Key Messages

- The diagnostic sensitivity of direct microscopy (DM) is low for the detection of worm infection especially for *Trichuris* and hookworms.
- Large number of cases of STH could be missed in clinical settings.
- Deploying WHO-recommended worm diagnostic tests crucial.
- Improving the sensitivity of DM by standardizing and training could improve its performance.

What is the problem and why is it important?

Worm infection in children leads to malnutrition, poor physical and cognitive development. It remains a major public health problem in Ethiopia. Prevention and control programs use WHO recommended diagnostic methods. However, health care facilities only use DM all over the country due to its simplicity, rapid, detects wide ranges of parasites, and cost-effectiveness to perform. We evaluated the diagnostic sensitivity of DM for worm infection.

How did we measure it?

A school-based cross-sectional study was conducted in Jimma Town in 2015 including 600 children. The diagnostic performance of DM was compared to a composite reference standard (CRS) combining the results of Kato-Katz (WHO recommended test for STH) and two flotation tests (Mcmaster and Mini-FLOTAC) to determine the true infection status.
What did we find?

- The diagnostic sensitivity of DWMM is low particularly for *Trichuris* (*TT*) and hookworm (*HW*) species (Fig 1).
- A large proportion of worm infected individuals were missed using DM. including 35% of worms, 43% *TT*, 14% *HW* and 10% *Ascaris* (*AL*) (Fig 2).

**Implications and recommendation**

Poor diagnostic sensitivity of DM contribute for an ongoing transmission of worm infection, missing an opportunity for patient treatment, and impede the success of prevention and control programs.

- Substitution of DM with WHO recommended STH diagnostic methods could support an elimination of worm infection as a public health problem.
- Improving the diagnostic performance of DWMM through standardizing the volumes of stool to be examined and training of lab professionals.
- Further researches should be undertaken to improve the diagnostic sensitivity of DM.
- In health care facilities, DM is used to detect intestinal parasites other than STH (e.g., *Strongyloides*, protozoans). If DM is replaced with other WHO recommended STH diagnostic methods, there will be a missing intestinal parasites other than STH. Therefore, using DWMM in parallel with WHO recommended methods is important.
- Research on the development of alternative diagnostics detecting all intestinal parasites are highly crucial.