

Linkage Between Drinking Water Supply and Irrigation under Multi-Use Water System in rural Ethiopia

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Introduction

In rural areas, irrigation has a complex interaction with domestic water supply and sanitation services.

Separate sources of domestic water supply and irrigation agriculture use do not exist in several areas.

As a result of limited availability of improved domestic supply, most rural households rely on unimproved water sources including unprotected wells or springs, rivers, irrigation water from canals, ponds and streams which are easily polluted by humans and animal excreta.

Objectives of the study

To examine the role of irrigation agriculture practices on quality and quantity of domestic water uses

To analyze the complex interaction between irrigation and domestic water supply and their impact on health outcome

To investigate the impact of irrigation on child nutritional outcomes

Conceptual Framework

The conceptual framework shows the link between irrigation agriculture-nutrition-health.

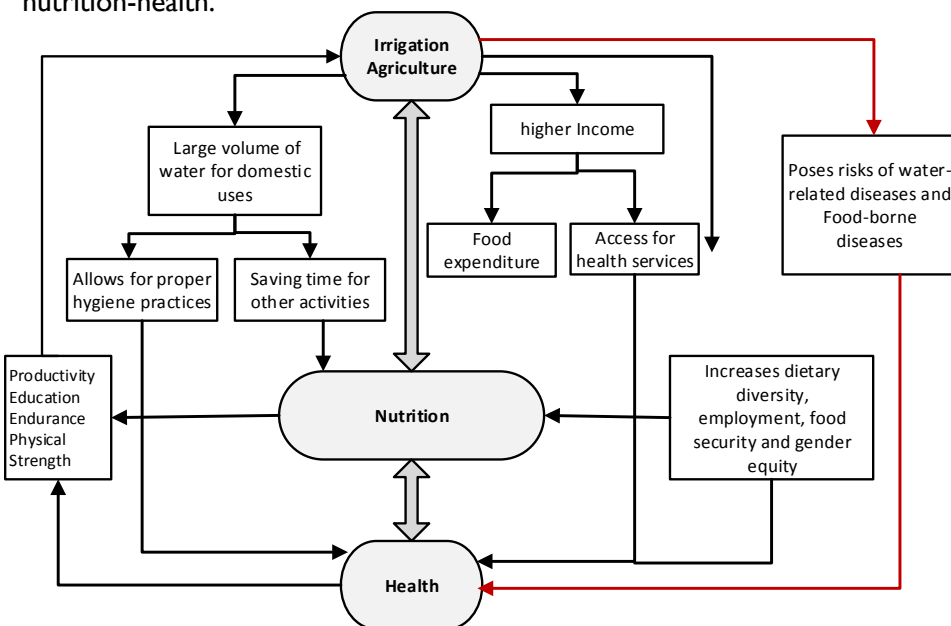


Figure 1. Conceptual Framework

Study Areas

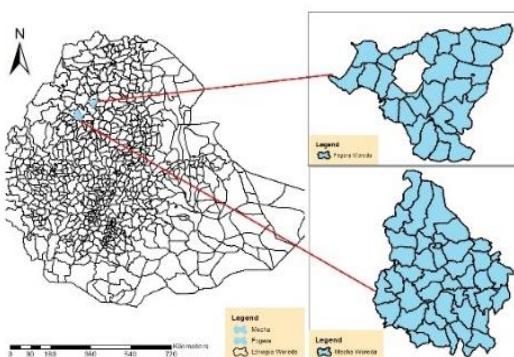


Figure 2. Map of the study areas

✓ The study was conducted in Fogera and Mecha districts of Amhara Regional state,

✓ Water and sanitation coverage is very low and the prevalence of water-related diseases are higher

✓ Small scale irrigation farming practice is in place

Data and Methods

- A household survey has been conducted from February to June 2014 for 454 households. In addition;
- Water samples from household drinking water storage has been collected and tested for the presence of *Escherichia coli* (E.coli) bacteria (colony forming units per 100 ml) water using membrane filtration method
- A self-reported morbidity status for all selected household member have been recorded (for instance: diarrhea, malaria and other types of illness)

Results and Discussions

- Based on the JMP definition, 50% of our sample households have access to improved drinking water source.
- 58% of the water samples from household's drinking water storage is contaminated with E.coli (at least 1 E.coli counts of CFU per 100 ml).

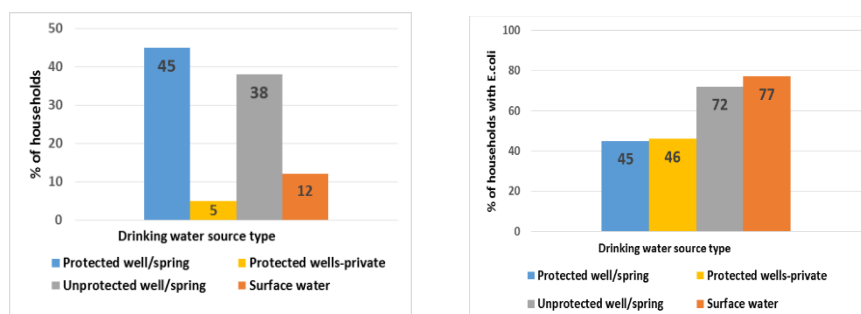


Figure 3: water source and household water contamination

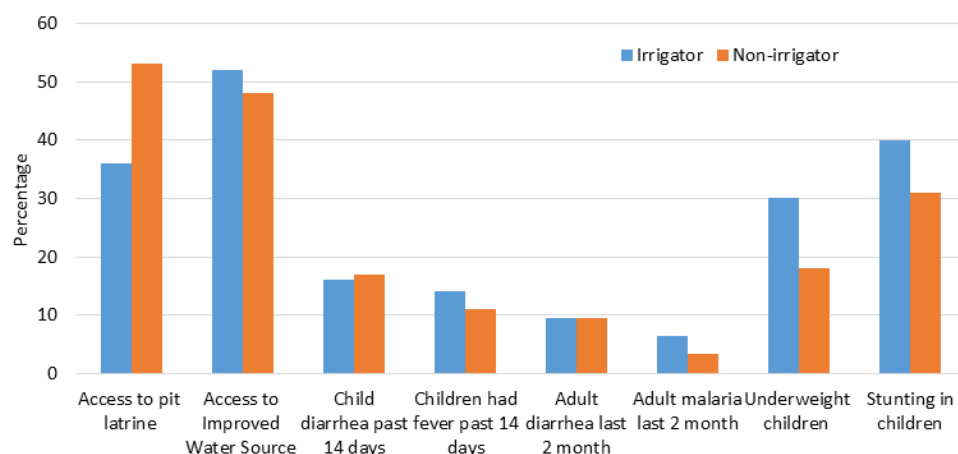


Figure 4: Health status between irrigator and non-irrigator household

Preliminary Conclusions

- ✓ After controlling for distance to water sources, no significance difference in terms of per capita per day water consumption between the two groups, but non-irrigator household on average travel 10 minutes more per trip than irrigator for water collection
- ✓ The mean value of *Escherichia coli* (E.coli) bacteria coliform colony count is higher for irrigator than non-irrigator households
- ✓ Overall adult morbidity rate is much higher in irrigator households than non-irrigator (30% vs 37%).
- ✓ Irrigator households children are more likely to be underweight and stunted than non-irrigator household children.

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