PREVALENCE OF PARASITIC INFESTATION IN SCHOOL AGE (6-12Y)

Thesis

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بسم الله الرحمن الرحيم

قَالُوا سُبْحَانَكَ لاَ عِلْمَ لَنَا
إِلاَّ مَا عَلَّمْتَنَا إِنَّكَ أَنتَ الْعَلِيمُ
الْحَكِيمُ

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Abstract

Background:

Intestinal parasitic infections are a major public health problem of developing countries. World Health Organization estimates one-fourth of world's population harbors one or more intestinal parasites. children being major victims

Aim :

This study aims at assessing prevalence of parasitic infections among school age [6-12y] .

Methods:

Fecal samples from 100 child attending Zenhom family health center were examined by direct smear technique and result was correlated with their socioeconomic status and hygienic behavior. And blood samples were taken from each child to detect Hb level.

Results:

The prevalence of parasitic infections was 46%, E.vermicularis was the commonest parasite (63.9%), followed by G.lamblia(23.9%),followed by E.histolytica(13%). The highest positive rate was found among children of (6-8year), where boy being slightly higher(50.0%) than girls (42.0%) (P=0.3). (80.4%)of infected children were having anemia. Children of illiterate mothers (74.3%) were more infected than literate ones(30.8%)(P=.001). There were, however, significant association between parasite infections and washing hands habits,nail trimming(P<0.05).

Conclusions:

Intestinal parasitic infection was found among 46% school children. E.vermicularis was the commonest parasite (63.9%) the children whose having illetrated mothers were liable for infection 2.4 than the children were having litrated mothers.

. **Recommendation:**

Awareness on infectious diseases, improving hygiene, and application of supportive programs for parents to elevate socioeconomic conditions may reduce the burden of infection.

Keywords:

Children, intestinal parasites, socioeconomic condition.

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List of Abbreviation

A . lumbricoides:	Ascaris lumbricoides
B.hominis:-	Blastocystic hominis
C.parvum:-	Crypto sporidium
E.histolytica :-	Entamoeba histolytica
E.vermicularis:-	Enterobius vermicularis
FDA:-	The food and drug administration
G.lamblia:-	Giardia lamblia
H.nana:-	Hymenolepis nana
IPI_S :-	Intestinal parasitic infections
MDA :-	Mass drug administration
NICE :-	National Institute for Health and Clinical Excellence
$RWI_{S:}$	Recreational water illnesses
STH:-	Soil-Transmitted helminthes
T.trichiura:-	Trichuris trichiura
WHO :-	World Health organization

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INTRODUCTION

Intestinal parasitic infections (IPIs) are among the most prevalent infections in humans in developing countries and are responsible for considerable morbidity and mortality. Most of them are transmitted by the faecal-oral route. In general, situations involving unhygienic conditions promote transmission **(Murray et al., 2005).** These infections are globally endemic and have been described as constituting the greatest single worldwide cause of illness and disease **(WHO, 2002)**. They are associated with poor hygiene and lack of access to safe water **(Katzl et al., 2001)**. Food handlers play an important role in their transmission. Ignorance is also a contributing factor to transmission especially among people living in rural areas where level of awareness is relatively low. Like the majority of the parasitic diseases, these infections are influenced by human behavior especially their hygienic practices, and failure to take advantage of available screening services or comply with treatment **(Idowu et al., 2006)**.

It is estimated that approximately 3.5 billion people are affected and that 450 million are ill as a result of these infections, the majority being children. Common intestinal parasites such as *Blastocystis hominis* and *Giardia lamblia* are still health challenges of economically developed and developing countries **(Hill *et al.*, 2007).**

The problem of Soil-transmitted helminthes (STH) is predominant among the school children, and is often associated with poor growth, reduced physical activity, impaired cognitive function, and learning ability. Helminthic infections are also associated with nutritional deficiencies, particularly of iron and vitamin A, with improvements in iron status and increments in vitamin-A absorption seen after deworming **(WHO, 2004)**

Ascaris lumbricoides and Entrobius vermicularis are two of the most prevalent intestinal helminthes in school-age children **(Bethony et al., 2006).** Worldwide,

320 million school-age children are infected with A. lumbricoides Infection with E. vermicularis is common among primary school children because they are regularly exposed to overcrowded conditions and inadequate sanitation, both associated with infection with this parasite **(WHO, 2007).**

AIM OF THE WORK

Goal:

Improve health of school children.

Objectives:

1) Detecting the prevalence of parasitic infections in stool among school children (6-12y) attending Zenhom family health center.

2) Detecting the effect of different factors as age, sex, mother education, father education, family size, household income, nail trimming and hand washing on the prevalence of parasites.

HUMAN PARASITES

Helminthes or worm infection is worldwide although in wormer, moister area, especially where standard of hygiene are low, the range of species and prevalence tend to be greater in such parts.

Multiple infections are often the rule because children tend to live more closely with nature and with their pets. Many helminthic infections are more common in children than adult (**Mc Carthy et al., 2000).**

Helminthes infection differ in most cases from those caused by viruses, bacteria or protozoa in that clinical effect exhibited by the host are mostly related to the worm load carried and the later in turns is usually related to the infective dose. The controversy regarding the possible adverse effect of helminthic infections and the value of antihelminthic treatment on cognitive function and learning or educational ability remain unresolved, but the concept may well be valid **(Dickson et al., 2001).**

The common parasitic helminthes infecting human include nematoda (round worm) and platyhelminthes (flat worms) which comprises the trematoda (flukes) &cestoda (tape worms), less commonly human may be infected with such worms as Acanthocephala (thorny headed worms).The control of human helminthes infection usually depends on knowledge of the epidemiology and the life cycle of the species concerned the aim

to break the cycle. The most important method for control of human helminthiasis is education combined with improved sanitation and personal hygiene, however mass deforming may play important role in the control of helminthes infection and in relation to immunization (**Bettiols et al.,2000).**

I)Protozoan disease:

Amebiasis:

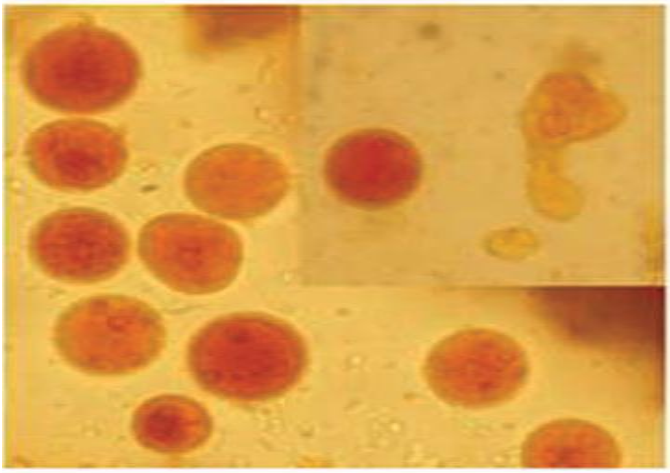

Figure (1): Microscopic image of entamoeba coli **(Paran et al., 2010)**

Amoebiasis is a parasitic disease caused by the protozoan parasite *Entamoeba histolytica (E histolytica)* that is commonly transmitted via the fecal-oral route.

Amoebiasis may affect any age group and has no gender preference. It is considered the third leading parasitic cause of death worldwide, surpassed only by malaria and Schistosomiasis. On aglobal basis, amoebiasis affects approximately 50 million persons each year, resulting in nearly 100,000 deaths mostly from liver abscesses or other complications **(Dhawan et al., 2012).**

The parasite has 2 forms: a motile form, called the trophozoite, and a cyst form, which is responsible for person-to-person transmission of infection. Humans are the only reservoir of *E histolytica*. Cysts passed in the feces, can survive in moist environmental conditions for weeks to months. Upon ingestion of contaminated food or water, the cysts travel to the small intestine, where the trophozoites are released. In 90% of patients, the trophozoites reencyst and produce asymptomatic infection, which usually spontaneously resolves within 12 months. In the remaining 10% of patients who are infected, the parasite causes symptomatic amoebiasis **(Dhawan et al., 2012).**

Intestinal amoebiasis

In symptomatic cases, the trophozoite of *E histolytica* inhabits the large intestine to produce amoebic colitis and amoebic dysentery giving symptoms that can range from mild diarrhea to dysentery with mucus and blood, which comes from amoebae invading the lining of the intestine.

The passage of large volumes of malodorous stools with slough from the mucosa in a child with preexisting malnutrition suggests amoebic colitis. Amoebic colitis is gradual in onset, with symptoms presenting over 1-2 weeks, distinguishing it from bacterial dysentery.

Invasion of the colonic mucosa leads to dissemination of the organism to extra colonic sites, predominantly the liver, leading to amoebic liver abscess, which is considered the most

frequent extra intestinal manifestation of *E histolytica* infection **(Misra et al.,2004).**

Hepatic amoebiasis

Amoebic liver abscess is caused by the parasite ascending the portal venous system. Signs and symptoms of amoebic liver abscess are initially nonspecific.

Fever and abdominal pain are the most common element in the history and present in 90%-93% of patients. Pain is most frequently located in the right upper quadrant (54%-67%) and may radiate to the right shoulder or scapular area and increases with coughing, walking, and deep breathing. It is usually constant, dull, and aching. Elevation of the diaphragm and atelectasis or effusion, rigor, nausea and vomiting, and diarrhea may also occur **(Hughes et al., 2000).**

Treatment

Invasive amebiasis is treated with a nitroimidazole such as **metronidazole** or **tinidazole** and then a **luminal amebicide** (Table1). Tinidazole has similar efficacy to metronidazole with shorter and simpler dosing and less frequent adverse effects. These adverse effects include nausea, abdominal discomfort, and a metallic taste that disappears after completion of therapy.

Therapy with a nitroimidazole should be followed by treatment with a luminal agent, such as paromomycin (which is preferred) or iodoquinol. Diloxanide furoate can also be used in