Evaluation of the Knowledge and Activities of a Local Community in Mwea Endemic with Schistosomiasis

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Abstract

Schistosomiasis infection remains a neglected tropical disease in the tropics. Despite successive years of Mass Drug Administration (MDA) targeting school aged children prevalence rates have remained high over the years. This study sought to evaluation of the knowledge of the surrounding communities in close proximity to the schools previously targeted and activities predisposing them infection as a key indicator to successive control programs. Data collection involved semi structured interviews using a questionnaire and also through observation. A total of 99 people across the locality both male and female were interviewed. The people were selected randomly for the interviews at different points within the locality. Observations of their awareness of risks factors predisposing them to the disease was done within the different watering points. Qualitative data was analysed according to the common characteristics and the main themes identified and descriptive statistics was used in accessing these parameters with a percentage frequency of the variables. Spearman's Rank correlations were performed on various variables to check for bivariate correlations between the demographic parameters and the various aspects of the knowledge of the residents on awareness of the disease at *P≤ 0.05*. The study revealed that knowledge about the cause, transmission and prevention of schistosomiasis among the rural population in Karii locality was adequate and well known with 95% of the sampled population being aware of disease, many of whom have heard about it from a health worker (73%). There was a positive correlation between occupation and activities leading to infection whereas there was no correlation between the education level and knowledge of disease prevention. Ultimately the challenge is that with a high awareness level there was still a persistent high prevalence that can be attributed to occupation, education level and the activities leading to reinfection. The community is therefore continuously exposed despite efforts being made.

Keywords: Schistosomiasis, community, control

1. Introduction

Schistosomiasis prevention and control has heavily depended on chemotherapy and also adoption of basic sanitation practices (WHO, 2015). However the involvement of the population at risk greatly influences any disease control initiatives hence individual and community perceptions relating to the control of schistosomiasis are likely to have a significant effect on prevention and control efforts (Parker and Allen, 2011). In addition, immense efforts are being made to control morbidity caused by schistosomiasis, therefore knowledge, attitudes, and practices of the communities have a major role in sustainable control interventions (Maseko *et al.,* 2016). For this reason, prevention and control interventions need to invest in social mobilization and community participation (Amazigo, 2012).

The success of control initiatives involving the community depend on level of the communities' uptake of the program, which is based upon understanding the community knowledge and practices towards the disease and recommended preventive and/or treatment regimens. Indeed, the Kenyan Ministry of Public Health and Sanitation (MOPHS) through its national multi-year strategic plan for control of Neglected Tropical Diseases 2011–2015 recommends that more research is needed on the knowledge, attitudes and practices towards schistosomiasis control (MOPHS, 2011). When working with communities to develop a compelling rationale for their participation, existing knowledge and perceptions must be taken into account. Perceptions and attitudes about parasitic worm infections and their prevention and treatment are important factors (Omedo *et al.,* 2012). Since the distribution of schistosomiasis is focal and depends on specific snail hosts and infective human activities, it is greatly important to evaluate possible community awareness and knowledge.

Despite the high prevalence of schistosomiasis, majority of the people in the community have low awareness and therefore there is the need for health education to raise community's awareness on schistosomiasis in order to augment prevention, control and elimination efforts (Odhiambo *et al.,* 2014). It is expected that following a community-based public health education campaign, knowledge of common symptoms and transmission may lead to improved health-seeking behaviour and early treatment (Musuva *et al.,* 2014).

In this study, the knowledge of the affected community on schistosomiasis and its control and activities predisposing them to infection was evaluated.

2. Methodology

An evaluation of the knowledge and activities predisposing the community to schistosomiasis infection was carried out in Karii location in Mwea (Kirinyaga County) where previous studies have indicated high prevalence rates in the schools sampled despite several years of successive MDA as outlined by Masaku et al. (2015) and Kihara et al. (2007). This was done so as to fully evaluate the community awareness on the knowledge of the disease affecting them and their children. The target was the parents, guardians and the community surrounding the school who are continuously exposed to the infection and are key targets of any control programs. Data collection involved semi structured interviews and observation within the time that the study was undertaken. A questionnaire was developed in consultation with a biostatistician and was administered by the locals who understood the Kikuyu language. A total of 99 people across the locality both male and female were interviewed. The people were selected randomly for the interviews at different points within the locality. Observations of their awareness of risks factors predisposing them to the disease done within the different watering points.

3. Data Analysis.

A qualitative analysis of the knowledge and awareness of the community about the disease was done. Information captured from the questionnaire was analysed according to the common characteristics and the main theme which included the social-demographic parameters, knowledge of existence of disease, causative agent and transmission, greatest people at risk prevention and control. Descriptive statistics was used in accessing these parameters with a percentage frequency of the variables. Spearman's Rank correlations were performed on various variables to check for bivariate correlations between the demographic parameters and the various aspects of the knowledge of the residents on awareness of the disease. Statistical analysis was performed using a statistical analysis software (SPSS).
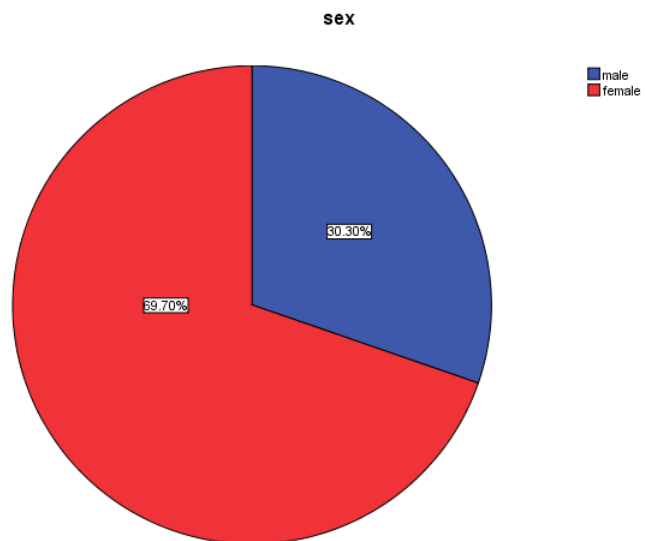
4. Results.

Socio-demographic information

The age group of most of the respondents was between 25-29 years. They had the highest frequency of 34% while the least age group was 40-45 years representing 8 % (Fig 1).
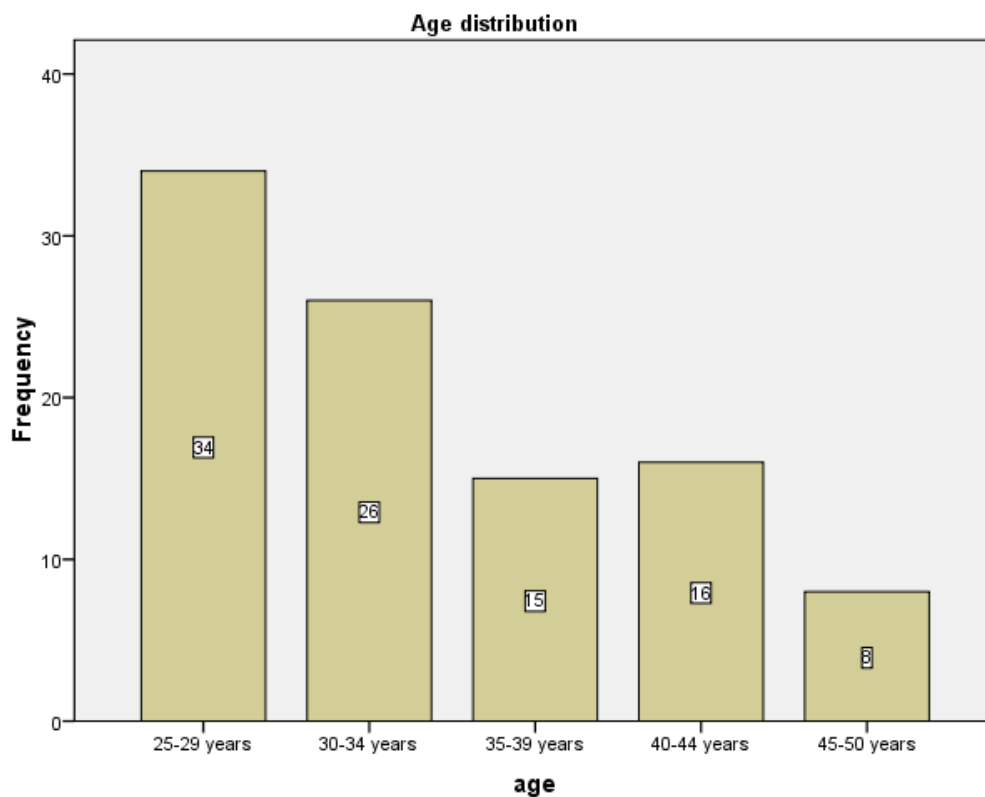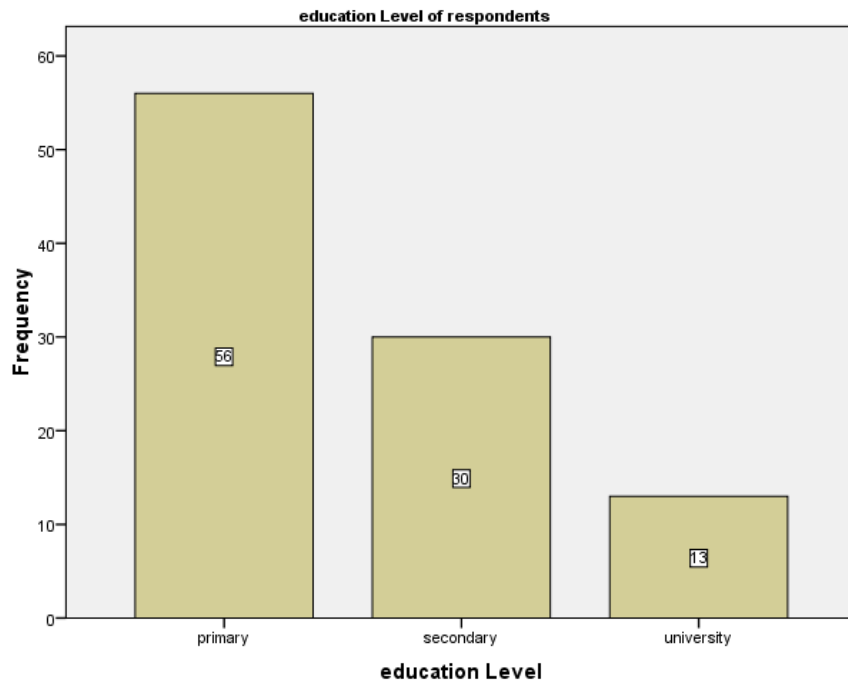
Fig 1. Age distribution of the respondents

Majority of the respondents interviewed were female (70%) while the male were represented by only 30%. (Fig 2).

Fig. 2. Sex distribution

On education level the majority (57%) were educated only up to the primary school level while 30% and 13% were educated up to the secondary and tertiary/post-secondary level respectively (Fig 3).

Fig 3. Education level of respondents

Farming accounted for 66% of the respondents as their main occupation while the unemployed were 15%. Those in formal employment were 8% and the students were 10% (Fig 4)

**Fig 4**. Occupation activities of respondents

Knowledge on schistosomiasis

95% of those interviewed were aware of the existence of schistosomiasis while 5% had no idea about the existence of the disease (Fig. 5).
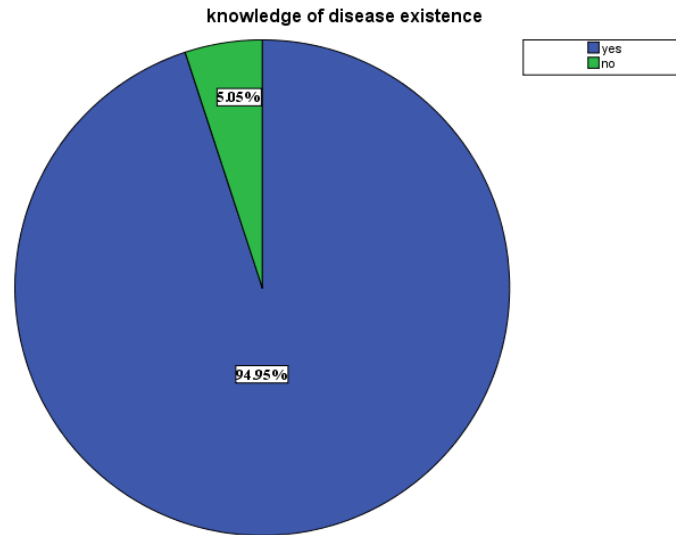
Fig 5. Knowledge on awareness of schistosomiasis

Only those who had knowledge of the disease were then asked about the other aspects of the disease. Of the 94 participants, most (73%) had heard about the disease from a health worker while the rest had heard about it from a relative/friend (22%), newspaper (1%), radio (1%) and local administration (2%, Fig. 6).
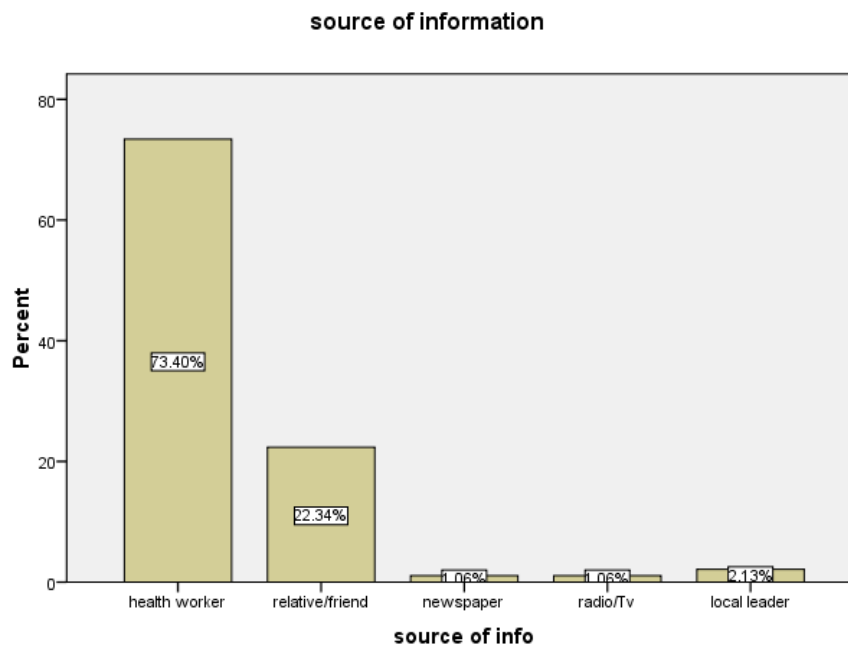
Fig 6. Source of information about the disease

On the causative agent 98% of the respondents were aware that the causative agent lives in water before it gets into man. Furthermore the respondents were aware and correctly identified some of the activities leading to infection i.e. bathing (6%), swimming (33%), urinating/defecating (30%), farming (30%) and washing in streams

(1%) and that they are risk factors for contracting the disease (Fig 7).
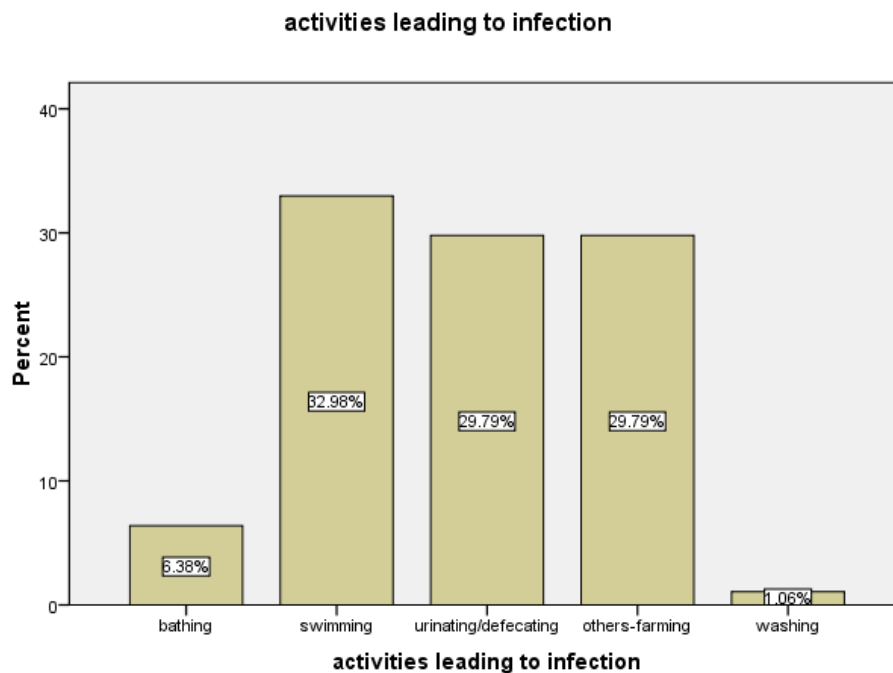
Fig 7. Activities leading to infection

On treatment 98% were aware of the treatment for schistosomiasis and similarly they were also aware that one goes to a health facility (98%) for treatment. Most of them or their relatives (90%) have been infected with the disease and sought treatment at the health facility.

Correlations

Spearman's Rank correlations were performed on various variables (bivariate correlations) to check for bivariate correlations between the demographic parameters and the various aspects of the knowledge of the residents on awareness of the disease. There was no correlation between the level of education of the community members and their knowledge of activities leading to infection. $P = 0.082 > 0.05$ (Table 1).

Table 1. Correlation between level of education and knowledge of activities leading to infection

Correlations				education level	activities leading to infection
Spearman's rho	education level	Correlation Coefficient		1.000	-.180
		Sig. (2-tailed)		.	**.082**
		N		94	94
	activities leading to infection	Correlation Coefficient		-.180	1.000
		Sig. (2-tailed)		.082	.

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		N	94	94
	activities leading to infection	Correlation Coefficient	-.180	1.000
		Sig. (2-tailed)	.082	.
		N	94	94

There was a positive correlation between the occupation of the community members i.e. farming and the activities leading to infection *P*= 0.015< 0.05 (Table 2).

Table 2. Correlation between occupation and activities leading to infection

Correlations			activities leading to infection	occupation
Spearman's rho	activities leading to infection	Correlation Coefficient	1.000	.251[*]
		Sig. (2-tailed)	.	**.015**
		N	94	94
	occupation	Correlation Coefficient	.251[*]	1.000
		Sig. (2-tailed)	.015	.
		N	94	94
*. Correlation is significant at the 0.05 level (2-tailed).				

There was no correlation between the education level and knowledge of disease prevention *P*=0.309>0.05 (Table 3).

Table 3. Correlation between education level and knowledge of disease prevention

Correlations			education level	knowledge on prevention
Spearman's rho	education level	Correlation Coefficient	1.000	-.106
		Sig. (2-tailed)	.	**.309**
		N	94	94
	knowledge on prevention	Correlation Coefficient	-.106	1.000
		Sig. (2-tailed)	.309	.
		N	94	94

Lastly there was no correlation between the knowledge on the cause of disease and education kevel P=0.462>0.05 (Table 4).

Table 4. Correlation between knowledge on the cause of disease and education level

Correlations				
			causes	education level
Spearman's rho	causes	Correlation Coefficient	1.000	-.077
		Sig. (2-tailed)	.	**.462**
		N	94	94
	education level	Correlation Coefficient	-.077	1.000
		Sig. (2-tailed)	.462	.
		N	94	94

5. Discussion

Knowledge on the control of schistosomiasis is an important concept for its success in any control program. Permanent control can be achieved only through regular treatment accompanied by long-term key preventive interventions in order to break transmission routes: provision and use of a safe and adequate water supply; improvement of environmental sanitation; good sanitation and hygiene habits (WHO, 2002). However all this can become futile if the community in which these control programs are initiated are not aware of the information concerning the disease.

In the present study 95% of the respondents were knowledgeable and had heard about the disease while 5% said they have never heard about the disease. This is an indicator that information regarding the disease is known well in this area. However the 5% that have no idea about the disease also represent a population that is heavily burdened by the infection yet they have no idea about its existence. These findings are in agreement with a previous study from western Kenya (Musuva *et al.,* 2014) and in Mwea (Mwai *et al.,* 2016) where a high level of awareness of schistosomiasis was reported.

The majority of the respondents in this study were educated only up to primary school level and this may represent a population that has challenges in understanding the salient aspects of the disease as well as limited comprehensive knowledge on the infection. Education level of the parents/guardians plays a critical role in relaying information to their children in regards to control, and prevention. Lack of this could lead to higher infection and this could be due to the fact that lack of proper knowledge of the disease which leads to inability to properly educate their children/wards about the preventive measures against the disease as also reported by Houmsou *et al.* (2012). Additionally educational backwardness may have great impact on the prevalence of schistosomiasis local endemic communities Rassi *et al.* (2016).

Farming mainly consisting of rice growing in the irrigation schemes was the main source of livelihood in the study area and this has been known to be a contributing factor for the persistence and spread of the infection. This was also demonstrated in this study as a major factor. Schistosomiasis is particularly linked to agricultural and water development schemes being a disease of the poor who live in conditions which favour transmission (Engels *et al*., 2002).

The findings of this study shows that 73% of the respondents declared a health worker as the source of information about schistosomiasis, and this was good because health workers play an important role in helping to create awareness in the area. However there needs to be more coming from the local leadership and also mass

media as evidenced by the low information received from these sources by the respondents. A similar study carried out in the same locality found out that a third of the participants interviewed indicated health workers as the main source of information (Mwai *et al.,* 2016). The importance of the health workers in creating awareness about schistosomiasis can therefore not be underscored and is very vital. This is crucial for a continuous improvement of the awareness of the disease which would translate to the reduction of prevalence and morbidity.

The present study revealed good knowledge about the habitat of the causative agent particularly the role of snails in the transmission of schistosomiasis. Most of them were able relate the existence of the disease to the snails especially in the canals and streams and the fact that the disease is got form the water. In addition they were aware of the activities that may contribute to the infection i.e swimming, urination/ defecation and farming. In western Kenya, a previous study found that some of the participants knew that snails and poor sanitation contributed to the spread of the disease, but lacked understanding of the transmission cycle (Odhiambo *et al.,* 2014). Lack of this knowledge among the targeted population may create an additional burden and cost for controlling the disease and may cause the failure of the schistosomiasis eradication program (Sady *et al.,* 2015). As noted by Musuva *et al.* (2014), there is a great need for health education on the signs, symptoms, and risk factors of schistosomiasis to strengthen the impact of control strategies and reduce infection. Continued health education is critical in raising awareness in the population about schistosomiasis, and encouraging symptomatic individuals to seek care and treatment with praziquantel (Doenhoff *et al.,* 2008).

In respect of treatment-seeking behaviour, the majority of the participants seek treatment at health centres when they or their relatives have been infected. Access to a health facility to seek treatment is key in reducing morbidity. However, it is widely acknowledged that there is always a delay in seeking treatment, because many people do not seek care for symptoms that they perceive as mild or moderate and wait until they become severe (Musuva *et al.,* 2014).

There was a positive correlation between occupation and activities leading to infection. This can be related very well because most of them believe that farming activities are a great contributor for the infection and transmission coupled with the fact that most of them know of the existence of the snails in the water. Schistosomiasis infection is known to be associated with various water contact activities; swimming, washing of clothes and cooking utensils, fishing and farming (Anto *et al.,* 2013). This informs about the initiatives that should be put in place for the farmers and their exposure to the infection. There is need to encourage proper farming gears e.g. gumboots and gloves while farming to reduce the exposure to the invading cercariae.

There were no correlation between education level and knowledge of activities leading to infection and this is an area of concern because academic empowerment directly influences the perception and avoidance of activities that would expose an individual to the infection. Similarly there was no correlation between education level and the knowledge on the cause of the infection. This is also an area that needs to be looked into because they are directly linked in that the higher the education level the better the understanding of the cause of infection. There was also no correlation between education level and knowledge of disease prevention. This can be attributed to the fact that there has been adequate health sensitization and awareness as verified by the percentage of the people that have heard the information from the health professionals (73%). This is very encouraging because awareness of the disease and knowledge on disease prevention may not necessarily be tied to the education level so long as there is adequate sensitization of the local community. The community here is disadvantaged because of low income levels and poverty and other several factors. Therefore the best in terms of disease control and prevention is through continuous health education. In as much as higher education levels were fairly consistently associated with higher levels of knowledge attitudes and practices (Rassi *et al.,* 2016), it is virtually important that more health education to the parents and caregivers of the children is done so as to directly impact on the control and prevention activities.

6. Conclusion

From the study it was shown that the community is well informed about the infection as seen in the percentage of people who know about the disease that is affecting them. Health workers have done a good job in sensitization of the community, however more attention is needed on health education. This is need for continuous sensitization in the community as far as control strategies is concerned and periodic assessment of the knowledge attitudes and practices in the community.

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