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Parasites: Major Attacks, Ways Of Transmission And Preventive Measures

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ABSTRACT

Helminths infection is a class one neglected problem nowadays, particularly in Asia and very common in economically poverty-stricken families. To build up a healthy nation, circulate a real message with this review. A literature survey suggested that only individual and family hygiene through provocation are the only ways to avoid parasitic attacks in the human community.

INTRODUCTION

The presence of parasites has been discovered in fossil sponges from millions of years old [1]. As evidence, calcified eggs of *Schistosoma* were found in Egyptian mummies [2]. Epidemiologists estimated at least three-fourths of living organisms are infected by various parasites [3]. Most of the parasites are related to the gastrointestinal tract of animals and the most common complaints are diarrhoea, and alternating periods of constipation. This may be accompanied by bloating, nausea, loss of appetite, and irritated bowel. Other symptoms that are not related to the intestinal tract may include night sweating, low tolerance to exercise, allergic reactions, and possibly behavioural changes [4]. Traveling to certain parts of the world may expose us to greater amounts of parasites than our bodies can handle. Another way is by exposure in restaurants where food handlers may be carriers [4]. Parasitic infections could be fatal in AIDS patients and other patients with weakened immune systems. Parasites most often cause malnutrition and anemia. Although these parasites usually stay in the intestines, they can migrate into the bloodstream, muscles and even vital organs such as the brain, lungs and liver. Insect bites, walk by

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barefoot, eating raw or undercooked animals, contaminated raw fruits, vegetables and water, eating foods prepared by infected handlers, contact with infected persons, inhaling dust that contains parasitic eggs or cysts, and playing with pet litter contaminated objects are vulnerable for everybody. Common bugs such as ticks, mites, fleas, lice and bedbugs may cause intense itching in affected areas. Mosquitoes spread more serious diseases like western and eastern equine encephalitis, malaria, dengue fever, and yellow fever [5].

Out of 204 children, 80 (39.2%) were infected with at least one species of helminth [6]. Helminthic infestation of children is a common health challenge in developing and poor countries [7]. Transmission of intestinal nematodes involves contamination of the environment by eggs due to lack of adequate sanitation, poor personal hygiene and low socio-economic conditions [8]. Heavy infections in Sichuan Province, China and Vietnam are attributed to the widespread use of faeces as night-soil fertilizer [9]. More than two billion people are infected with soil-transmitted nematodes [10]. The maximum number of children with intestinal worms is living in India followed by Nigeria, Indonesia and Bangladesh [6]. Deworming program in Bangladesh (2005), the prevalence of worm infestation was about 79.8% [11]. The government estimated that 20 million Bangladeshi children are at risk for soil-transmitted helminthic infestations [11]. Deworming is now conducted for all school-age children (5-12 years) in the country biannually preferably every May and November. A single dose of albendazole is administered in this case [6]. Living on mud–floor and a thatch-walled house were significantly associated with the infection of various helminths [6].

The overall prevalence of infestation was 43.253% and egg per gram of this infestation was slightly higher in males than females and intestinal helminth was found higher than protozoans [12]. Male children are more susceptible than females because of their staying habits from outside [13]. In Dhaka Medical College Hospital, most of the patients are from old Dhaka and from slum areas where hygienic conditions are very poor [12]. The probable causes of higher infection of females may be due to low immunity, repeated pregnancy, lack of health education, and malnutrition. 41% of helminth infections had been noticed in the soldier community of 'Bangladesh Rifles' [14]. There was a study on the global epidemiology, ecology, and soil-transmitted helminth infection (ascariasis, trichuriasis, hookworm) [15, 16]. Like in other Asian countries, helminthiasis, anaemia and malnutrition remain major public health hazards in Bangladesh [12]. The objective of this study is to motivate people from these parasites through the hygiene.

Major attacks and ways of transmission

Most of the parasites have been consisted in the arthropod group and found at the greater risk in the poorest countries [3]. Among the five species of the malarial parasite, the *Plasmodium falciparum* is the most dangerous [17]. Most blood-sucking mosquitoes are crepuscular feeders [3]. Castor bean tick (*Ixodes ricinus*) is a cosmopolitan species [3]. One can become infected with babesiosis by blood transfusion [3]. Chagas fever could be

happened by *Trypanosoma cruzi* are called 'kissing bugs' because they bite the victim's mouth area [18]. Cutaneous leishmaniasis causes skin ulcers on various parts of the body, often leaving scars for the whole life [3]. *Entamoeba histolytica* is the most common protozoan and *Endolimax nana* is observed frequently. The flagellate class includes *Giardia lamblia,* and *Trichomonas hominis*. Other agents are *Blastocystis hominis*, microsporidium and cryptosporidiosis [4]. Pinworm resides within the colon, yet it lays eggs near the anus. Tapeworms are two types *Taenia solium* is a pork tapeworm and *Taenia saginata* is found in beef. Adult tapeworms may become as long as 20 feet in length. Eggs of tapeworm (proglottid) burrow in muscles, eyes and brain where cysts in the brain often cause epileptic seizures. Tapeworms could be originated from a rodent or dog and its infection may not be seen in our system for up to five months. *Toxoplasma gondii* is the most common parasite that invades the central nervous system (CNS). Infected cat litter can contain many parasitic eggs. Infected pregnant women may exhibit miscarriage or stillbirth. Infected babies are born with congenital toxoplasmosis, eye inflammation, blindness, jaundice, seizures, abnormally small or large heads and mental retardation [5]. Almost all tropical and subtropical countries have malaria-transmitting mosquitoes. *Plasmodium falciparum* is particularly dangerous and more likely to resistant to antimalarial drugs [19]. Amoebiasis has a great tendency to spread because of poor sanitation in the family [2]. Typhus and other diseases are transmitted by the body louse (*Pediculus corporis*) where such infections are prevalent. The crab louse (*Pediculus pubis*) particularly attacks the pubes but is also found in armpits and over the eyelashes and beards. The head louse *Pediculus capitis* is found on the scalp of the head [20]. Giardiasis is a well-recognized problem in special groups including travelers, campers, male homosexuals and persons who have impaired immune systems. Humans are the reservoir for *Giardia,* but dogs and beavers have been implicated as a source of infection [21] (Table 1).

Pathological tests and prevention

Eosinophil could be increased by the presence of parasites within the body. Secretory IgA may also be measured to determine the ability of the intestinal tract to fight this type of infection. For the treatment of Amoebiasis, tablet flagyl (metronidazole) and for destroying *Giardia* atabrine (quinacrine HCl) can be prescribed. The seed extract of grapefruit is used as an anti-parasitic agent. Avoiding sugar, dairy products and fruit has shown to be beneficial. All salad ingredients should be thoroughly washed with clean water. We should avoid ordering salads at restaurants. All water consumed should be filtered, do not drink water straight from the tap [4]. Ova and parasite (O & P test) are available in any pathological centres. In addition, endoscopy, urine samples and vaginal swabs are used to detect *Trichomonas* (cause vaginitis). Fibrous food helps to eliminate worms from the intestines and good nutrition improves immunity and protects the body against parasitic invasion. *Momordica charantia* (bitter melon) can eliminate pinworm infection. Soil can be contaminated with eggs or cysts of the parasites [5]. Worm infestation can lead to respiratory or cardiovascular complications but most are easily treated and

cause no lasting harm. Pineapple, papaw juice, and pumpkin seeds are to be tough on worms' lifecycle [22]. Antidiarrhoeal medications are usually not prescribed because they can make the condition worse [23]. Freshwater snails are also a carrier of *Schistosoma*. Cystitis leads to stones in the bladder, cancer, ulceration and fistula which will require surgical treatment finally [2]. To allay irritation, a zinc cream or an oily calamine lotion may be used on the skin. The lymphatic glands of the neck may become swollen or form abscesses from the scalp infection [20]. For probing the sting of the wasp, lemon juice or vinegar could be used to relieve the pain [20] (Table 1).

Concluding remarks

People are becoming health conscious day by day through proper knowledge about their food, nutrition and scientific activities in their daily life. From the family, a child could take a lesson about overall hygiene. Food is the only medium to allow any micro-organisms into the body. Fresh and nutritious food with proper hygiene only could play a significant role in the hazardous phenomena of these parasites.

Table 1. Some important phenomena about the human parasites

Features	Examples	References
Evolutionary evidences	Parasitic infection is an ancient phenomenon in human body	Hoekelman, 2009; Zapalski & Hubert, 2011; Cholewinski *et al.,* 2015
Major species	Arthropods, helminths and protozoan are commonly found in the nature	Alternative Medicine, 2009; Manum, 2009; Smith, 2010; Cholewinski *et al.,* 2015; Mita & Tanabe, 2012; CDS/DPDx, 2015
Source of infection	Unhygienic condition is the main cause for spreading these parasites	Khaled, 1983; Stephenson, 1987; Smith, Olsen *et al.,* 2001; WHO, 2001-2010; Brooker *et al.,* 2004, 2006; Bethony *et al.,* 2006; Dupont & Sullivan, 2009; Hoekelman, 2009; Tran & Odle, 2010; Technical brief, 2013; Odinaka *et al.,* 2015; Khanum *et al.,* 2016; Afroz *et al.,* 2019
Symptoms	Very common symptoms are associated with this infection	Tran & Odle, 2010
Prevention and treatment	Through the prevention, it is possible to manage it	Manun, 2009; Hoekelman, 2009; Chowdhury, 2009; Medical Adviser, 2010; Afroz *et al.,* 2019

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