

# Intestinal Parasites in Children: An Overview for a School/College-Level

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## ABSTRACT

Intestinal parasitic infections remain a major public health problem in children, especially in low- and middle-income countries and deprived communities. Recent systematic reviews and large field studies show that roughly one-third to one-half of preschool and school-age children are infected with at least one intestinal parasite. The evidence supports integrated control strategies combining periodic deworming, water, sanitation and hygiene improvements, health and school-based education, and, where relevant, animal health measures to reduce transmission and protect child growth and development. This article aimed to know the prevalence of intestinal parasites among children globally.

**Keywords:** Children, Intestinal Parasites, Risk factors, Prevention

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### Introduction

Intestinal parasites (IPs) are organisms (worms and microscopic protozoa) that live in the gut and use the child's nutrients to survive. They are common in many low- and middle-income countries and remain a major public health problem in childhood [1,2, 3].

#### What are intestinal parasites?

There are two main groups affect children:

- Protozoa (microscopic single-celled organisms) – e.g., *Giardia duodenalis*, *Entamoeba histolytica*, *Cryptosporidium*, *Blastocystis* [4,5,6].
- Helminths (worms) – e.g., *Ascaris lumbricoides* (roundworm), *Trichuris trichiura* (whipworm), hookworms, *Enterobius vermicularis* (pinworm) [1,2].

These parasites spread mainly by the fecal–oral route: when eggs or cysts from feces contaminate water, soil, food, hands, or surfaces and are swallowed [7,8].

How common are they in children?

Studies from many regions show that intestinal parasitic infections (IPs) are very frequent in preschool and school-age children:

- Ethiopia, meta-analysis: about 48% of children infected at least once [1].
- Egypt: 46.5% of apparently healthy children had at least one parasite [9].
- Ghana: pooled prevalence 22%, higher in rural regions [10].
- Turkey: pooled prevalence 29% in school-age children [2].
- Iran: 38% in preschool and school children, with a decreasing trend over time [11].
- Duhok, Iraq: 27.7% in in school children-age 1-14 years [6].

In some rural or very poor areas, virtually all children may be infected (near 100% in rural Colombian schools; 97% in Nicaraguan children) [12, 13].

#### Health effects on children

Intestinal parasites can cause both acute illness and chronic, subtle damage:

- Digestive symptoms: diarrhea, abdominal pain, nausea, vomiting [6,13].
- Malnutrition and growth problems: wasting, stunting, low weight-for-age and height-for-age, and “failure to thrive” [14].
- Anemia and micronutrient deficiencies, partly due to blood loss and poor absorption [1].
- Poor cognitive and school performance: lower learning capacity and school achievement over time [1,6].
- In some studies, infected preschool children were much more likely to be wasted (severely underweight for height) than uninfected peers [6,13].

Even when children appear well, asymptomatic infections are common and contribute to ongoing transmission in communities [15,16].

#### Risk factors

Across settings, similar risk factors repeatedly appear:

- Unsafe water – use of untreated or unclean drinking water strongly increases risk [15,16].

- Poor sanitation – open defecation; latrines without septic tanks; contaminated play areas [1,17].
- Inadequate hygiene – not washing hands after defecation or before eating; long or dirty nails [11,3].
- Low socioeconomic status and crowded housing, including large family size and overcrowded slums [2,3,4].
- Rural residence and close contact with contaminated soil and roaming animals [15,16].
- Younger school age (about 6–10 years), when children are active, independent, and often unsupervised [1,3].

#### Intestinal parasites and the gut microbiome

Newer research shows that protozoan infections such as *Giardia* and *Entamoeba* can alter the bacterial gut microbiota, shifting the community composition and potentially affecting immunity and other diseases. Multiple parasite species tend to produce stronger changes in the microbiota than single infections [6,18].

#### Prevention and control

Evidence from many countries points to a combination of medical and environmental interventions:

Regular deworming of preschool and school-aged children, often every 6–12 months in high-burden areas [5,7].

Improved water, sanitation and hygiene (WASH):

- Safe, treated drinking water
- Functional latrines with septic systems
- Clean play areas, safe waste disposal [2,4].

Hygiene education for children and caregivers: handwashing with soap, washing vegetables, wearing shoes, nail trimming [6,18].

Targeting high-risk groups and regions, such as rural communities, slums, and very poor households [6,18].

#### Global trends

In some countries (for example Iran and Ethiopia), the overall prevalence of IPs in children has declined over recent decades, likely due to better sanitation, health education, and deworming programs [10]. However, in many rural or marginalized communities, the burden remains high, underscoring the need for sustained, integrated control efforts [9].

#### Conclusion

Intestinal parasites in children are highly prevalent, strongly linked to poverty and poor hygiene, and can seriously harm growth and development, but are preventable with integrated public health measures.

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