis was a curse. However, 69.11% intend to advise others to go to a health facility as part of the fight against onchocerciasis. In terms of practice, 52.45% have a good practice in the fight against onchocerciasis (Table 4). In short, almost 80% of respondents had a favourable attitude towards onchocerciasis control.

Influence of levels of knowledge and attitudes on onchocerciasis control practices

Knowledge did not influence participants' attitudes (OR=1.3 (0.59-3.00), p=0.41). After adjustment for age, sex and profession, people with a satisfactory level of knowledge practised onchocerciasis control well (ORa=03.82, (2.33-5.41), p=0.001) (Table 5). However, their attitude did not influence their control practices.

Table 1: Socio-demographic and occupational characteristics of participants living in onchocerciasis-endemic areas in 2023 (n=654).

Sociodemographic characteristics	Population	Proportions (%)
	N	%
Age (years), Means (SD)	28(±08)	
Age groups (years)		
15-31	541	82.72
31-82	113	17.28
Sex		
Male	380	58.10
Female	274	41.90
Educational level		
Primary	189	28.90
Secondary	283	43.27
Higher	104	15.90
Out of school	78	11.93
Profession		
Civil servant	134	20.49
Private sector	144	22.02
Farmers/Breeders	327	50.00
Autonomous	49	07.49

Table 2: Description of variables relating to participants' knowledge about onchocerciasis in endemic areas in 2023 (n=654).

Knowledge variables	Proportion	
	N	%
Ever heard of Onchocerciasis?		
Yes	439	67.13
No	215	32.87
Knowledge of vector name		
Yes	337	51.53
No	317	48.47
Knowledge about skin lesions		
Yes	161	24.62
No	493	75.38
Knowledge about itching		
Yes	248	37.92
No	406	62.08
Knowing about cysts		
Yes	135	20.64
No	519	79.36
Knowledge about eyesight reduction		
Yes	285	43.58
No	369	56.42
Knowledge about sight loss		
Yes	189	28.90
No	465	71.10
Heard about drug distribution		
Yes	390	59.63
No	264	40.37
Disease transmission mode		
Yes	423	64.68
No	231	35.32

Table 3: Effect of socio-demographic and professional characteristics on onchocerciasis control in 2023 (n=654).

Characteristics		Level of knowledge					
		Satisfactory		Insatisfactory			
		N	%	N	%	OR (95% CI)	P value
Age groups (in years)							
15-31	541	230	42.51	311	57.49	1	-
31-82	113	34	30.09	79	69.91	1.71 (1.11-2.66)	0.006
Sex							
Male	380	175	46.05	205	53.95	1	-
Féminin	274	89	32.48	185	67.52	1.77(1.28–2.45)	0
Educational level							
Primary	189	69	36.51	120	63.49	0.37(0.23–0.61)	0
Secondary	283	111	39.22	172	60.78	0.42(0.27–0.67)	0
Higher	104	63	60.58	41	39.42	1	-
Out of school	78	21	26.92	57	73.08	0.24(0.13–0.45)	0
Profession							
Civil servant	134	93	69.4	41	30.6	1	-
Private sector	144	75	52.08	69	47.92	0.48(0.29–0.78)	0.001
Farmers /Breeders	327	79	24.16	248	75.84	0.14(0.09–0.22)	0
Autonomous utonome	49	17	34.69	32	65.31	0.23(0.12–0.47)	0

Table 4: Variables on participants' attitudes and practices towards onchocerciasis control in 2023 (n=654).

Variables	Participants (n=654)	
	N	%
Attitude		
Cause of disease by population		
Curse	179	27.37
Disease like any other	424	64.83
Other matters	51	07.80
Treatment for patients		
Advise him to go to a health facility	452	69.11
Avoiding it to avoid contamination	202	30.89
Practice		
Acceptance of Mectizan		
Yes	343	52.45
No	311	47.55

Table 5: Influence of knowledge and attitudes on the practices of the population in endemic areas with regard to onchocerciasis control in 2023 (n=654).

		Practice level							
		Good		Bad		OR_C (95% CI)	pc	OR_A (95% CI)	*Pa*
Knowledge level	**Total**	**N**	**%**	**N**	**%**				
Satisfactory	264	206	78.03	58	21.97	06.56 (4.58–9.38)	0	3.82 (2.33–5.41)	0.001
Insatisfactory	390	137	35.13	253	64.87	1			
Attitude level									
Favorable	523	245	46.85	278	53.15	0.29 (0.19–0.45)	0	0.89 (0.79–1.09)	0.06
Unfavorable	131	98	74.81	33	25.19	1			

DISCUSSION

Sociodemographic and professional characteristics

Most of those surveyed were under the age of 32. Several authors have addressed the subject and found the same trends.[12,13] It should be noted that our study took place in a rural environment where the population is increasingly young. Men were in the majority (58.10% of the survey participants). In most households, the head of household is usually the first person to be contacted and, in our countries, they are usually men.[14,15] The majority of our respondents (72.17%) had secondary or primary education.

This result may be due to the fact that schooling in rural areas is very encouraging. The results of some of the studies carried out showed that education levels differed from ours. However, the levels of primary education were 67.54%, 43.20%, 45.45% and 53.10% respectively.[1,15–17]

As for occupations, 50.00% of participants were farmers/breeders. These results differ from those of Makenga et al, but are consistent with those of Okafor et al, whose occupation represented 65.91% of farmers.[16,18] This could be explained by the fact that we worked in rural areas.

People's knowledge, attitudes and practices

Knowledge was related to the following aspects: having heard of onchocerciasis, knowledge of clinical signs (manifestations) and knowledge of complications. Knowledge was then categorised as satisfactory or unsatisfactory. Thus, knowledge levels were judged to be satisfactory (82.72% vs. 17.38%). Specifically, 32.85% (215/654) of respondents had never heard of Onchocerciasis, despite the fact that the area inhabited is an endemic zone.

This result can be explained by the fact that few people take part in the Onchocerciasis control activities that the National Onchocerciasis Control Programme (NOCP) organises every year. Some previous studies showed percentages of people who had never heard of Onchocerciasis significantly higher than ours (8,19) ranging from 38.6% to 64.5%. Other authors have found percentages of participants who had never heard of onchocerciasis to be lower than ours, ranging from 0.47% to 31.40%.[1,15,18,20]

The differences can be explained by the different levels of awareness among the population. Similarly, 35.32% and 48.47% respectively did not know the mode of transmission of onchocerciasis or the name of the vector agent, simulium, in the local language. Few people take

part in the focus groups that NOCP organises in the communities through the community distributors before the launch of the distribution of medicines each year. Some authors reported results higher than ours.[8,15,21] These results could be explained by the low level of political involvement in the fight against onchocerciasis in endemic areas, but also by behavioural theory.[22,23] In summary, most of those surveyed had poor knowledge of the clinical signs of onchocerciasis. Percentages ranged from 20.64% to 64.68% depending on the clinical signs mentioned (itching, skin lesions, impaired vision).

Despite being an endemic area, people in the two sub-prefectures were not sufficiently informed about the clinical signs of the disease during the awareness sessions. The same situation was observed with regard to knowledge of the main complications of the disease (presence of nodules, loss of sight). Respondents' attitudes were judged by whether or not they would accept Ivermectin, whether they would inform others or whether they would give treatment to someone with the disease. Attitudes were judged to be favorable towards combating the disease (79.97% vs. 20.03% unfavourable). As far as people were aware, onchocerciasis was a disease like any other caused by simulium.

This result could be explained by the fact that the majority of the population surveyed had a secondary level of education. These results corroborate those of Afolabi et al, but differ from those of Philippe et al, obtained in an urban environmen.[1,17] Regarding practice level, our results showed that 47.55% (311/654) had poor practice compared with 52.45% (343/654) with good practice. These results would justify why some respondents replied: "we don't take this medicine because it is said to be the medicine for gnats". Our results were consistent with a study conducted by Okello in Uganda in 2017.[24] Other authors obtained higher results than ours (8) and some had lower results.[19] These differences could be explained by the motivation of the population to adhere to the onchocerciasis control strategy in endemic zones or outside them.

Influence of socio-demographic characteristics on knowledge levels

Factors associated with satisfactory knowledge of onchocerciasis control were: age, sex and occupation. People aged 31 and over had a higher score of 1.71 for satisfactory knowledge of onchocerciasis control than those under 31 (p=0.006). Women had a higher rating of 1.77 of having a satisfactory level of knowledge about onchocerciasis control than men (p<10-3). More often than not, it was women who were willing to attend awareness-raising sessions on onchocerciasis control while men went about their daily business.

As for the profession associated with knowledge levels, the results showed that workers had a higher rating of having a satisfactory level of knowledge of onchocerciasis control than shopkeepers and other professions. This result could be explained by their access to several sources of information on health problems and their participation in local interdepartmental meetings where all aspects of public health are discussed (newspapers, television, etc.). Influence of knowledge level and attitude level on practice

Knowledge level had no influence on attitude level. For knowledge and attitude levels, after adjusting for potential confounding factors (age, sex and profession), people with a satisfactory knowledge level had a 3.85 higher rating of having the right practices to fight onchocerciasis (pa=0.001). People with a satisfactory knowledge level had a 78.03% (206/264) chance of having a good practice to control onchocerciasis than those with an unsatisfactory knowledge level whose chance of having a good practice to control onchocerciasis was 35.13% (137/390). In addition, people with a favourable attitude level had a lower score for having a good practice with regard to onchocerciasis control, but this result was not statistically significant (p=0.06). Furthermore, attitude did not influence practice in onchocerciasis control. This is justified by Bieger's theory of behaviour.

CONCLUSION

Most of the respondents were farmers and stockbreeders. Just over half of them had an unsatisfactory level of knowledge. Attitudes were favourable in 80% of cases and 52.45% considered their level of practice to be good. Factors associated with a satisfactory level of knowledge were: age, gender and profession. Knowledge had no effect on attitude. However, it does have a positive effect on practice. The national onchocerciasis control programme needs to step up awareness of the disease, emphasising its signs and complications in every corner of towns and villages. The results of our study could serve as a reference for studies that could be carried out in other onchocerciasis-endemic health districts for very useful purposes.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Woromogo SH, Ngouyombo AD, Garoua-Adjou SI, Doyama-Woza RH, Longo JD. Assessing people's perception of onchocerciasis control in forest and savannah areas of the Central African Republic in 2023: a cross-sectional analytical study. Int J Community Med Public Health 2025;12:639-45.