



# Knowledge, Attitudes and Practices of intermittent deworming in Alakahia Community, Rivers State, Nigeria

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## Abstract

Soil transmitted helminth infections (STHIs) are a major problem in tropical countries of which Nigeria is one. Periodic deworming has been shown to reduce morbidity associated with these infections. This study seeks to assess people's knowledge as well as attitudes and practices of intermittent deworming in Alakahia community in Rivers State, Nigeria. Questionnaires were administered randomly to 305 participants and subsequently 35 caregivers for children less than five years were interviewed on their knowledge of transmission and symptoms of STHIs. Results show that regardless of the high level of knowledge of the benefits of deworming by more than 80 % of the respondents, the actual practice of periodic deworming was poor, 52.4 % and 60.2 %, respectively in adults and children. Level of knowledge of deworming increased with level of education. Less than 60% of interviewed respondents knew the modes of transmission of STHIs and symptoms of infection. Findings show that knowledge of deworming does not translate to practice. In order to reverse this trend, it is recommended that social marketing and intensive awareness campaign be implemented to promote periodic de-worming practices. Development of free mass deworming programmes for the people at higher risk by government and other stakeholders is also advocated.

**Keywords:** Soil transmitted helminth infections, anthelmintics, intermittent deworming, Nigeria.

## Introduction

Soil transmitted helminth infection (STHI) is a very common problem in tropical and developing countries. Estimates from recent reports show that one billion of the population of the world is infected with soil transmitted helminth infections<sup>1</sup>. The disease burden worldwide caused by these intestinal nematodes is estimated at 22.1 million disability adjusted life years (DALY) for hookworm, 10.5 million for *Ascaris lumbricoides* (roundworms) and 6.4 million for *Trichuris trichuria* (whipworm) respectively. In all a whopping total of 39 million life years is lost to STHI<sup>2</sup>. The main effects of STHIs include malnutrition, decreased nutrient intake, iron deficiency anaemia, loss of appetite and growth retardation<sup>3</sup>. Due to the low mortality associated with STHIs when compared to other tropical diseases such as malaria, they are normally overlooked despite the high morbidity associated with them. STHI is more prevalent in tropical areas because the climate encourages the viability of the larva<sup>4</sup>. The optimal conditions of moist sandy soil in a tropical region with a hot climate and high temperature, makes Nigeria very viable for the survival of intestinal helminths. According to World Health Organization (WHO) country health profile, as at 2011, 58% of the Nigerian population has access to clean water and only 32% of the Nigerian population has access to good sanitation<sup>5</sup>. This limited access to clean water and sanitation coupled with the climate of the region contributes to high transmission and hence increase in the prevalence of these infections in Nigeria. Eliminating

STHIs will contribute to the achievement of the millennium developmental goals (MDGs) by improving child health thereby reducing child mortality which is one of the MDGs<sup>6</sup>. Since more than 50% of the country's population lack access to sanitation and almost 50% lack access to clean water, there is a high level of re-infection which calls for periodic deworming as an effective intervention to reduce the transmission of STHIs and the burden of worm infestation. A randomized controlled trial in young rural African children shows that periodic deworming decreased mild wasting malnutrition by 62%, decreased the prevalence of small arm circumference by 71% in children less than 30 months and decreased moderate anaemia (Hb < 9g/dl) by 59% in children less than 24 months. It also improved appetite in 48% of all children<sup>7</sup>. Other studies have also reported that intermittent deworming has been accompanied by significant improvement of nutritional status, promotes growth and reduces retardation, and reduces prevalence and intensity of *Ascaris Lumbricoides* infections in preschool children<sup>8-11</sup>. According to WHO levels of infection can be kept below those associated with morbidity through intermittent chemotherapy at regular intervals with safe and affordable single dose drugs and improves health and development in children<sup>12</sup>. Drugs recommended by WHO for intermittent deworming include levamisole, mebendazole, albendazole and pyrantel pamoate<sup>13</sup>. However, previous reviews show that the benzimidazoles such as mebendazole and albendazole are the most commonly used anthelmintics<sup>14</sup>.

In order to develop an effective system of intermittent administration of anthelmintic drugs as a means of controlling the transmission of STHIs in Nigeria, it is important that the knowledge, attitudes and practices of Nigerians to deworming be evaluated.

In this study, data was collected from the Alakahia community, a semi rural area in Rivers state, Nigeria and analysed to determine their level of awareness about STHIs and their deworming practices.

### Material and Methods

The study was carried out in Alakahia community in Rivers State. As far as we know, no survey of this kind has been carried out in that area to determine the people’s knowledge and attitudes towards deworming. The survey was carried out in September, 2011. Consent for the study was sought and obtained from the community development committee through their chairman as well as leaders and elders of the entire community. Oral consent was got from all respondents. Pre-tested structured questionnaires with 23 questions on knowledge of deworming was administered to 305 participants. The study population included both males and females who were randomly selected from eight years of age and above. Demographic data such as age, gender, level of education and occupation of respondents were part of the data collected. The questionnaire also sought to assess the respondents’ prior knowledge of periodic deworming, their information source, their perception of worm infestation as a health risk and their deworming practices. Other questions asked included the choice of drugs they use for deworming and reasons for their choice.

A further interview was carried out with 35 people, randomly selected, who were caregivers to children under five years of age to determine their knowledge of the symptoms of worm infestation and mode of transmission. No leads or options were given for them to choose from.

Data collected was analysed using SPSS version 14, Chicago IL. Results were expressed in percentages and cross tabulations were used to determine association between certain demographic characteristics and other variables.

### Results and Discussion

**Demographic data:** Table 1 shows the demographics of the respondents. One hundred and forty males with 165 females participated in the study.

**Knowledge of deworming:** When asked if they perceived worm infestation as a health risk, 256 people (84.5%) said yes, 27 people (8.9%) said no and 20 people (6.6%) were not sure. One hundred and eighty-four people (73.6%) correctly named children less than five years as the age range at greatest risk of worm infestation, 46 people (18.4%) named children between the ages of six and fourteen to be at greatest risk (see table 2).

**Table-1**  
**Demographic data**

Demographics		Number (Percentage)
Sex	Male	140 (45.9)
	Female	165 (54.1)
	Total	305 (100)
Age brackets	8 to 10	40 (13.1)
	11 to 20	73(23.9)
	21 to 30	127 (41.6)
	31 to 40	26 (8.5)
	40 and above	39 (12.8)
	Total	305 (100)
Marital status	Married	72 (23.6)
	Single	224 (73.4)
	Divorced	1 (0.3)
	Separated	1 (0.3)
	Widowed	7 (2.3)
	Total	305 (100)
Educational qualification	FSLC	70 (23.2)
	SSCE	111(36.4)
	Graduate	90 (29.5)
	Postgraduate	7 (2.3)
	No formal education	27 (8.8)
	Total	305 (100)
Occupation	Student	205 (69.3)
	Civil servant	28 (9.5)
	Trader	48 (16.2)
	Housewife	8 (2.7)
	Job seeker	7 (2.3)

**Table-2**  
**Age at risk**

Age at risk	Number (Percentage)
1 to 5	184 (73.6)
6 to 14	46 (18.4)
15 to 25	13 (5.2)
25 and above	7 (2.8)

On their knowledge of periodic deworming, 254 people (83.28%) said they had heard about periodic deworming while 44 people (14.43%) said they had not heard about deworming, seven people did not give any feedback.

Table 3 shows their responses to questions about worm infestation and deworming practices.

The study participants were asked about their source of information on deworming. Their responses are shown in figure 1. About 33.1% said they got their information from hospitals, other sources of information include pharmacies, word of mouth, television and posters.

There was no significant difference across genders and knowledge and practices of deworming.

**Table-3**  
**Responses to questions asked about deworming**

Question asked	Yes	No	Not sure
Are there health risks associated with worm infestation?	256/303 (84.5%)	27 /303 (8.9%)	20/303 (6.6%)
Are there benefits in intermittent deworming ?	293/299 (98.0%)	6/299 (2.0 %)	-

Figure 2 shows the association between level of education and knowledge of deworming. It was discovered that knowledge of deworming was poorest amongst the people with no formal education. Level of knowledge increased with increasing level of education.

**Deworming practices:** Cross tabulations between knowledge of periodic deworming and people that actually deworm showed that although most of them were aware of the importance of periodic deworming, only 133 people (52.4 %) actually dewormed regularly. One hundred and forty two people (60.2 %) of the respondents deworm their children regularly. Table 4 shows their frequency of deworming.

**Table-4**  
**Deworming Frequency**

Deworming Frequency	Adults	Children < 10 years
Once in 3 months	49/133 (37.2 %)	64/142 (44.8%)
Once in 6 months	36/133 (26.7%)	37/142 (26.0%)
Once in a year	48/133 (36.1%)	41/142 (29.2%)

Cross tabulations between knowledge of periodic deworming and actual deworming was stratified by occupation. It was observed that all housewives that knew about de-worming practised periodic de-worming. However, the habit of de-worming was poorest among job seekers as only 16.7% of those who knew about de-worming actually de-wormed regularly (figure 3).

**Choice of anthelmintic used:** One hundred and one persons had a preferred anthelmintic. The anthelmintic with the greatest preference was pyrantel pamoate (figure 4) and levamisole had the least preference (8.0 %). Sixty three people (62.4 %) stated that their choice was informed by perceived efficacy. Ten people (9.9 %) said their choice was informed by affordability of the medications while 15 people (14.9 %) chose anthelmintics they used based on recommendations by a health professional. Their source of anthelmintics is shown in table 4. Thirty five people were further interviewed on their knowledge of the symptoms of worm infestation and mode of transmission of intestinal worms. Table 5 shows their feedback.

**Table-5**  
**Perception about causes and symptoms of helminthic infections**

Causes	N = 35	%	Symptoms	N= 35	%
Poor sanitation	7	20	Nausea	7	20
Contaminated water	10	28.57	Weight loss	9	25.71
Improperly cooked meat	8	22.86	Vomitting	14	40
Improper food handling	17	48.57	Anaemia	7	20
Sugary foods	4	11.43	Decreased appetite	5	14.29
Direct contact	5	14.29	Increased appetite	4	11.43
Inhalation	1	3.45	Diarrhoea	9	25.71
Do not know	6	17.14	Blood in urine	2	5.71
			Weakness	5	14.29
			Fever	2	5.71
			Itching	9	25.71
			Abdominal pain	17	48.57
			Flatulence	8	22.86
			Constipation	4	11.43
			Rumbling stomach	4	11.43

**Discussion:** Improving sanitary conditions and water supply are primary measures necessary for the control of STHIs. However, since a majority of Nigerians do not have access to clean water and live under poor sanitary conditions the likelihood of re-infection with soil transmitted intestinal helminths will be high. There is thus need for intermittent prophylactic deworming as a means of controlling the transmission of STHIs. Studies have shown that intermittent de-worming with albendazole was successful in reducing the prevalence and intensity of STHIs<sup>11</sup>. Results from this study show a high level of awareness amongst the majority of the respondents on the importance of periodic de-worming (table 3). However, this did not translate to regular deworming. Out of the 254 people that knew about intermittent deworming, only 133 people (52.4 %) actually deworm regularly. There was a higher frequency of deworming for children. Out of the 236 respondents that have children, 142 people (60.2 %) de-worm their children regularly. The awareness that children are at a greater risk of worm infestation may probably account for this difference.

Greater level of education was associated with a higher level of knowledge of deworming. Enlightenment and health promotion programmes to improve the awareness of deworming should therefore be targeted more at people with little or no formal education. The focus of de-worming has very often been on

children. Most free de-worming programmes undertaken by both government and non-governmental organizations are targeted at only school age children. But literature has shown that the intensity of infection increases with age<sup>1</sup>. Therefore, the focus of de-worming should not be restricted only to infants and school age children. Intermittent de-worming is to be promoted across all ages. Shortened duration between treatments reduces the morbidity associated with STHI<sup>16</sup>. The findings of this study show that only 37.2% and 44.8% deworm at three month intervals for adults and children less than 5 years respectively (table 4). This means that greater than 50% of the people do not deworm as often as they should. There should be an increased awareness of quarterly deworming in these endemic areas. The findings on the source of anthelmintics show that none of the respondents got their anthelmintics free from mass deworming programmes. This might explain the poor level of consistency in deworming. It is possible that the socioeconomic status of the people prevent them from deworming as they should. As was shown in figure 3, job seekers, had the lowest level of compliance to de-worming, (16.7%). This suggests that income level contributes to the adherence to deworming. Therefore, it is necessary to develop a national programme on the control of STHIs via intermittent deworming to ensure free access to anthelmintic drugs.

Knowledge of caregivers on the mode of transmission and symptoms of STHIs is poor; a few people (11.43 %) believed that worms were got through eating sugary things and 17.14 % of the respondents did not know how worms were transmitted. There should be greater enlightenment on these aspects so that caregivers will better understand how to improve on their

behaviour patterns in order to control transmission of intestinal worms. They will also be able to identify when their children and wards are infected with these helminths and then seek medical assistance.

The findings from this study also show that regardless of the knowledge of the importance of deworming, there needs to be an active health promotion programme to enhance compliance to intermittent deworming. Social marketing which applies proven concepts and techniques obtained from the commercial sector can help promote changes in diverse socially important behaviours such as drug use, smoking and sexual behavior<sup>17</sup>. The major interests of social marketing include product, price, place and promotion<sup>18</sup>. It has been shown to be an effective tool in promoting behavioural changes that improve health<sup>19-21</sup>. The importance of deworming should be promoted in the same way commercial brands are promoted. There should be constant reminders to the endemic communities of the advantages of periodic deworming. The respondents have shown the channels through which they get information on deworming. Such sources should be the focus for health promotion campaigns to ensure that the message gets to its target audience. Although benzimidazoles have been the most commonly used anthelmintics in mass de-worming programmes, findings from this study show that respondents generally preferred pyrantel pamoate probably because it has been longer on the market. Since the benzimidazoles and pyrantel pamoate have comparative efficacy in intermittent de-worming, pyrantel pamoate can be used in mass deworming programmes in these areas to help encourage greater acceptability and enhance compliance to intermittent deworming.

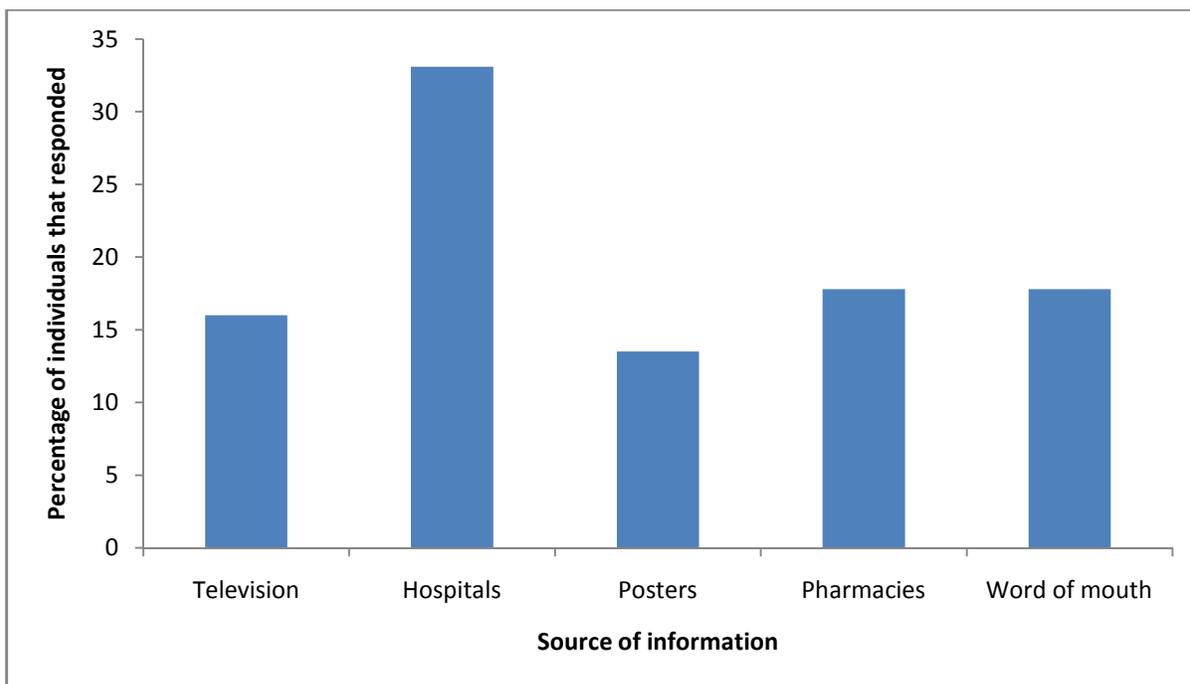
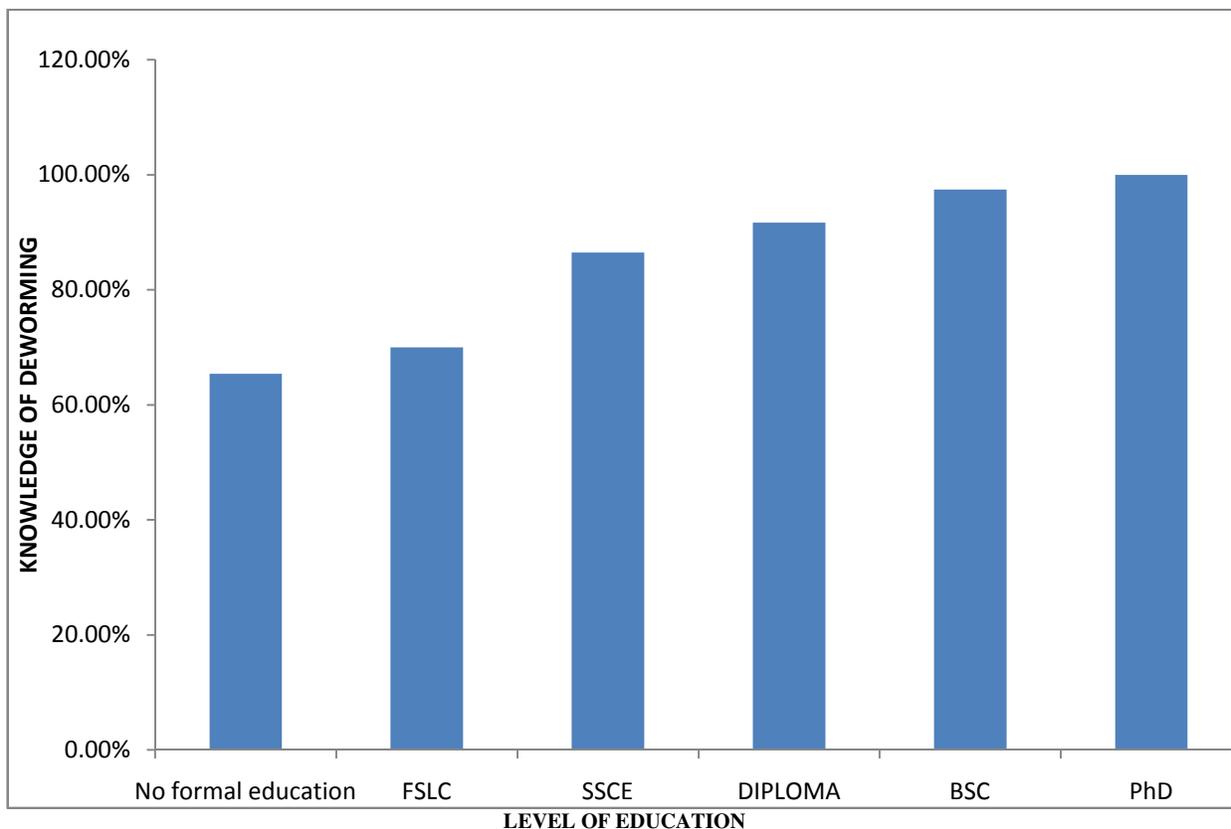
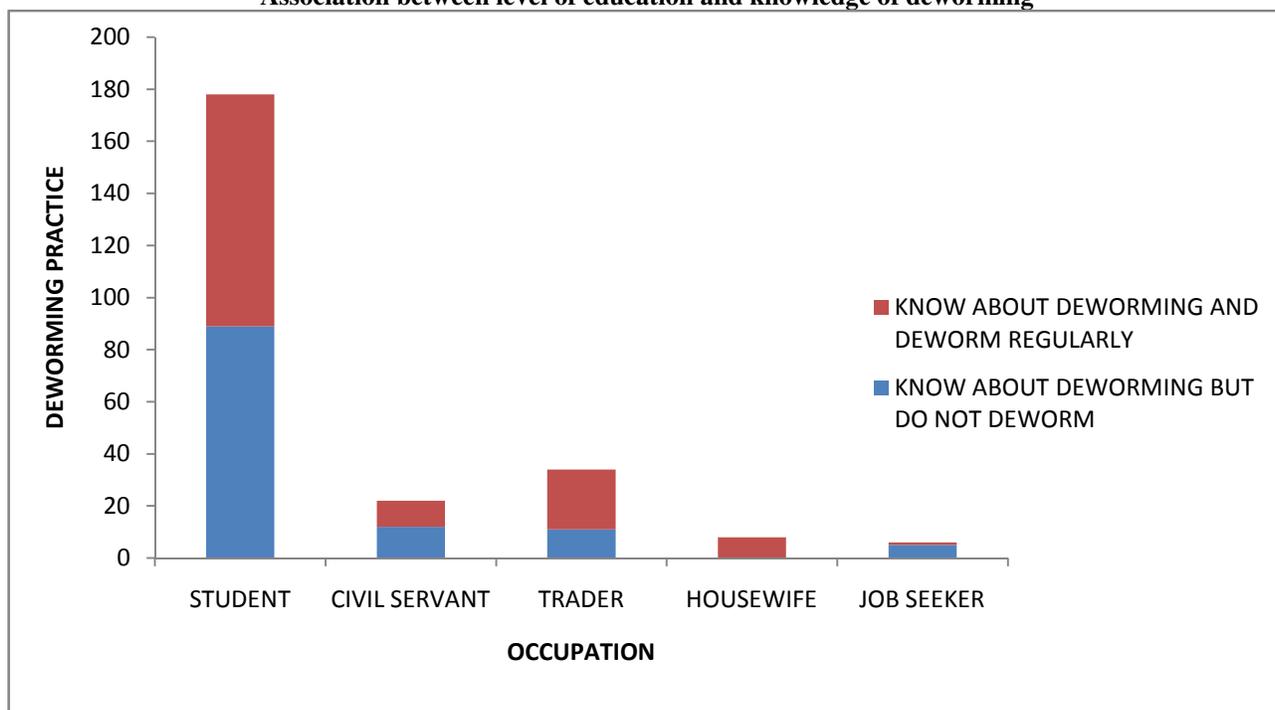


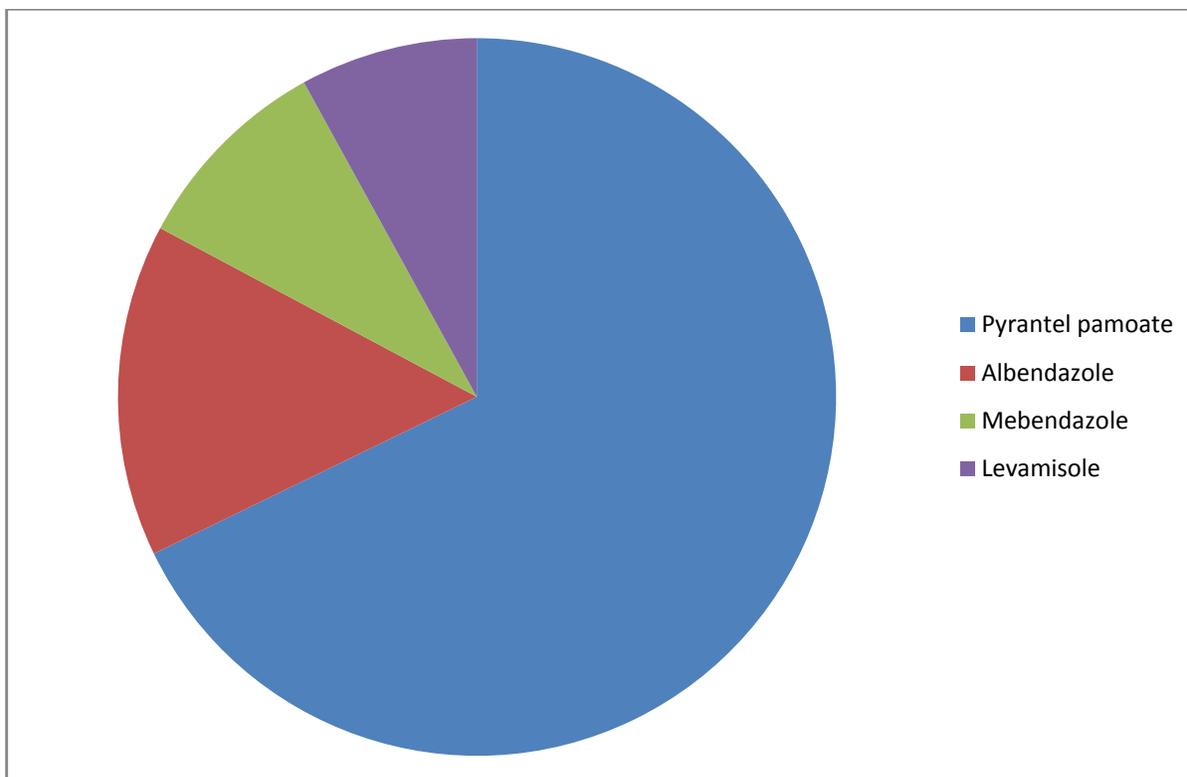
Figure-1  
Sources of information



**Figure-2**  
 Association between level of education and knowledge of deworming



**Figure-3**  
 Association between occupation, knowledge of deworming and deworming practices



**Figure-4**  
**Preferred anthelmintic**

## Conclusion

In conclusion, increased health promotion and development of mass deworming programmes targeted at the population at greater risk should be developed in this area. Further research is needed to evaluate the impact of social marketing on improving compliance to intermittent deworming. The findings of this study provide a baseline for designing a social marketing intervention for promoting intermittent deworming.

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