

# Intestinal Parasitic Infection among Primary School Children in Port Harcourt City Local Government Area of Nigeria: A Review for School-based Intervention

Emmanuel Michael<sup>1\*</sup>, Austin Abah<sup>2</sup> and Peace Marcus<sup>1</sup>

<sup>1</sup>Department of Microbiology, University of Port Harcourt, Rivers State, Nigeria

<sup>2</sup>Department of Animal and Environmental Biology, University of Port Harcourt, Rivers State, Nigeria

\*Corresponding author: Emmanuel Michael, Department of Microbiology, University of Port Harcourt, Rivers State, Nigeria, Tel: 08064665949; E-mail: emmanuelmichael001@yahoo.com

Received date: November 02, 2017; Accepted date: November 06, 2017; Published date: November 12, 2017

Citation: Michael E, Abah A, Marcus P (2017) Intestinal Parasitic Infection among Primary School Children in Port Harcourt City Local Government Area of Nigeria: A Review for School-based Intervention. Adv Tech Clin Microbiol. Vol.1 No.4:19.

## Abstract

Intestinal parasitic infections rank among primary school children in Port Harcourt City Local Government Area of Rivers State, Nigeria is the most significant causes of morbidity and mortality, yet behavioral, economic, unhealthy environment and other factors have contributed to the widespread of intestinal parasitic infection. Intestinal parasites are organisms that dominate the gastrointestinal tract of humans. Parasitic infection remains a serious public health issue in the study area. Interventions such as provision of adequate sanitary facilities, chemotherapy, portable drinking water, health education should be considered/implemented, improved personal hygiene.

**Keywords:** Parasite; Helminthes; Intestinal chemotherapy; Children; Port Harcourt

## Introduction

Intestinal parasites are microorganisms transmitted directly and indirectly through objects like food, water, nails, fingers, etc. Compared to alternative parts of the hand, fingernails harbors the foremost microorganisms and troublesome to wash simply [1].

Gastrointestinal parasites are omnipresent to Africa, wherever environmental condition and lots of environmental factors give near-perfect conditions for their survival and development [2]. Gastrointestinal parasites are common in each temperate and tropical country, they are more prevalent in most geographic region of Federal Republic of Nigeria wherever sanitation is poor and normal of living is low [3] and cause monumental economic losses because of the associated morbidity and mortality.

Intestinal helminthes are life organism that are worm-like in morphology and receive nutrient and protection from their host thereby disrupting the inner activities of the host, inflicting diseases and weaknesses [4].

Children are the most vulnerable cluster with highest prevalence rate of helminthes infection since they are the

foremost susceptible to the factors that causes it [5]. Moreover, there are differing types of behavioral pattern equivalent to taking part on sand games, introducing dirty fingers to the mouth etc. There are common to those infected with sort of helminthes infections, resulted in terrible widespread of parasites, thus, feeding habits that involve the consumption of unwashed raw vegetables, etc. Conjointly enable the transmission of helminthes infections [6]. The review aims at decisively evaluating the prevalence of enteric helminths and protozoans among children in Port Harcourt city government area of rivers state likewise because the interventions approach.

## Study Area

The study was conducted in Port Harcourt, the capital town of Rivers State. Port Harcourt is found between latitudes of 04°4'N and longitudes 07°10'E at the southern region of the federal republic of Nigeria in West Africa. Port Harcourt enjoys a tropical monsoon climate with characteristics of by extreme temperature, low pressure and high wetness all year spherical. It has a mean temperature of 30°C (86°F) and a ratio of between 80th and 100 and a mean annual downfall of 2,300 mm [7].

## Intestinal Parasitic Infection in Port Harcourt City Local Government Area

The most prevailing helminthes causes lymphatic disease, soil-transmitted helminthiasis (including Ascariasis, Trichuriasis and Hook worm infections) Schistosomiasis and food-borne flatworm infections [8].

The parasites oftentimes encountered in Port Harcourt region are roundworm, hookworms, *Trichuris trichiura*, *Strongyloides stercoralis*, *Giardia lamblia*, *Enterobius vermicularis*, *Ancylostoma duodenale*, *Necator americanus* and a few species of Schistosoma similarly as *Entamoeba histolytica* [9].

The World Health Organization (WHO) estimates that more or less 50 million individuals worldwide suffer from invasive amoebic infection annually, leading to 40-100 thousand deaths annually [10].

Information for this review was obtained from a comprehensive search of intestinal helminthiasis in Port Harcourt titles conducted, using the key words "Port Harcourt", "intestinal helminthiasis", "soil-transmitted helminths". The abstracts of relevant articles and full articles available on line were obtained and accessed. Many years ago, we have seen new approaches to the diagnosing, treatment, and prevention of intestinal protozoan parasites. However, the diagnosing and treatment of intestinal parasitic worm infections have not been modified abundantly, and therefore the ancient microscopic technique may be used for their diagnosing.

In an article published on epidemiological survey by Abah and Arene [11] on intestinal helminthiasis in the Akpor area of Port Harcourt, Rivers State. They have found a high prevalence of intestinal parasites, especially the intestinal protozoan parasites. They have used the traditional microscopic technique to diagnose intestinal parasitic infections. The research survey recorded 42.7% prevalence of hookworm 16.0%, *Ascaris lumbricoides* 15.4%, *Trichuris trichiura* 8.0%, *Strongyloides stercoralis* 3.0% and *Taenia saginata* 1.7%. This high prevalence could be attributed to the standard of living of the subjects and the exposure to geographical condition of the study area.

This study found that intestinal helminthes remain an outstanding problem in Port Harcourt. The prevalent species were *Ascaris lumbricoides* (12.4%), *Trichuris trichiura* (6.8%) and hookworm (5.6%), are prevalent among primary school children in Port Harcourt city Local Government Area. Previous research attributes transmission of these parasites to be due to the sanity level of environmental as many children are exposed to mostly contaminated soil during outdoor activities such as games.

Prevalence estimates of intestinal helminthic infections in Port Harcourt according to survey on prevalence of gastro-intestinal parasitic infection among the inhabitants of Bori military cantonment in Port Harcourt city local government area of Rivers state, Nigeria. Result of overall high prevalence of six gastro-intestinal (GIT) parasites was recorded among children with 84.6%. *Ascaris lumbricoides* 68 (36.2%), *Necator americanus* 33 (17.6%), *Trichuris trichiura* 24 (12.8%), *Strongyloides stercoralis* 17 (9.0%), *Taenia saginata* 10 (5.3%) and *Enterobius vermicularis* 7 (3.7%). The study pointed out that *Ascaris lumbricoides* is the most common infection, followed by *N. americanus* (hookworm) and *T. trichiura*, with *E. vermicularis* as the least prevalent infection. The spread of GIT helminth infection has been attributed to environmental conditions such as poor sanitation and personal hygiene [12].

## Discussion

### Public health significance of intestinal parasitic infections

The amount degree of caused by intestinal parasites to the health of communities depends on several factors such as species, prevalence and/or intensity of infection, the interaction between the parasites and co-occurring infections, the nutritional and immunological status of the population and various socio-economic factors.

Their significance is extraordinarily tough to assess as a result of most of those infections are symptomless with terribly low morbidity and mortality. Thus the public health significance is often measured by the prevalence, intensity of the infection and association the infections with human nutrition, growth and development of children and work productivity in adults. The intestinal parasitic infection has adversely impacted on nutrition, growth and development of children as studied since the seventies.

The findings but, have remained debatable. Proof from community studies indicate that Ascariasis is related to growth impairment [13,14]. Impaired disaccharide digestion, reduced food consumption and lower plasma nourishment. The role of hookworm infection in inflicting iron deficiency anemia has been confirmed by many studies [15]. Chronic protozoan infection can interfere with the growth of children by impaired nutrient digestion (fat and vitamin) and genetic disease.

Recently, it has been shown that Trichuriasis and Ascariasis impair college performance and psychological feature functions of children.

## Conclusion and Future Direction

The social and economic impact of chronic gastro-intestinal parasites on human development (e.g. nutrient assimilation, malnutrition, inhibited growth and chronic anaemia) and capability (e.g. diminished psychological feature, incomprehensible school and inability to work) will destabilize endemic communities and reinforce native economic condition. This will consequently hinder national and regional economic development because of financial condition [16]. Poor personal and environmental hygiene, economic condition and favourable atmospheric condition are major factors sustaining transmission of intestinal parasitic infection among children and others. However there has not been any policy-backed effort at management. Intestinal parasitic worm infections are still extremely prevailing among school-age children in Port Harcourt city local government area of Nigeria and a significant reason behind morbidity among children of this age. The effectiveness of school-based intervention by employing chemotherapy at six monthly intervals has been shown to be cost-efficient and possible.

## Control Strategies and Need for School-Based Intervention

There is no proof of nationwide management program for helminthiasis in Nigeria as school health services are rudimentary [17,18] and presently funding for public health programs are inclined in favour of HIV/AIDS interference. Researchers in parasite management had over time advocated for improved sanitation and health education and specifically stressed the necessity to focus on the school children for health education and behavior modification so as to scale back environmental contamination with parasite infective stages. It has additionally been urged that the majority heavily infected people in a community ought to be known and treated over a

period of years, particularly throughout the season, once transmission conditions are least favourable [19]. These suggestions, if enforced in the slightest degree, have not achieved a lot of, because the prevalence of parasitic worm infection is still high in Port Harcourt and across the country.

## References

- Zaglool DA, Khodari YA, Othman RAM, Farooq MU (2011) Prevalence of intestinal parasites and bacteria among food handlers in a tertiary care hospital. *Niger Med J* 52: 266-270.
- Perry BD, Randolph RF, Mcdmot JJ, Sones KR, Thomtom PK (2002) Investigation in animal health research to alleviate poverty. International livestock research institute Nairobi, Kenya, p: 148.
- Schmidt GD, Roberts LS, Janovy J (2000) Foundation of Parasitology. McGrawhill, Boston, Massachusetts, Science, p: 670.
- Maizels RM, Yazdanbakhsh M (2003) Immune regulation by Helminth parasites: cellular and mollular and molecular mechanisms. *Nat Rev Immunol* 3: 733-744.
- Saathoft E, Olsen A, Magnussen P, Kvalsving JD, Wilhelm B, et al. (2004) Patterns of schistosoma Haematobium infection, impact of preziqentel treatment and re-infrection after Treatment in a cohort of school children from rural Kwazulu- Natal/South Africa. *BMC Infect Dis* 4: 15-40.
- Montessor A, Crompton DWT, Gyorkos TW, Savioli L (2002) Helminth control in school-Age children: A guide for managers of control programmes Geneva. World Health Organization.
- Mmom PC (2003) The Niger Delta: A spatial perspective to its development. Zelon Enterprises, Port Harcourt, pp: 45-47.
- Sachs JD, Hotez PJ (2006) Fighting tropical diseases. *Science* 311: 1521.
- Awolaju BA, Morenikeji OA (2009) Prevalence and intensity of intestinal parasites in five communities in south-west Nigeria. *Afr J Biotechnol* 8: 4542-4546.
- World Health Organization (1997) Amoebiasis. *WHO Weekly Epidemiol Rec* 72: 97-100.
- Abah A, Arene FOI (2006) Status of intestinal parasitic infections among primary school children in rivers state, Nigeria. *J of Parasitol. Res* 7.
- Awi-Waadu GDB (2005) The prevalence of gastro-intestinal tract parasites in the inhabitants of Bori military cantonment in Port Harcourt Local Government Area of Rivers State, Nigeria. *Af J Appl Zoology Environ Biol* 7: 56-60.
- Stephenson LS, Crompton DWT, Latham MC, Schulpen TW, Neshiem MC, et al. (1989) Treatment with a single dose of albendazole improves growth of Kenyan schoolchildren with hookworm, *Trichuris trichiura* and *Ascaris lumbricoides* infection. *Am J Trop Med Hyg* 41: 78-87.
- Robertson LJ, Crompton DWT, Sanjur D, Neshiem Me (1992) *Trichuris trichiura* and the growth of primary school children in Panama. *Trans R Soc Trop Med Hyg* 86: 656-657.
- Schad GA, Warren KS (1990) Hookworm disease. Taylor & Francis Ltd.
- Hotez P (2008) Hookworm and poverty. *Ann N Y Acad Sci* 1136: 38-44.
- Holland CV, Asaolu SO (1990) Ascariasis in Nigeria. *Parasitol Today* 6: 143-147.
- Ola JA, Oyeledun B (1999) School health in Nigeria: National strategies. In: World Health Organization (Ed.), Improving health through schools: National and International Strategies. WHO, Geneva, Switzerland, pp: 81-84.
- Nwosu ABC (1981) The community ecology of soil-transmitted helminth infections of humans in a hyper endemic area of southern Nigeria. *Ann Trop Med Parasitol* 75: 197-203.