

## Prevalence of Parasitic Infections amongst Children In-Patients in Maiduguri; Northeastern Nigeria

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### ABSTRACT

A prevalence study on parasitic infections amongst children in - patients at the Umaru Shehu Hospital, Maiduguri, was conducted between June, 2010 and June 2012 using direct and concentration method for faecal parasites and thin blood films for haemoparasites. Out of the 2630 parasites examined 2180 (82.9%) were infected with *Plasmodium* species, *Entamoeba histolytica*, *Ascaris lumbricoides*, *Giardia lamblia*, *Ancylostoma duodenale* and *Enterobius vermicularis* represented as 710(32.5%), 490(22.4%), 410(18.8%), 230(10.5%), 210(9.6%) and 130(7.7%) prevalence rates respectively ( $p < 0.05$ ). Sex wise prevalence indicated that male had 700(32.1%) and females had 1480(67.8%) ( $p < 0.05$ ). Age-wise, children between zero and 6 years had 113(5.2%) prevalence which was significant ( $p < 0.05$ ) compared to those  $> 6$  years with 2067(94.8%). Based on stool consistency diarrhoeic children showed a higher prevalence of 1134(52.0%) than non diarrhoeic children with 1046(47.9%) ( $p > 0.05$ ).

**Keywords:** Prevalence, Parasitic Infections, Children, Nigeria

### INTRODUCTION

Parasites are organisms that are entirely dependent on other organisms for all or part of their life (Arora and Arora, 2010). Parasitic infections are the most basic causes of diseases in urban and rural areas of Nigeria (Adeyaba and Akinlabi, 2002). Poor hygiene, low standards of environmental sanitation and

nutrition, and inadequate health education are factors empowering high prevalence of parasitic infections in children in Africa (Biu and Harry, 2001; Sam-Wobo *et al*, 2006). About 250 million people mostly children are infected with one parasite or more, which results in mortality and morbidity with over

3 million deaths annually (Biu and Adam, 2004).

In Nigeria, reports have shown that most common infections are those by malaria and intestinal helminthiasis leading to devastating epidemics occurring periodically following excessive rains and floods in arid areas (Nebe *et al*, 2000).

Information on parasitic infections of children in developing countries is inadequate and knowledge on that is useful in planning reliable public health problems, thus the need to conduct this study to determine its prevalence in semi-arid Maiduguri, Nigeria.

## **MATERIALS AND METHODS**

### **Study Area**

Maiduguri, a city in Northeastern Nigeria lies between latitude 11<sup>o</sup> to 15<sup>o</sup> E and longitude 10<sup>o</sup> and 20<sup>o</sup> N (Biu *et al*; 2011) and has a count of 4.12 million people (Census- Nigeria, 2006). It is characterized by a rainy season of about 3 months duration and a long dry season of 8 months (Biu *et al*, 2011).

### **Stool Collection and Examination**

Fresh stool samples were collected from a total of 2630 children in-patients between June 2010 and June 2012. In each case, the sex, age of the children and stool consistency were determined and recorded. Stool samples were

examined by direct microscopy, formol-ether concentration and saturated salt (NaCl) floatation techniques were used to identify parasite ova, and or cysts as described by Cheesbrough, (2005) and Wakid, (2006).

### **Blood Collection and Examination**

Index- finger pricking method using sterile needle was used to obtain 2 drops of blood from the 2630 children in-patients examined. Thin blood films stained with 10% Giemsa were examined under oil immersion of A x 100 light microscope objective for haemoparasites as described by Biu and Hannatu (2008).

### **Statistical Analysis**

Infection was expressed as percentage and variations amongst sex and age of the children tested using the students t-test with "p" values equal to or less than 0.05 regarded significant (GraphPad Instat, 2000).

### **Ethical Consideration and Patients Consent**

The management of the hospital gave ethical clearance. Informed consent was sought for and obtained from child bearing mothers who were clearly informed on the objectives, design and merits of the study.

## RESULTS

Table 1 shows the prevalence of parasites of children examined. *Plasmodium* sp; *Entamoeba histolytica*, *Ascaris lumbricoides*, *Giardia lamblia*, *Ancylostoma duodenale* and *Enterobius vermicularis* were isolated at prevalence rates of 710(32.5%), 490(22.4%), 410(18.8%), 230(10.5%), 210(9.6%) and 130(7.7%) respectively.

Table 2 shows prevalence of infection based on the sex, age and stool consistency of children examined. Males had a prevalence of 700(32.1%) and females had 1480(67.8%) ( $p < 0.05$ ); while ages between 0 and 6 years had 113(5.2%) and those  $> 6$  years had 2067(94.8%) ( $p < 0.05$ ). Diarrhoic stools were seen in 1134(52.0%) children, and non - diarrhoic in 1046(47.9%) ( $p > 0.05$ ).

**Table 1: Prevalence of Parasites of Children Examined**

Parasites Identified	No. (%) of Children Infected (n = 2180)
<i>Plasmodium Spp.</i>	710(32.5)
<i>Entamoeba histolytica</i>	490 (22.4)
<i>Ascaris lumbricoides</i>	410 (18.8)
<i>Giardia lamblia</i>	230(10.5)
<i>Ancylostoma duodenale</i>	210(9.6)
<i>Enterobius vermicularis</i>	130(7.7)

**Table 2: Prevalence of Infection Based on Sex, Age and Stool Consistency of Children Examined**

	No. Examined	No. (%) Infected
Overall	2630	2180 (82.9)
<b>Sex</b>		
Male	780	700 (32.1)
Female	1850	1480 (67.8)
<b>Age: (years)</b>		
0 – 6	180	113 (5.2)
$>6$	2450	2067 (94.8)
<b>Stool Consistency</b>		
Diarrhoic	1436	1134 (52.0)
Non-diarrhoic	1194	1046 (47.9)

## DISCUSSION

This study has observed a significantly high prevalence for parasitic infections amongst children with the blood parasite *Plasmodium* as most prevalent followed by the

enteric protozoans and intestinal helminths *Entamoeba histolytica* and *Ascaris lumbricoides*. This is consistent with reports of Nebe *et al*, (2000) that *Plasmodium* infection is relatively the most prevalent and

is consistently the commonest cause of death, leading to devastating epidemics especially in tropical countries like Nigeria and occurs periodically following excessive rains and floods in arid areas. Also, in Nigeria reports have shown *Ascaris lumbricoides*, *Entamoeba histolytica* and *Giardia lamblia* as the most common infections (Biu and Harry, 2000).

Generally, intestinal parasites are a major public health problem worldwide especially in tropical and subtropical countries with an estimated 3.5 billion cases (Wakid 2006). They are particularly endemic in populations lacking adequate sanitation facilities, hygiene and health education, and are more associated with lower socio-economic status and age groups (Choubisa and Choubisa, 2006). Findings based on sex and age was not statistically significant, and this tallies with the reports by Mbanugo and Abazie (2000) that exposure to sources and factors of infection justify disease development.

## CONCLUSION

In conclusion parasitic infections in this study area are a serious concern amongst children, and the government should emphasize on the elimination of the underlying factors responsible.

## ACKNOWLEDGEMENT

We are grateful to the management of the Umaru Shehu General Hospital Maiduguri for authorizing the conduct of this research.

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**Reference** to this paper should be made as follows: Aisha, H. and Biu, A.A. (2014), Prevalence of Parasitic Infections Amongst Children In-patients in Maiduguri; Northeastern Nigeria. *J. of Medical and Applied Biosciences*, Vol. 6, No. 1, Pp. 1 - 5.

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