

## Preventing and Treating Entamoeba histolytica in Malnourished Populations

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## DESCRIPTION

Malnutrition and infectious diseases often transfer from one individual to other, creating a vicious cycle that disproportionately affects vulnerable populations in lowincome countries. One such infectious disease that is closely linked to malnutrition is Entamoeba histolytica infection. Entamoeba histolytica is a parasitic protozoan responsible for amoebic dysentery and liver abscesses, causing a significant burden of disease in many parts of the world. They explore the complex relationship between malnutrition and Entamoeba histolytica infection, the mechanisms through which malnutrition exacerbates the disease, and potential strategies for prevention and treatment.

Before delving into the role of malnutrition, it's important to understand the basics of *Entamoeba histolytica* infection. This parasite primarily infects the human colon, where it can exist as a harmless commensal or become pathogenic, and causing amoebic colitis. In severe cases, the parasite can invade the intestinal wall, leading to amoebic dysentery characterized by bloody diarrhea, abdominal pain, and fever. Furthermore, *E. histolytica* can disseminate to the liver through the bloodstream, resulting in liver abscesses, which can be life-threatening if left untreated.

*E. histolytica* is transmitted through the ingestion of contaminated food or water containing cysts of the parasite. Inside the human host, these cysts excyst in the intestines, releasing trophozoites that can colonize the colon and initiate infection.

Malnutrition is a condition characterized by deficiencies in essential nutrients such as proteins, vitamins, and minerals. It can lead to impaired growth, weakened immune function, and increased susceptibility to infections. Malnourished individuals often have weakened mucosal barriers in the gut, compromised immunity, and altered gut microbiota, all of which can make them more susceptible to enteric infections, including those caused by *E. histolytica*.

Malnutrition, particularly protein-energy malnutrition, can compromise the body's immune response. Malnourished

individuals may have reduced numbers and impaired function of immune cells, making it more difficult to combat infections effectively. *E. histolytica* can take advantage of this weakened immune response to establish and exacerbate infection.

Malnutrition can lead to alterations in the structure and function of the gut mucosal barrier. This barrier normally acts as a physical and immunological defense against invading pathogens.

It's vital to maintain this barrier's integrity to prevent pathogens like *E. histolytica* from penetrating the intestinal wall. Malnutrition can compromise this barrier's effectiveness, allowing the parasite to invade the gut tissue more easily.

Malnutrition can lead to imbalances in the gut microbiota, the community of microorganisms residing in the intestines. A healthy gut microbiota helps protect against infections by competing with pathogens for resources and producing antimicrobial substances. Malnutrition can disrupt this balance, creating an environment conducive to *E. histolytica* proliferation. *E. histolytica* and the host compete for nutrients within the gut. Malnourished individuals often have limited nutrient availability due to their dietary deficiencies. This competition can favor the parasite's survival and growth, as it may be more efficient at acquiring nutrients under these conditions. Malnutrition can lead to reduced efficacy of treatments for *E. histolytica* infection. Malnourished individuals may have impaired absorption of medications, making it more challenging to clear the infection.

Improving the nutritional status of individuals at risk of *E. histolytica* infection is essential. Providing balanced diets and nutritional supplements can help boost immune function, restore gut barrier integrity, and enhance overall health. Promoting proper hygiene practices, safe water sources, and sanitation facilities can reduce the risk of *E. histolytica* transmission. Ensuring that food and water are free from contamination is critical in preventing infection. Research into potential vaccines against *E. histolytica* is ongoing. Developing effective vaccines could be a could be most effective preventing infection, especially in areas with high malnutrition rates.

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Raising awareness about the dangers of *E. histolytica* infection and the importance of nutrition and hygiene is important. Communities need to be educated about preventive measures and early symptoms to seek timely medical care. Ensuring that healthcare services are accessible to vulnerable populations is vital. Early diagnosis and treatment of *E. histolytica* infection can prevent complications and improve outcomes, even in malnourished individuals. In conclusion, the relationship between malnutrition and *Entamoeba histolytica* infection is a significant public health concern, particularly in low-income countries. Understanding the mechanisms through which malnutrition exacerbates the disease and implementing comprehensive prevention and treatment strategies is significant to breaking the vicious cycle and reducing the effect of this infectious disease on vulnerable populations.