INTERVENTION FACT SHEET 3:
DATA-DRIVEN BEHAVIOR CHANGE • OCTOBER 2015

Increasing fluoride filter use in rural Ethiopia

High levels of fluoride concentrations in water can lead to fluorosis, which eventually cripples sufferers. Fluoride removal household filters are efficient in preventing it, but their effectiveness depends on adequate use. In a longitudinal study, based on the RANAS approach, behavioral factors of filter use were assessed and two behavior change strategies were developed aiming specifically at the critical behavioral factors. Both strategies, a planning and social-prompt intervention and an education workshop combined with pledging, were able to raise use to a level sufficient to prevent fluorosis. Mere provision of the fluoride removal filter led to insufficient use, but combining this with a behavior change technique led to more than 80% use of filtered water for drinking and cooking.

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Context

In the northern Great Rift Valley in Ethiopia, fluoride concentrations in water are much higher than the guideline set by the World Health Organization. This can lead to fluorosis, with joint pain, limited joint movement, deformation of bones, and eventually physical disability. Use of fluoride removal filters can prevent symptoms effectively. However, practitioners have increasingly realized that the mere provision of infrastructure or equipment such as fluoride removal filters does not ensure that it is used sufficiently to achieve health benefits. Additional interventions to change behavior, termed behavior change techniques (BCTs) are needed. To be most effective, BCTs should be tailored to the behavioral factors steering a behavior.

Objectives

The project's main goal was to increase fluoride removal household filter use to a level sufficient for the prevention of fluorosis. We analyzed effects on behavior (fluoride removal filter use) and on psychological factors. The specific objectives were:

- To assess the behavioral factors that influence fluoride removal filter use.
- To design, implement and evaluate systematic behavior change strategies to promote the use of fluoride removal filter.
- To compare the strategies' effectiveness to the effectiveness of mere provision of fluoride removal household filters.

Activities

Step 1 & 2: Identify, measure and determine the behavioral factors determining use of fluoride removal filters:

- Partially subsidized fluoride removal household filters were provided in two rural villages in the northern Rift Valley.
- A baseline survey on filter use and behavioral determinants was conducted in September 2010 (N = 72).
- Analyses revealed the key behavioral factors affecting the use of fluoride removal filters to be habit, remembering, commitment, interpersonal communication, and health knowledge.

Step 3: Select behavior change techniques (BCTs) and design behavior change strategies to increase use of fluoride removal filters:

- Several BCTs expected to enhance the key factors affecting use of fluoride removal filters were selected and combined in two behavior change strategies.
- The first strategy, a planning and social support intervention, was designed to target habit and remembering. In a promotional visit, the household's water use was assessed and suitable times for a particular member of the household to fill the filter were found and marked on a colored circle (Figure 1). A second member of the household was asked to support the first by providing a reminder.
- The second strategy, an educational workshop combined with public commitment, was designed to target commitment, interpersonal communication, and health knowledge (Figure 2). Women were invited to a three hours' workshop on fluorosis and its prevention. At the end, the women made a public commitment by raising their hands and saying aloud that they pledged to use the filter.

Step 4: Implement and evaluate behavior change strategies:

- The strategies' effectiveness was assessed through a before-after control trial.
- One of the villages studied was chosen as control village. In the other village, the intervention village, half of the households received the social support strategy and the other the public commitment strategy.
- The behavior change strategies were implemented by the local non-governmental organization, the Oromo Self Help Organization (OSHO).

- A follow-up survey was conducted in February to May 2011 to evaluate change in behavior and behavioral factors.

Findings

- The planning and social support intervention and the educational workshop combined with public commitment increased filter use substantially.
- Filter use for drinking and cooking water consumption increased to above 80% of total consumption in the intervention village – sufficient for the prevention of fluorosis.
- Filter use for drinking and cooking water consumption was below 60% in the control village, which had only received the filter – insufficient for the prevention of fluorosis.

Conclusion

Mere distribution of fluoride removal filters did not succeed in raising use to a level sufficient for the prevention of fluorosis. The systematic behavior change strategies were necessary to introduce the behavior change required to prevent fluorosis.

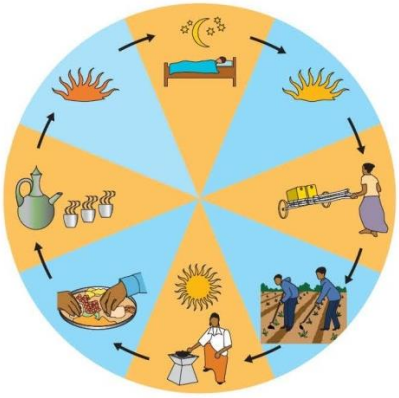

Figure 1: Daily routine planning circle.

Figure 2: Educational workshop combined with pledging.

Duration
2009 – 2012

Partners
Oromia Self-Help Organization (OSHO)

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Swiss National Science Foundation (SNSF)
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Further information
http://www.eawag.ch/en/department/ess/main-focus/environmental-and-health-psychology-ehpsy

Publications
Sonego, I.L., Huber, A.C., Mosler, H.-J. (2013). Does the Implementation of Hardware Need Software? A Longitudinal Study on Fluoride-Removal Filter Use in Ethiopia. *Environmental Science & Technology, 47,* 12661−12668.

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