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## Intestinal Protozoan Infections among Primary School Children in Anuradhapura District, Sri Lanka

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**Background:** Intestinal protozoa (IP) are single-celled organisms transmitted via ingestion of cysts from contaminated sources, causing symptoms ranging from asymptomatic to severe diarrhoea. Pathogenic IP include *Giardia duodenalis*, *Entamoeba histolytica*, and *Cryptosporidium parvum*, while *Blastocystis* spp. and *Entamoeba coli* are generally commensals. In Sri Lanka, data on IP is limited, with no studies from Anuradhapura. The most recent study from a tea plantation (Kandy, 2016) reported a 0.4% prevalence by microscopy in children.

**Objectives:** This study aimed to estimate the prevalence of IP infection among primary schoolchildren in Anuradhapura district.

**Methods:** This cross-sectional study collected stool samples from 688 asymptomatic students from grades 1–5 from 19 schools representing five educational zones in Anuradhapura, with multistage stratified cluster sampling. Stool samples were analysed in triplicate using direct wet smear, formalin-ether concentration, Kato-Katz, Ziehl-Neelsen staining and PCR. Data were analysed descriptively, and prevalence was calculated for each diagnostic method.

**Results:** Mean age of the cohort was  $7.9 \pm 0.6$  years, with 364 (52.9%) being boys. With all tests, 26 (3.8%) were positive for pathogenic IP: *G. duodenalis* 15 (2.2%), *C. parvum* 13 (1.9%), and *E. histolytica* 4 (0.6%). Pathogenic IP co-infections were identified in six (0.9%), with the commonest combination being *Giardia* and *Cryptosporidium* (4, 0.7%). Microscopy detected pathogenic IP in 1.6% (n=10): *E. histolytica* (3, 0.4%), *G. duodenalis* (2, 0.3%), and *C. parvum* (5, 0.7%). *E. coli* was found in 2.5% (n=17). PCR detected pathogenic protozoa in 3.4% (n=21): *E. histolytica* (1, 0.2%), *G. duodenalis* (14, 2.2%), and *C. parvum* (10, 1.6%). *B. hominis* was detected in 16.5% (n=103).

**Conclusions:** The study revealed a notable 3.8% prevalence of pathogenic IPs, mainly *G. duodenalis*, including co-infections, among asymptomatic primary school children. Reliance on microscopy alone underestimates these infections, while PCR offers greater accuracy. Although ideal, PCR use must balance cost and feasibility in resource-poor settings. Combining multiple microscopic methods can enhance detection and support better diagnosis and targeted interventions.

**Keywords:** Intestinal protozoa, Microscopic methods, PCR, Prevalence, Sri Lanka