Brief summary

Diagnostic sensitivity of direct microscopy for worm infections in Jimma Town, Ethiopia

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 malnutrion , poor physical and cogenitive development. It remain major public health problem in Ethiopia. Prevention and control programs use WHO recommanded digbostic methods. However, health care facilities only use DM all over the country due to its simplecity, rapid, detects wide ranges of parasites, and cost effectiveness to perform. We evaluated the diagnostic sensetivity of DM for worm infection.

How did we measure it?

A school based crossection study was condcted in Jimma Town in 2015 including 600 children. The diagnostic performance of DM was comared to a composite reference standard(CRS) combining the results of Kato-Katz (WHO recommanded 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).

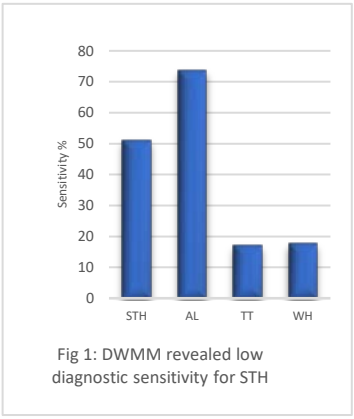

Fig 1: DWMM revealed low diagnostic sensitivity for STH

Implications and recommndation

Poor diagnostic sensitivity of DM contribute for an ongoning transmission of worm infection, missing an opportunity for patient tretment, and impede the the success of prevention and control progrmas.

- 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 professionls.
- 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 (eg Strongyloides, protozoans). If DM is replaced with other WHO recommended STH diagnostic methods, there will be a missing intestinal parasites other than STH. There fore, using DWMM in parallel with WHO recommended methods is important.
- Research on the development of alternative diagnostics detecting all intestinal parasites are highly crucial.

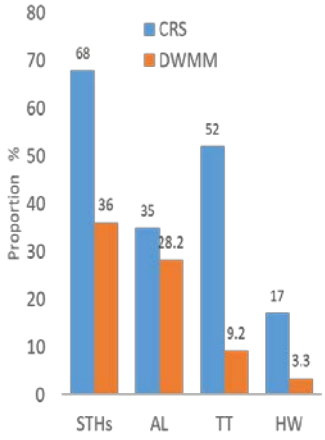

Fig 2: Worm infection missed while using direct microscopy