

**REPORT OF  
SCHISTOSOMIASIS  
AND SOIL  
TRANSMITTED  
HELMINTHS  
EPIDEMIOLOGICAL  
MAPPING AND  
BASELINE SURVEY  
IN ELEVEN LOCAL  
GOVERNMENT  
AREAS OF GOMBE  
STATE**

February 28

**2013**

**FEDERAL MINISTRY OF HEALTH (NATIONAL  
SCHISTOSOMIASIS AND SOIL TRANSMITTED  
HELMINTHS CONTROL PROGRAMME) IN  
COLLABORATION WITH GOMBE STATE  
MINISTRY OF HEALTH.**

**DATE: 13TH –  
23RD JANUARY  
2013**

## **BRIEF INTRODUCTION**

As part of the ongoing efforts to scale up de-worming activities in Nigeria, the Federal Ministry of Health Abuja in collaboration with the Gombe State Ministry of Health supported Epidemiological Mapping/Baseline survey of Schistosomiasis and Soil Transmitted Helminths among school aged children in Eleven (11) LGAs of Gombe State, North East Nigeria from 13<sup>th</sup> -23<sup>rd</sup> January,2013.

## **OBJECTIVES**

1. To determine the prevalence and endemicity of Schistosomiasis and Soil Transmitted Helminths infections in the state.
2. To build capacity of the state/LGA technical officers on integrated mapping/baseline survey of Schistosomiasis and Soil Transmitted Helminths.
3. To obtain baseline information that will form the basis for estimation of drug requirements for preventive chemotherapy interventions in the state.
4. To provide baseline data needed for planning, implementation, and monitoring of control progress of integrated control of Schistosomiasis/STH in the State.

## **JUSTIFICATION**

School-aged children comprise the largest and most vulnerable group to Schistosomiasis and STHs infections. As a result of their behaviour, this age group are more exposed to infections and they bear the highest prevalences and intensities of infection. Therefore, they suffer more morbidity from infections with these worms. With the availability of safe and cheap anti-helminthic drugs, periodic anti-helminthic treatment of people in communities where Schistosomiasis and STH infections are endemic, has been accepted as the overall public health strategy for controlling morbidity due to these infections. There is now an overwhelmingly strong case for targeting anti-helminthic treatment at school-aged children to relieve them from the effects of Schistosomiasis and Soil Transmitted Helminths (STH) infections.

School-age children are an important high-risk group for STH infection and bilharzia for a number of reasons. These include: Typically 6 to 15-year-old have the highest prevalence and intensity of worm infections compared with other age groups. Children have increased nutritional needs due to intense physical growth and rapid metabolism; when these needs are not met, the child's growth may falter and he/she may be more susceptible to infection. Bilharzia and STH infections have been shown to have a negative impact on cognition and learning. Children are continuously exposed to contaminated soil and water, but often lack awareness of the need for good personal hygiene (Taylor *et al.* 1999).

The survey was an urgent intervention by the Honourable Minister of Health to the reported outbreak of schistosomiasis in shongom LGA in Gombe state in 2012. The epidemic was brought to the attention of the Honourable Minister of Health by the Executive Governor of Gombe state. Hence the approval of funds by the Honourable Minister of Health for the mapping activity in the state.

The data obtained from the survey will form the basis for the identification of LGAs of higher priority for interventions and will also be used for the development of Behavioural Change Communication (BCC) strategy as well as assessment of progress during the proposed Mass Drug Administration in the State.

### **COURTESY CALL TO THE HON. COMMISSIONER FOR HEALTH AND PERMANENT SECRETARY**

The FMOH and SMOH team paid a courtesy call to the Honourable Commissioner for Health, Dr Ishaya Kennedy, Directors and Deputy Directors in the Ministry. They were briefed on the objectives of the survey in the state and the need to urgently commence treatment in endemic LGAs once the baseline data is generated. In his remark, The Honourable Commissioner for Health thanked His Excellency, Governor Aliyu Dankwambo and the Honourable Minister of Health Professor Onyebuchi Chukwu for bringing the programme to the state and assured the team of the State's support.

There was media coverage of the courtesy call to the State policy makers. The roll out of the mapping activities was covered and aired by the Gombe State Television, Voice of Nigeria Hausa service and News Agency of Nigeria (NAN).

## MATERIALS AND METHODS

### STUDY AREA:

Gombe state is one of the thirty six states in Nigeria and is in the North East zone of the country. It has Eleven Local Government Areas (LGA) and lies in the coordinate [10°15'N 11°10'E](#) and located at a distance of 18,768 km<sup>2</sup> (7,246 sq mi). The study was carried out in January in the eleven LGAs (Districts) of the state.

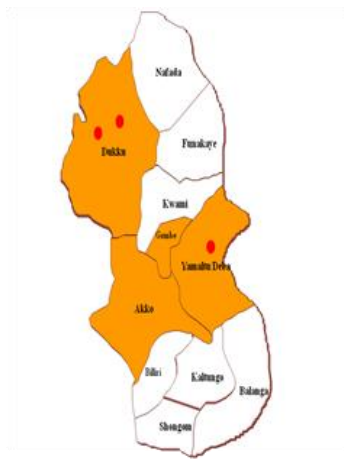


Fig 1: Geographical Map of Gombe State

### TRAINING/MOBILIZATION

A total of 11 LGA Coordinators, 4 State team members, 1 SUBEB Officer and 1 State Ministry of Education officer were trained for the activity on 14<sup>th</sup> January, 2013. The State Ministry of Education and Universal Basic Education Officers assisted with the mobilization of schools and communities.

### DESIGN, SAMPLE SIZE AND SCOPE OF WORK

The study population were school aged children between the ages of 5-14 years. Sample size was determined based on the World Health Organization (WHO) sampling size for epidemiological survey of Schistosomiasis and Soil Transmitted Helminths infections. **Five Schools from different communities were randomly selected from each LGA. At least 50 school children were selected across different sexes and age groups. One to two teachers were selected by the head**

teacher and then rapidly trained by the survey team to assist in administering the questionnaire to the school children. The geographical coordinates of each of the sampled school were recorded with Global Positioning System (GPS) devices.

The survey was based on the World Health Organization standard diagnostic procedures on the examination of urine and faecal samples from school-aged children in the State for the presence of schistosome and intestinal helminths eggs. Stool samples were processed using the kato katz method, while the urine samples were examined using combi-9 reagent strips. All the positive urine samples were further examined microscopically for the confirmation of the presence of schistosome eggs. Fifty samples were collected from each school and a total of 2753 children (1538 Males and 1215 Females) were examined from the 55 schools visited in the three senatorial districts in the state.

The heights and weights of each child were taken. Baseline information on these diseases was obtained from the community members using structured questionnaires. The survey was facilitated and supervised by the Technical Officers from the Federal Ministry of Health Abuja in collaboration with State Universal Basic Education Board, State Ministries of Health and Education. The LGAs sampled for the survey are: Dukku, Nafada, Funakaye, Kwami, Akko, Gombe, Yamaltu/Deba, Balanga, Kaltungo, Billiri and Shongom.

At the end of collection, samples were transported to Gombe State Specialist Hospital for examination. Data was entered into excel sheet and the prevalence calculated manually.

## **RESULTS**

The results showed significant variation of schistosomiasis and STH prevalence between schools, communities and LGAs. The overall prevalence among the 2753 pupils (1538 males and 1215 females) examined for Schistosomiasis was 12% and 6% for Soil Transmitted Helminths(

**Hookworm, Ascaris and Trichuris). Schistosomiasis prevalence by gender was as follows: male 15% and female 8%. Soil Transmitted Helminths, male 6% while female 6%. *Schistosoma heamatobium* was the most prevalent schistosoma species, with an overall prevalence of 12%, followed by *S. mansoni* 4%.**

### **PREVALENCE OF SCHISTOSOMIASIS**

Out of the 2753 school children examined in Gombe state, 320 (12%) were found to be positive for urinary schistosomiasis. Prevalence ranged from 2.4% in Gombe LGA to 38.1% in Balanga LGA. 108 children were found to be positive for intestinal Schistosomiasis representing (4%). Prevalence ranged from 0% in Funakaye LGA to 26% in Balanga LGA.

223 (15%) represented males, prevalence ranged from 4.1% in Funakaye LGA to 44.2% in Balanga LGA, while 97 (8%) were females, prevalence ranged from 1% in Gombe LGA to 30% in Balanga LGA.

### **PREVALENCE OF SOIL TRANSMITTED HELMINTHS (ASCARIS, HOOKWORM AND TRICHURIS)**

Out of the 2753 children examined, 156 (6%) were positive for Soil transmitted helminths. 87 (6%) represented males while 69 (6%) represented females. The prevalence ranged from 2.4% in Yamaltu/Deba to 11% in Kwami LGA. The Prevalence ranged from 3% in Gombe to 13% in Billiri for males while for females it ranged from 1.1% in Nafada to 10.2% in Kwami LGA.

The prevalence of the intestinal worms were as follows *Ascaris lumbricoides* 2.3%, *Trichuris trichiura* 0.2% and Hookworm 3.2% prevalence of other worms are as follows *Hymenolepis nana* 3%, *Strongyloides stercoralis* 0.04%, *Tenia Spp* 0.04% and *Diphyllobotrium latum* 0.1%, *Escherichia coli* 0.3%, *Entameoba histolytica* 0.2%.

**Balanga LGA had the highest prevalence for Schistosomiasis (38.1%) and Kwami LGA had the highest prevalence for Soil Transmitted Helminthes (11%). The prevalence for Schistosomiasis and Soil Transmitted Helminthes was higher in males with prevalence rates of (15%) and (13%) respectively.**

**SEE APPENDIX 1-3**

## **DISCUSSIONS ON THE FINDINGS**

In the recent study conducted in the 11 LGAs in the State, two thousand seven hundred and fifty three school aged children from fifty five schools were screened and there was a wide range of prevalence: 2.4%–38.1% for *S. Haematobium*, 1.2%–10.3% in the case of *S. mansoni* and 3.2% - 10% for Soil transmitted helminths. Schools were chosen based on their proximity to Streams, stagnant water bodies and reported high prevalence of schistosomiasis. The finding highlights two important features of schistosomiasis in Gombe State. Firstly, these infections are highly localised and secondly they are not common in general. As expected higher prevalence rates are found in communities close to water bodies with absence of safe drinking and bathing water. *S. mansoni* does not seem to be a generalised problem in any particular ecological area in the state and there was very low or no case detected in areas with safe water.

The low prevalence of schistosomiasis and soil transmitted helminths reported for Shongom LGA in this recent survey was due to the ongoing interventions. Following the reported outbreak of schistosomiasis in Shongom LGA, the State Ministry of Health carried out preliminary assessment of the situation using Combi-9 reagent strips and reported 33% prevalence. There is also Lymphatic filariasis mass drug administration ongoing in Shongom, Balanga, Billiri and Kaltungo LGA since 2009 and this definitely have serious impact on soil transmitted helminths prevalence in the 4 LGAs. There were previous research work and treatment in some of the communities in Shongom LGA.

The findings of the current survey showed prevalence of 11.1% for schistosomiasis compared to 33% previously reported by Gombe State Ministry of Health in 2012. This is a clear indication of reduction of prevalence following drug intervention by the State Ministry of Health.

It was also observed that basic sanitation facilities (water and toilets) are lacking in most of the schools in rural LGAs of Gombe State.

### **RECOMMENDATIONS:**

1. Federal Ministry of Health should support the state with Praziquantel and Mebendazole tablets for Mass Drugs Administration (MDA) in the State.
2. Federal Ministry of Health should provide technical support to build the capacity of the State team on MDA.
3. The Honourable Minister of Health should advocate to the Executive Governor of Gombe State on the need to roll out mass deworming in the 11 LGAs of the state to avoid future occurrence of schistosomiasis outbreak in the state.

### **HONOURABLE COMMISSIONER OF HEALTH'S RECOMMENDATIONS ON NTDs CONTROL:**

1. There is need to carry out survey of other NTDs eg; Human African Trypanosomiasis, Cutaneous Larvea Migrant, leishmaniasis, leeches and cross border mapping of NTDs in the region.
2. The Honourable Minister of Health should create School of Hygiene and Tropical Medicine in Gombe state, a prototype of London School of Hygiene and Tropical Medicine due to its relative peace and vast land mass in the North Eastern part of the country
3. Endemic NTDs should be targeted for Mass Drugs Administration (MDA) in the North Eastern region.



## **CONCLUSIONS**

The survey ended on a successful note.

Dr. O. J. Nebe

Coordinator

National Schistosomiasis/Soil Transmitted

Helminths Control Programme

## **ACKNOWLEDGEMENTS**

The team is grateful to the Federal Ministry of Health and Gombe State Ministry of Health for their support in the mapping of Schistosomiasis and Soil Transmitted Helminths in the State.

Grateful thanks go to the Honourable Minister for Health, Minister of State for Health, Permanent Secretary for Health and Director of Public Health (FMOH) for the approval of the funds and the MDG Office for allowing the programme access their funds.

Our appreciation go to the Honourable Commissioner for Health, the State Permanent Secretary, the State Director of Disease Control, the State NTD team Members, State Ministry of Education and State universal basic education board for their assistance, warm reception and support. Also to the schools in the various communities visited for their good conduct and cooperation throughout the survey.

Grateful thanks to the media organizations (Voice of Nigeria Hausa Service, News Agency of Nigeria and Gombe State Television) for publicity to the programme.

Above all, we thank GOD Almighty for journey mercies and success of the programme.

## **LIST OF PARTICIPANTS**

### **FMOH FACILITATORS**

Dr. M. Kabir  
Dr. I. Kana  
Dr. E. Meribole  
Dr. N. Azodo  
Dr. O. J. Nebe  
Nwoye A. Ikenna  
Okon Marian E.  
Uzoke Solomon  
Anne N. Akpan  
Damza Peter D.  
Anfi Bulus

### **STATE PERSONNEL**

Talatu Danzaria  
Hannatu Y. Atiku  
Mohammed Nuhu  
Zakari Bala  
Danjuma Mohammed  
Mohammed Auwal Jibin

### **LGA PERSONNEL**

Tanko Bala  
Ahmed Buba  
Adamu Salihu K.  
Baba Ahmed Tugga  
Reuben A. Bauna  
Abubakar Bappayo  
Muazu Ibrahim

Santuraki M. Aliyu  
 Kure Kwila  
 Mohammed Yuguda  
 Hussein M. Kawo

### APPENDIX 1: PREVALENCE OF URINARY AND INTESTINAL SCHISTOSOMIASIS BY LGA

S/N	LGA	No of pupils examined			Haematuria (using dipstick). NO +(%)	No + by gender			S. Haemato bium No + (%)	S. Manso nii No + (%)	S. Ja p o ni cu m No + (%)
		M	F	T		M	F	T			
1	AKKO	129	122	251	13(5.2)	11(9)	2(2)	13(5.2)	13(5.2)	3(1.2)	0
2	BALANGA	147	105	252	96(38.1)	65(44.2)	31(30)	96(38.1)	96(38.1)	26(10.3)	0
3	BILLIRI	139	111	250	30(12)	21(15.1)	9(8.1)	30(12)	30(12)	17(7)	0
4	DUKKU	139	111	250	57(23)	31(22.3)	26(23.4)	57(23)	57(23)	18(7.2)	0
5	FUNAKAYE	147	99	246	7(3)	6(4.1)	1(1)	7(3)	7(3)	0(0)	0
6	GOMBE	120	130	250	6(2.4)	5(4.2)	1(1)	6(2.4)	6(2.4)	9(4)	0
7	KALTUNGO	137	113	250	14(6)	7(5.1)	7(6.2)	14(6)	14(6)	9(4)	0
8	KWAMI	142	108	250	19(8)	17(12)	2(2)	19(8)	19(8)	1(0.4)	0
9	NAFADA	164	88	252	10(4)	8(5)	2(2.3)	10(4)	10(4)	9(4)	0
10	SHONGOM	140	112	252	28(11.1)	25(18)	3(3)	28(11.1)	28(11.1)	6(2.4)	0
11	YAMALTU/DEBA	134	116	250	40(16)	27(20.2)	13(11.2)	40(16)	40(16)	10(4)	0
<b>TOTAL</b>		<b>1538</b>	<b>1215</b>	<b>2753</b>	<b>320(12)</b>	<b>223(15)</b>	<b>97(8)</b>	<b>320(12)</b>	<b>320(12)</b>	<b>108(4)</b>	<b>0</b>



## APPENDIX 2: PREVALENCE OF SOIL TRANSMITTED HELMINTHS BY LGA

S/N	LGA	NO OF PUPILS EXAMINED			Hookworm	A. Lumbricoles	T. Trichuria	No + by gender		
		M	F	T	No + (%)	No + (%)	No + (%)	No + (%)	No + (%)	No + (%)
1	AKK O	129	122	251	7	5	4	7(5.4)	9(7.4)	16(6.4)
2	BAL ANGA	147	105	252	8	9	0	9(6.1)	8(8)	17(7)
3	BILLI RI	139	111	250	16	9	0	18(13)	7(6.3)	25(10)
4	DUK KU	139	111	250	1	7	0	5(4)	3(2.7)	8(3.2)
5	FUN AKAY E	147	99	246	4	5	0	5(3.4)	4(4)	9(4)
6	GO MBE	120	130	250	8	6	0	3(3)	11(9)	14(6)
7	KALT UNG O	137	113	250	9	7	0	8(6)	8(7.1)	16(6.4)
8	KWA MI	142	108	250	16	11	0	16(11.3)	11(10.2)	27(11)
9	NAF ADA	164	88	252	6	2	0	7(4.3)	1(1.1)	8(3.2)
10	SHO NGO M	140	112	252	8	2	0	5(4)	5(5)	10(4)
11	YAM ALTU / DEBA	134	116	250	5	1	0	4(3)	2(2)	6(2.4)
<b>TOTAL</b>		<b>1538</b>	<b>1215</b>	<b>2753</b>	<b>88(3.2)</b>	<b>64(2.3)</b>	<b>4(0.2)</b>	<b>87(6)</b>	<b>69(6)</b>	<b>156(6)</b>

## APPENDIX 3: PREVALENCE OF SCHISTOSOMIASIS AND STH BY CATEGORY

S. HAEMATOBIIUM PREVALENCE IN % (LGAs)				STH PERVALENCE IN		
S/N	LESS THAN 10 (Low Risk)	10 TO LESS THAN 50 (Moderate Risk)	50 AND ABOVE (High Risk)	S/N	LESS THAN 20	20 TO LESS (Low Risk)

				1	AKKO(6.4)	0
1	AKKO(5.2)	BALANGA(38.1)	0	2	BALANGA(7)	
2	FUNAKAYE(3)	BILLIRI(12)		3	BILLIRI(10)	
3	GOMBE(2.4)	DUKKU(23)		4	DUKKU(3.2)	
4	KALTUNGO(6)	SHONGOM(11.1)		5	FUNAKAYE(4)	
5	KWAMI(8)	YAMALTU/DEBA(16)		6	GOMBE(6)	
6	NAFADA(4)			7	KALTUNGO(6.4)	
				8	KWAMI(11)	
				9	NAFADA(3.2)	
				10	SHONGOM(4)	
				11	YAMALTU/DEBA(2.4)	

### SCHISTOSOMIASIS AND SOIL TRANSMITTED HELMINTHS PREVALENCE BY CC

#### S. HAEMATOBIIUM PREVALENCE IN %

LGA	10 AND ABOVE	LGA	10 AND ABOVE	LGA	10 AND ABOVE
AKKO	KUMO(12)	DUKKU	SABONPEGI/SHABAWA(38)	KWAMI	GADAM(10)
			DUKKU(22)		DIRRI(20)
BALANGA	LAJANGARA(26)		NAYELWA(26)		
	SWA(42)		SHABAWA(28)	NAFADA	SHOLE(14)
	BALANGA(64)			SHONGOM	BOH(12)
	GANUSA(54)	FUNAKAYE	-----		LALAIPIDO(31)
BILLIRI	SHELA(22)	GOMBE	-----		
	AYABA(10)			YAMALTU/DEBA	DADIN KOWA(10)
	LAMORKONDO(20)	KALTUNGO	DAGON RUWA(12)		KWADON(36)
			LAKWEME(14)		DAKUM(24)