Deworming shows growth similar to placebo in pre-school children in Peru

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The three intestinal worms: roundworm (*Ascaris*), whipworm (*Trichuris*) and hookworm, cause infections and diseases that are among the most common neglected tropical diseases in the developing world. They spread through contaminated food, water and the environment; disrupt nutritional intake and utilization by the body; and cause blood loss and loss of appetite. The World Health Organization supports large-scale deworming programs aimed at pregnant women, school-age children and pre-school children. Children between 1 and 2 years of age have been included in recommendations since 2002. Recent global estimates show that fewer than 25% of pre-school children receive deworming treatment.

Early pre-school children make up a unique study group due to their high rate of growth and development and nutritional demands. Researchers from the McGill University Health Centre and the Asociación Civil Selva Amazónica set up a large-scale randomised controlled trial of 12 and 13-month-old children attending health centres in Iquitos, Peru. 1760 children were randomized to one of four treatment groups:

- Group 1: Deworming treatment at 12 months, placebo at 18 months
- Group 2: Placebo at 12 months, deworming treatment at 18 months
- Group 3: Deworming treatment at both 12 and 18 months
- Group 4: Placebo at both 12 and 18 months

At the 12-month, 18-month and 24-month follow-up time points, the researchers measured the weight and length of the children, took a stool specimen for worm infection analysis and administered a questionnaire to collect epidemiological information. 1563 children attended the final follow-up assessment (88.8% of the original study population). The overall prevalence of intestinal worms increased from 14.5% at the beginning of the study to 42.6% after 12 months. No statistically significant difference was seen among groups in the prevalence of roundworm or hookworm infection, although there was a lower prevalence of whipworm infection in group 3 (receiving two doses of de-worming treatment) compared to group 4 (receiving placebo).

Over the 12-month duration of the trial, all children gained approximately 2 kg in weight and 9.6 cm in length. No statistically significant difference was seen in child growth among the groups. The researchers note, however, that between 25-30% of children were receiving deworming treatment outside of the trial protocol making it difficult to observe differences. Other considerations include the presence of high levels of malnutrition and high rates of intestinal worm re-infection and new infection over the 12 months. Longer follow-up times and better adherence to study protocols are needed to accurately detect the true effect of deworming on growth.

This study provides results from a large and well-designed double-blind randomized controlled trial with a high rate of follow-up. The authors highlight methodological challenges of conducting this type of trial and suggest that a more comprehensive approach to future research on this topic is warranted. Renewed efforts from the global research community is needed in order to contribute to the evidence base regarding interventions to reduce malnutrition and intestinal worm infections in early pre-school children in developing countries.

More information: *PLOS Neglected Tropical Diseases*,

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