

A Study on The Knowledge and Practice of Prevention and Control of Schistosomiasis Among Community Health Workers in Abuja Municipal Area Council, FCT, Nigeria.

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Abstract- *The Community Health Workers remain the frontline health service providers in Nigeria health system, particularly at the PHC level. Effective schistosomiasis prevention and control strategies are rooted in PHC concepts. This makes the CHWs a veritable resource for effective community-based control and prevention, and they have been deployed for this purpose as observed in AMAC, FCT, Nigeria. This study aims to ascertain the existing knowledge of these frontline health care providers with a view to improving their prevention and control of schistosomiasis.*

Methodology: *This was a cross-sectional descriptive study among the 396 CHWs selected through a multistage sampling process from PHCs, FCT PHC Board and Health Department of AMAC.*

Results: *348 (87.9%) and 372 (93.9%) had good knowledge across various dimensions of knowledge of Schistosomiasis and of control and prevention respectively. They were found to be involved in several community-based control and prevention activities. These include supporting community members access appropriate treatment and medication; promoting personal hygiene, water and environmental sanitation; and providing education on risks associated with activities in the streams and river by 388 (98.0%). 387 (97.7%) engaged in identifying high-risk group for schistosomiasis prevention; collaborating with local authorities, organizations, and stake holders in their schistosomiasis control and prevention activities, and supporting local schools and educational institutions in other to incorporate schistosomiasis control and prevention in their educational activities.*

Conclusion and Recommendations: *Participants were found to possess satisfactory knowledge of schistosomiasis, appropriate knowledge about control and prevention of schistosomiasis, and involved in various community-based control and prevention practice, with recommendation that these should be consistently re-enforced and sustained for sustained and greater impact in their profession.*

Index Terms- *Schistosomiasis, Knowledge, Practice, Community Health Workers.*

I. INTRODUCTION

Schistosomiasis, also known as bilharzia, is one of the Neglected Tropical Diseases (NTDs) caused by parasitic worms of the genus *Schistosoma*. It remains a significant public health challenge in many developing countries, particularly in sub-Saharan Africa (WHO, 2023). The disease is associated with poverty, poor sanitation, lack of access to safe water, and inadequate health education. Schistosomiasis is the second most fatal parasitic infection worldwide in terms of morbidity, with over 90% of all cases worldwide being reported in the continent. Globally, it is estimated that over 230 million people require preventive treatment for Schistosomiasis annually (WHO, 2023). Africa has the highest Schistosomiasis burden, with Nigeria accounting for a significant proportion of the global burden. In many sub-Saharan African nations including Nigeria, the illness poses a serious threat to public health (Oyeyemi et al, 2020).

In West Africa, Schistosomiasis is a major public health concern; depending on the area where the prevalence varies from less than 1% to more than 50%, and it is a significant contributor to illness and disability. Nigeria is recognized as one of the countries with the highest prevalence of Schistosomiasis, especially in rural and peri-urban areas. Factors such as poor water supply, frequent contact with infested water bodies, and limited health awareness contribute to the continuous transmission of the disease.

In the Federal Capital Territory (FCT) Abuja, despite its urban status, all the six area councils have rural settlements where Schistosomiasis remains endemic due to these risk factors.

In Abuja Municipal Area Council, the dynamics of rural-urban migration, coupled with environmental risk factors, necessitate an evaluation of the Knowledge and Practice of CHWs towards Schistosomiasis Prevention and Control. With the right support from committed NTDs officers at the facility and National NTDs program level, Community Health Workers (CHWs) can act as change agents by promoting awareness, pushing for the necessary allocation of resources and implementing Schistosomiasis interventions.

CHWs play a crucial role in the prevention and control of Schistosomiasis at the grassroots level. They are often the first point of contact between the healthcare system and community members. Their responsibilities include health education, disease surveillance, case detection, and mobilization for Mass Administration of Medicines (MAM) campaigns.

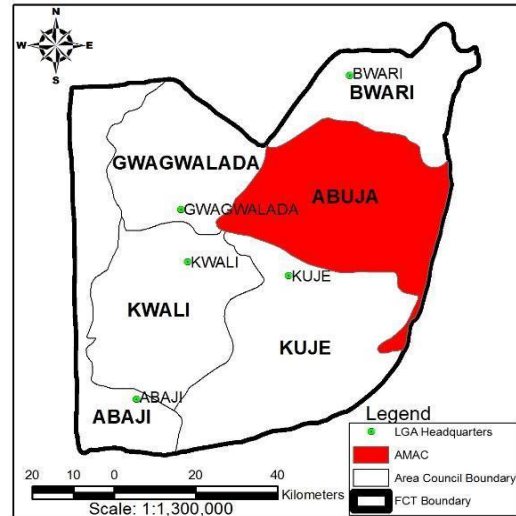
II. METHODS

Study Design:

This study employs a Cross-Sectional Descriptive design aimed at assessing the Knowledge and Practice of Schistosomiasis Prevention and Control among Community Health Workers in Abuja Municipal Area Council, FCT Nigeria.

Study Area:

The Federal Capital Territory (FCT) is situated in the central part of Nigeria and falls in the Sudan, and Guinea vegetation. It consists of six area councils of which AMAC is one of the six and has a total of twelve (12) wards, with an estimated population of over 2million (projected from 2006 census).



AMAC is the central administrative unit within the FCT. It is characterized by a blend of densely populated urban settlements and peripheral areas that maintain peri-urban and semi-rural characteristics. This mix of environments influences public health dynamics, particularly regarding water, sanitation, and health service delivery. A significant proportion of the population, particularly among the Gbagyi, Koro, Gwandara, Hausa, Yoruba, Igbo, and other ethnic groups, are predominantly engaged in farming as their major occupation.

AMAC hosts a network of Primary Health Facilities that serve as the frontline for health service delivery. Current records from the FCT Ministry of Health indicate that there are approximately 294 primary health facilities within AMAC. These facilities are spread across different wards.

Within these facilities, there are an estimated 650 Community Health Workers (CHWs) actively engaged in community outreach and primary health care activities.

Several water bodies have been identified as potential sites for breeding and the transmission of Schistosoma parasites, like the urban/rural streams and canals, artificial lakes, reservoirs, seasonal rivers and wetlands are often used for domestic purposes by local residents and can be potential hotspots for parasite exposure.

Praziquantel is the drug of choice for schistosomiasis treatment, and is distributed in AMAC through periodic Mass Administration of Medicines (MAM) campaigns.

Study Population

The Study populations were CHWs operating in Primary Healthcare Facilities, FCT Primary Health Care Board and AMAC Health Department who worked across the area council.

Sample Size Determination

Based on the study assessing Knowledge, Attitude, and Practices (KAP) among Community Health Workers (CHWs), the sample size is often calculated using the formula for estimating a single proportion:

$$n = Z^2 \times p \times (1-p) / d^2$$

Where:

Z = the z- score corresponding to the desired confidence level (typically 1.96 for 95% confidence level).

P = the estimated prevalence (or proportion) of the attribute being studied.

d= the desired margin of error (precision), often set at 0.05

Using Prevalence from a Similar KAP Study

In a previous KAP study among CHWs in FCT, the prevalence of adequate knowledge regarding Schistosomiasis was reported to be approximately 50% (Akinmoladun et al, 2019). This value was often used as it provides the maximum sample size for a given level of precision when no other reliable estimate was available.

Using the formula becomes:

$$n = (1.96)^2 \times 0.5 \times (1-0.5) / (0.05)^2 = 3.8416 \times 0.25 / (0.0025) = 0.9604 / (0.0025) \text{ approximately } 384.16$$

Rounding up, the initial sample size is 384 CHWs.

Adjustment for non-response:

To account for potential non-response or incomplete data, a common approach was to add approximately 10% to the calculated sample size. This was computed as follows:

$$\text{Adjusted Sample Size} = 384 + (384 \times 0.10) = 384 + 38.4 \text{ approximately } 422.4$$

After rounding, the final sample size required for the study was approximately 422 Community Health Workers.

Sampling Technique

This was a two-stage sampling technique with incorporated stratified random sampling.

Stage One

In each ward, PHC facilities were selected randomly (because they serve as a referral center to health post and health clinics, also has more community health workers than health post and clinics). Therefore, there are five (5) Primary Health Centers representing eight (8) locations. Namely: Garki, Gwagwa, Gwarimpa, GUI, Kabusa, Karu, Orozo and Jiwa. Two (2) Primary Health Centers (PHCs) were selected to represent four (4) wards: Nyanya, Wuse, Karshi and City Centre.

Stage Two

In the second stage, a list of all the Community Health Workers in each ward was determined, and each person was assigned a number based on the list and was selected at random i.e. Stratified random sampling was used.

Data collection

The questionnaire was adapted from a previous KAP (Knowledge, Attitude and Practice) and was pre-tested amongst 42 people who are working in Public Health Department and did not participate in the study. It was modified and improved before self-administration. The information related to the questionnaire includes the respondent's socio-demographic data, knowledge and practice methods for the prevention and control of Schistosomiasis among Community Health Workers.

In addition to data collection via questionnaire, direct observation was made and further enquiry made to ascertain more information on the observed behavior of members of the community with respect to use of water.

Data Grading and Analysis

Data were analyzed using the statistical package for social sciences (SPSS). Descriptive statistics (Mean, frequency, percentages) tables were presented in the section and corresponding graphs were used to present the findings. A test of significance or association was using chi-square and determined at $pV \leq 0.05$. Also, the table below was used to assess the level of practice among respondents.

Grading of Knowledge and Practice among respondents

Variables	Scores
Good Knowledge/Practice	70 – 100
Fair Knowledge/Practice	50 – 69
Poor Knowledge/Practice	1 – 49

The table above shows that, those who scored 70 – 100 were considered as having good Knowledge/Practice; those who scored between 50 and 69 were considered having a fair Knowledge/Practice while those who scored between 1 and 49 were considered as having poor Knowledge/Practice.

III. RESULTS

Respondents' Socio-Demographic Characteristics

As shown in Table 1, respondents between the ages of 21 and 30 formed the majority, with 177 (44.7%). It also revealed that females were the majority of the respondents, with 247 (62%), while males were 149 (38%). It was also revealed that, responses of the respondents based on the years of service, from 1-10 years were the majority with 282 (71.2%).

It also shows that, majority of the respondents are working in Primary Health Care facilities, with 299 (75.5%). Community Health Extension Workers were 270 (68.2) while Junior Community Health Extension Workers were 81 (20.4) respectively. This indicates that majority of the respondents were CHEW.

Table 1: Demographic Characteristics of the respondents

Variables		Frequency (Percentage)
Age group of the respondents	10-20 years	3 (0.8)
	21-30 years	177 (44.7)
	31-40 years	113 (28.5)
	41 above years	103 (26.0)
Gender of the respondents	Male	149 (38)
	Female	247 (62)
Years of service	1-10 years	282 (71.2)
	11-20 years	85 (21.5)
	21-30 years	27 (6.8)
	31 years above	2 (0.5)
Places of work	Primary health care	299 (75.5)
	Primary health care board	53 (13.4)
	Health department in AMAC	44 (11.1)
Cadre	CHO	45 (11.4)
	CHEW	270 (68.2)
	JCHEW	81 (20.5)

Source: (Researcher field experience, 2024).

Knowledge of CHWs on the prevention and control of Schistosomiasis

Respondents in the study area are knowledgeable (353, 89%) about Schistosomiasis Prevention and Control as shown in Figure 1 below

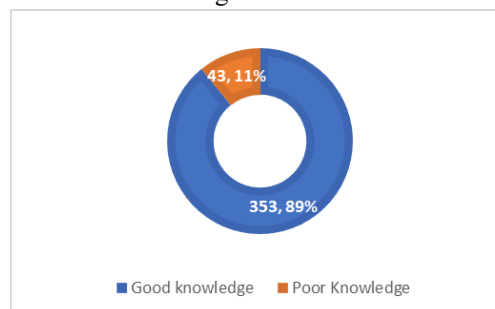


Figure 1 shows the proportion of respondents' knowledge of schistosomiasis prevention and control.

Respondents' Practice Methods Regarding Schistosomiasis Prevention and Control

From the respondents' practices, CHWs were able to identify several methods with regard to schistosomiasis prevention and control, as shown in Table 2.

Table 2: Respondents' Practice Methods Regarding Schistosomiasis Prevention and Control

Practice Methods (Within the years of service)	Percentage	Percentage
	Yes	No
Identification and targeting of high-risk groups within the community for schistosomiasis control and prevention	387 (97.7)	9 (2.3)
Promoting the use of clean water sources and encouraging personal and environmental practices within the communities	388 (98.0)	8 (2.0)
Visiting local schools and educational institutions to incorporate schistosomiasis control and prevention	387 (97.7)	9 (2.3)
Collaborating with local authorities, organizations, and stakeholders to create a comprehensive approach to schistosomiasis control and prevention	387 (97.7)	9 (2.3)
Ensuring that individuals have access to appropriate treatment and medication during	388 (98.0)	8 (2.0)

the annual mass administration of medication (MAM) in AMAC		
Educating the community on the dangers associated with activities that they perform in the streams and rivers	388 (98.0)	8 (2.0)
Creating awareness among individuals about school-age children who are more prone to schistosomiasis than other age groups	385 (97.2)	11 (3.8)
Engaging the public on the use of latrines, as open defecation can contaminate water sources with Schistosoma eggs	383 (96.7)	13 (3.3)

Test of association between Practice on Prevention and Control of Schistosomiasis and demographic characteristics

As revealed in Table 3, of the socio-demographic characteristics tested against the practice on prevention and control of schistosomiasis of the respondents, only age ($\chi^2 = 33.977$; $p = 0.038$), place of work ($\chi^2 = 30.975$; $p = 0.006$) and cadre ($\chi^2 = 23.478$; $p = 0.053$) were statistically significant at $P = 0.05$.

Table 3: Test of association between Practice on Prevention and Control of Schistosomiasis and demographic characteristics

Variables		Frequency (Percentage)	Chi-Square	Pv
Age group of the respondents	10-20 years	3 (0.8)	33.977 ^a	0.038
	21-30 years	177 (44.7)		
	31-40 years	113 (28.5)		
	41 above	103 (26.0)		

	years			
Gender of the respondents	Male	149 (38)	3.553 ^a	0.830
	Female	247 (62)		
Years of service	1-10 years	282 (71.2)	10.219 ^a	0.976
	11-20 years	85 (21.5)		
	21-30 years	27 (6.8)		
	31 years above	2 (0.5)		
Places of work	Primary health care	299 (75.5)	30.975 ^a	0.006
	Primary health care board	53 (13.4)		
	Health department in AMAC	44 (11.1)		
Cadre	CHO	45 (11.4)	23.478 ^a	0.053
	CHEW	270 (68.2)		
	JCHEW	81 (20.5)		

IV. DISCUSSION

The findings of this study revealed that respondents in the study area are knowledgeable about Schistosomiasis Prevention and Control. They have the knowledge that, Schistosomiasis is one of the Neglected Tropical Diseases that is caused by *Schistosoma* species, and staying away from infested water bodies such as lake, river or ponds that are infected with snails can reduce the burden of Schistosomiasis. Some of the control measures for Schistosomiasis includes control of snails' population, adequate sanitation and hygiene, provision of safe water supply as well as treatment of infected individuals with 370 (90.4%), 368 (92.9%) and 376 (94.9%) respectively. The findings are in line with that of Felipe (2022) whose mentioned that, implementation of sanitary facilities and access to safe drinking water alone does not guarantee a reduction in the prevalence of the disease in an

endemic area and must be accompanied by educational actions with the target communities to be more effective. Hotez et al (2009), added that, Schistosomiasis is also a parasitic disease caused by the trematode *schistosoma*. It is one of the prevalent parasitic infections in sub-Saharan Africa, including Nigeria. The disease is spread through contact with contaminated water sources, particularly in area where sanitation is poor. Another finding identified from this study was that, respondents are aware that the higher the time spent in infected water, the more the chances of contacting water borne diseases like Schistosomiasis. Various communities in AMAC depend heavenly on river/streams with response rate of 81.8% and Lake and Ponds for household water requirement especially in dry season with 322 (81.3%). This finding also revealed that respondents agreed that CHWs should be able to identify and target high risk group within the community for schistosomiasis control and prevention with 387 (97.7%), CHWs should promote the use of clean water sources and encourage personal and environmental practices within the communities with 388 (98.0%), CHWs should engage with local schools and educational institutions in other to incorporate schistosomiasis control and prevention with 387 (97.7%). CHWs also agreed that individual have access to appropriate treatment and medication during the annual mass administration of medication (MAM) in AMAC with 388 (98.0%), CHWs should also create awareness to individuals about school age children who are more prone to schistosomiasis than other age group, CHWs should encourage the public on the use of latrines, as open defecations can contaminate water sources with *Schistosoma* eggs among others with 385 (97.2%) and 383 (96.7%) respectively. This finding indicates that, respondents have good understanding about the Prevention and Control strategies used for Schistosomiasis Prevention and Control.

V. CONCLUSION AND RECOMMENDATION

This study concludes that CHWs in AMAC have a higher level of knowledge and good Practice methods concerning the Prevention and Control of Schistosomiasis, but there are significant gaps like socio-cultural barriers, poor Water, Sanitation and Hygiene (WASH) infrastructure, and behavioral

change complexity that hinder effective community-level intervention. The findings underscore the need for continuous professional development, community sensitization and awareness creation, provision of adequate resources, and supportive supervision to strengthen the role of CHWs in combating Schistosomiasis.

However, observations during the course of the study shows that community members were still using streams rather than the constructed boreholes as their source of water. There are cultural factors or issues like traditional belief and perceptions, distrust of modern facilities, perceived natural healing and cultural resistance to change that made them to use the streams, rather than the provided boreholes. As outlined earlier include, the stream water afforded them for utilization rather than the boreholes water.

This research contributes to the growing body of knowledge on Schistosomiasis Prevention and Control in AMAC by focusing on a key but often overlooked cadre of healthcare workers (CHWs). The insights derived from this study can inform policy decisions, program planning, and resource allocation aimed at strengthening community-level Schistosomiasis Control efforts in AMAC and similar settings across FCT, Nigeria.

Recommendations

The study recommends that, while reinforcing the knowledge and practices of Schistosomiasis Prevention and control, there is an urgent need to examine the socio-cultural factors influencing community members on the use of streams/rivers rather than boreholes. Strengthening CHWs' relationships with community leaders and local influencers will help to overcome cultural barriers and promote the acceptance of prevention strategies. CHWs, supported by Health promotion officers, should be empowered to address local health needs and advocate for resources that can improve community-wide health outcomes. And should lead sensitization campaigns and organize health education and awareness creation to correct misconceptions among community members.

This will increase community participation, awareness, and foster behavior change necessary for Prevention and Control Schistosomiasis in AMAC.

DECLARATIONS

Consent for publication

Consent was approved by my co-authors for this publication.

Availability of data and materials

The datasets generated and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

- Nafisat Salisu Isa: Conceptualization, study design, data collection, data analysis, manuscript drafting.
 - Prof. Haroun Omeiza Isa: Supervision, methodology guidance, validation, and critical review of the manuscript.
 - Muhammad Askirama Abdullahi: Suggestions, methodology review of the manuscript.
 - Ijah Achai Emmanuel: Final review of the manuscript.
- All authors read and approved the final manuscript.

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