INTERVENTION FACT SHEET 8:
DATA-DRIVEN BEHAVIOR CHANGE • December 2017

Increasing chlorination of drinking water in Chad

In this study the effects of a behavior change campaign promoting the uptake of household drinking water chlorination in communities along the Chari and Logone rivers in Chad were evaluated. The campaign was based on formative research using the RANAS model and targeted several behavioral factors identified as relevant. Results show that 64% of the intervention participants reported to chlorinate their drinking water. The campaign's effect on water treatment was mainly created through improvements in health knowledge, changes in norms, and self-efficacy convictions. The findings imply that water treatment behavior can be successfully promoted using a systematic behavior change approach.

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Context

Cholera is still one of the most serious diarrheal diseases, with fluctuating case numbers around the globe possibly underrated and under-reported. In 2015, 42 countries reported 172,454 cases and 1304 cholera-related deaths, with most cases and deaths occurring in African countries. The number of cholera cases rose to over 60,000 in 2010 and 2011 together for Chad and Cameroon alone. The Lake Chad Basin is a hotspot that is frequently hit by cholera outbreaks that quickly spread across the region's porous borders. Consequently, the governments of Chad and Cameroon and the World Health Organization (WHO) are trying to establish a strategy of quick response and prevention for cholera and other diarrheal diseases in the region. As part of this strategy, a campaign was developed and implemented at the household level to promote drinking water disinfection using chlorine in several communities along the Chari and Logone river beds.

Objectives

The objectives of this evaluation study were to examine the effects of the interventions on participants' water treatment behavior and changes in their psychological mindset concerning the target behavior. The following research questions were addressed:

1. Did the campaign have a positive impact on water treatment among intervention participants?
2. Did the campaign affect psychological factors for drinking water treatment that were targeted by the campaign?
3. Which of these psychological factors mediated the effects of the campaign on behavior?

Activities

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

The intervention strategies were informed by a formative baseline study in December 2013 and May 2014 among 1016 primary caregivers of children under the age of five. These surveys identified the psychological factors relevant to household water treatment, which were then recommended as the targets of promotional efforts to increase the uptake of water chlorination. Interventions were developed specifically targeting the following psychological factors: perceived vulnerability and health knowledge, perceived behavior of others, social support and social discourse, as well as perceived self-efficacy and action knowledge.

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

The first element of the intervention was a pre-recorded audio advert which introduced several arguments and personal statements about water treatment. These statements were inspired by interview responses given during the baseline surveys. Several BCTs were incorporated in this recording, such as “Inform about personal risk” (BCT 3), “Inform about and assess costs and benefits” (BCT 5), “Provide instruction” (BCT 15) targeting risk, attitude, ability, and norm factors. The statements in the recording were mixed so that positive stances outweighed negative stances. This fed the impression that more people were engaged in the behavior than those who were not and served as a means to target the perception of others' behavior and others' approval (“Inform about others' behavior”, BCT 9; “Inform about others' approval/disapproval”, BCT 11).

The second element was a poster communicating information on where and how diarrhea is contracted and what can be done to prevent it. It was an adaptation of the F-diagram which graphically depicts several pathways of diarrhea propagation and how those pathways can be interrupted. The poster used BCT 1 (“Present facts”), targeting health knowledge and explaining to participants where and why they are at risk. Participants were encouraged to discuss the contents of the poster among them to spark social

discourse on the topic (BCT 7: "Prompt to talk to others").

The third element was a practical demonstration mainly targeting how-to-do knowledge ("Provide instruction", BCT 15) and confidence in performance ("Demonstrate and model behavior", BCT 17). Promoters demonstrated to participants how to correctly apply chlorine products for drinking water disinfection, including how to calculate the dosage needed.

The fourth element, which concluded each session, was a public commitment appeal (BCT 10: "Prompt public commitment"). Participants were encouraged to make a public pledge in front of the assembled audience to treat their household's drinking water. Caregivers who were not heads of households were prompted to seek support from their heads of household (BCT 21: "Organize social support"). Participants committing to treating their household's drinking water received a commitment sign. This was a piece of blue cloth to be displayed on the participant's house.

Step 4: Implement and evaluate behavior change strategies:

The strategies were implemented by the Ministry of Public Health (MSP) in collaboration with the NGO CSSI. The strategies' effectiveness was assessed by a follow-up survey which was conducted in July 2016 to evaluate change in behavior and behavioral factors. 162 of the 220 interviewed caregivers confirmed having visited at least one session and remembered information received on household water treatment. Recall of intervention elements and materials was good, with 95% of intervention participants remembering the poster, the demonstration session, and the public commitment element, while the audio recording was recalled only by 83% of participants.

Findings

64% of intervention participants who had attended one or several of the intervention sessions reported to chlorinate their drinking water compared to 42% of non-participants and 30% in the baseline sample before the intervention.

Interventions heightened the perception of subjective vulnerability, perceived severity, health knowledge, perceived benefits, the descriptive norm, social support, action knowledge, and self-efficacy.

Conclusion

Water treatment rates were significantly higher in households after participating in an intervention campaign. Providing health knowledge paired with practical advice on how to implement it, such as the demonstration on how to treat water, proved to be a strong lever for behavior change. In addition, the organization of social support strategies within households helped. The strongest influence between intervention and behavior was participants' increased trust in their own abilities to perform and continue to do so.

"I went to buy "eau de javel" (liquid chlorine solution) at the local market, the price is about the same as for a pack of salt or sugar and it serves to treat the drinking water for our family for a whole month. Some people say it is too expensive or that they don't have the money for that. But if you think about the costs to buy medication each time when your kids fall sick, it is actually not that much money".

Figure 1: An exemplary statement played during the audio recording targeting perceived costs and benefits (BCT 5, translated from French).

Figure 2: Practical demonstration of chlorination procedure during an intervention session.

Project duration: 2013 – 2016

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Further information: http://www.eawag.ch/en/department/ess/main-focus/environmental-and-health-psychology-ehpsy

Publications:

Lilje, J., Kessely, H., & Mosler, H.-J. (2015). Factors Determining Water Treatment Behavior for the Prevention of Cholera in Chad. The American Journal of Tropical Medicine and Hygiene, 14-0613. https://doi.org/10.4269/ajtmh.14-0613

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