

**Incidence of Ascariasis among Primary School Pupils in two Communities of Kebbi State,
Nigeria.**

ABSTRACT

This study was carried out to determine the prevalence of Ascariasis among primary school pupils in Jega and Maiyama of Kebbi state, Nigeria. Four [hundred](#) (400) stool samples were examined for [ascaris](#) infections using formal-ether concentration techniques. The result of this study revealed 11.75% prevalence of the parasite. There was no significant difference ($P>0.05$) between the prevalence of Ascariasis among pupils examined from various schools. Statistical analysis shows that the prevalence of the infection was associated with community (O.R = 1.55) and gender (O.R = 1.72). [The](#) result also shows that the infection increase with increase in age of the pupils. Improved sanitation, personal hygiene, deliberate policy for regular deworming of school children by the government will decrease the rate of ascariasis.

Keywords: Ascariasis, Prevalence, pupils, Kebbi state, and Nigeria.

1.0 INTRODUCTION

Ascariasis is a parasitic disease caused by helminthes parasite *Ascaris lumbricoides* (Mamman and Maikenti, 2014). The parasite belongs to genus *Ascaris* of the phylum nematoda. Ascariasis is a common infection in children of tropical countries due to poor sanitation. It is, however, rare in adults. Infection is acquired via faecal-oral transmission through ingestion of food, water, or soil contaminated with embryonated eggs of the parasite (Gaash, 2004).

Ascaris lumbricoides infections in humans occur when an ingested infective egg releases a larval worm that penetrates the wall of the duodenum and enters the blood stream. From here, it is carried to the liver and heart, and enters pulmonary circulation to break free in the alveoli, where it grows and molts. In 3 weeks, the larvae pass from the respiratory system to be coughed up, swallowed, and thus returned to the small intestine, where they mature to adult male and female worms. Fertilization can now occur and the female produces as many as 200,000 eggs per day

30 for a year. These fertilized eggs become infectious after two weeks in soil; they can persist in soil
31 for 10 years or more (Murray *et-al.*, 2005).

32 One billion people or 25% of the world's population harbour *A. lumbricoides*, making it the most
33 prevalent helminthiasis of humans. It is usually a mild disease with relatively low morbidity and
34 mortality rates. The high global prevalence of *Ascaris* ultimately results in 20,000 deaths per
35 year, mainly due to intestinal obstruction (Chijoke *et al.*, 2011).

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37 The most prevalent and important helminthes in developing countries are the soil-transmitted
38 helminthes such as: *Ascaris lumbricoides*, *Trichuris trachiura*, hookworms and *Hymenolepis*
39 *nana* (Bunza and Abdullahi, 2013).

40 *Ascaris lumbricoides* have negative impacts on nutritional status, including decreased absorption
41 of micronutrients, loss of appetite, weight loss and intestinal blood loss that can often result in
42 anemia. They may also cause mental and physical disability, growth retardation in children, skin
43 irritation around the anus and lethal complications if left untreated (Ashtiani *et al.*, 2011).

44 Research has been shown that the presence of 26 adult *Ascaris lumbricoides* worms in a child
45 deprives as much as 1/10 (One tenth) of the total protein content of the child (Drake and Bundy,
46 2001).

47 Although several studies have been conducted on the distribution and prevalence of ascariasis in
48 Nigeria, there are still several localities in the country for which epidemiological information of
49 ascariasis are not available. Therefore, this study will provide data to assess prevalence of
50 ascariasis and their importance in the health of the communities.

51 The aim of this research is to determine the prevalence of ascariasis among primary school
52 pupils in some selected primary schools in Jega and Maiyama, Kebbi State.

53 **2.0 MATERIALS AND METHODS**

54 **2.1 Study Area**

55 This study was carried out in Jega and Maiyama local government areas of Kebbi state. The area
56 is located at latitude 13° north and longitude 5° east. The inhabitants are predominantly Hausa
57 people by tribe. The major occupation of the people is farming and trading (Sulaiman, 2008).
58 The area has annual rainfall between 500mm to 1300mm which starts from mid-may to mid-
59 September with heavy concentration in the month of august. The wet season is followed by dry
60 season which commences from September to April. The dry season is characterized by few or
61 near absence of vegetation cover and no incidence of rainfall. Also, during the dry season, a
62 short span temperature condition of cold harmattan (November to march) as well as the hot
63 bazara period (March to May) occur (Suleiman, 2008).

64 **2.3 Study Population**

65 The study population comprised of 400 primary school pupils. A total of 10 primary schools
66 were randomly selected from Jega and Maiyama for this study using cluster sampling. The pupils
67 enrolled were within the ages of 4-13¹⁴ years.

68 **2.4 Data Collection and Analysis**

69 A structured questionnaire was administered to obtain information on demographic data. Faecal
70 samples were collected from 400 pupils. Each pupil was given a sample collection bottle bearing
71 serial number that was assigned to his/her name in the record book. The pupils were instructed
72 on how to collect their stool sample into the containers between 7 and 10 am.

73 The faecal samples collected was preserved in 10% formalin and transported to the Zoology
74 Laboratory in the Department of biological sciences, Faculty of science, Kebbi State University
75 of Science and Technology, Aliero for analysis.

76 2.5 Laboratory Analysis of Faecal Samples

77 Fecal analysis was carried out using formol-ether concentration technique as described by
78 National committee for clinical laboratory standard (1997).

79 2.6 Identification of Parasites.

80 Identification of the intestinal parasites was done using the morphology of diagnostic stages of
81 human intestinal parasites by Brook and Melvin (2001).

82 2.7 Data Analysis

83 The data collected for this study was analyzed using Graph Pad InStat software version 3.05. The
84 prevalence of different intestinal parasites was calculated and express in percentages. Chi square
85 test was used to test the association between the prevalence of infection and schools. Odds ratio
86 (OR) was used to determine the association between gender/age of the pupils and prevalence of
87 infection. P-value ≤ 0.05 is considered significant.

88 RESULTS AND DISCUSSION

89 Table 1: Prevalence of Ascariasis in Ten Schools in Jega and Maiyama.

School	No exaimed	No positive (%)	Chi-square	D.F	P-value
Giwa Tazo	40	6(15.0)	4.846	9	0.848
Jega Model	40	3(7.5)			
MBD Maiyama	40	7(17.5)			
Nasarawa Pri sch	40	5(12.5)			
Nizamiya Pri Sch	40	5(12.5)			
Rauda Pri Sch	40	2(5.0)			
UBE Dumbegu	40	4(10.0)			
UBE Gindi	40	5(12.5)			
UBE Maiyama	40	6(15.0)			
UBE Mungadi	40	4(10.0)			
TOTAL	400	47(11.75)			

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91 Table 2: Prevalence of the infection in the two Communities.

Community	No Examined	No Positive (%)	O.R	P-value
Maiyama	200	28(14.0)	1.55	0.214
Jega	200	19(9.5)		
TOTAL	400	47(11.75)		

92 Table 3: Gender wise Prevalence of Ascariasis.

Gender	No Examined	No Positive (%)	O.R	P-value
Male	200	29(14.5)	1.72	0.121
Female	200	18(9.0)		
TOTAL	400	47(11.75)		

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94 Table 4: Prevalence of the infection with respect to age of the pupils.

Age	No Examined	No Positive (%)	O.R	P-value
4 – 7 yrs	140	13(9.3)	0.68	0.169
8 – 11 yrs	120	13(10.8)	0.88	0.426
12 – 14 yrs	140	21(15.0)	1.59	0.095
TOTAL	400	47(11.75)		

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96 Over the course of this study, 400 primary school pupils were examined for *Ascaris lumbricoides*
 97 infection out of which 47 were found positive. The result of this study revealed 11.75%
 98 prevalence. The result confirms the endemicity of Ascariasis in the study area. The prevalence
 99 was high compared to the findings of Mamman and Maikenti, (2013) with 6.17% in Akwanga,
 100 Nigeria and A prevalence of 1(0.2%) among school age children was recorded in Vom, Plateau
 101 State, Nigeria by (Dangana *et al.*, 2012). The relatively high prevalence of Ascariasis recorded in
 102 public schools could be attributed to the presence of much garbage around school compounds
 103 and the unhealthy conditions of latrines as recorded by (Uwem *et al.*, 2008). The populations in
 104 developing countries live in conditions that are highly conducive to the acquisition of parasitic
 105 infection. Poor hygiene, crowded household conditions, dietary habits, education level of the
 106 community and deficient sanitation mark their day-to-day life (Culha *et al.*, 2007).

107 Breakdown of result in relation to school showed that high prevalence of ascariasis was recorded
108 Muhammad Bello Dumbegu [\(MBD\)](#) primary school with 17.5% prevalence. Raudatus sunnah
109 academy had the least prevalence with (5.0%) Table-1. These differences among the Schools
110 were however not significant at 95% confidence level ($P = 0.848$).

111 Peak prevalence was recorded in Maiyama [28](#) (14.0%) than Jega [withwhich had](#) a total positive
112 cases of 19(9.5%) out of 200 (Table 2). Odds ratio value of 1.55 show that [theirthere is](#) positive
113 association between community and the prevalence of ascariasis. This is attributable to the
114 possible differences in community practices relating to infection and level of environmental
115 contamination. Similar observation was made by Danladi *et al.*, (2015). The distribution and
116 prevalence of various species of intestinal parasites differ from region to region because of
117 several environmental, social and geographical factors (Zahraa, 2010).

118 Table 3 depicts the prevalence of the infection with respect to gender of the pupils. The
119 prevalence of Ascariasis among gender shows that the male pupils were more parasitized
120 (14.5%) than the female pupils (9.0%). Despite positive association between gender and the
121 prevalence of the infection ($O.R = 1.75$), the effect is not statistically significant ($P = 0.214$).
122 This is in consonance with Elekwa and Ikeh, 1996. The reasons for this variation might be due to
123 the fact that the male pupils do more of the activities which necessitate more contact and
124 exposure to the parasite such as playing, swimming and fetching of water in streams.

125 The high prevalence of 15.0% and 10.8% was recorded among pupils within the age groups 12-
126 14 and 8-11 respectively while the lowest prevalence (9.3%) was seen among age group 4-7. The
127 result shows increase in prevalence of the infection with increase in age. The pupils within the
128 age group 8-11 and 12-14 are more expose to the infective stage of the parasite than their

129 | younger counterpart. ~~They~~ This may possibly be responsible of the high prevalence of the
130 | infection among these age group.

131 | **CONCLUSION**

132 | The establishment of this parasite among primary school pupils in this study area may portend
133 | grave consequences on human health. There is therefore the need to introduce and intensify
134 | prevention and control measures. Proper intervention by the government through provision of
135 | clean and safe drinking water, provision of free medications and public health education.
136 | Coverage and periodicity of deworming programme need to be comprehensive and intensified
137 | among public schools where the infections seem to be higher.

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