

COMMUNITY PARTICIPATION TO LOWER ARSENIC EXPOSURE MORE EFFECTIVELY IN BANGLADESH

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Background/Aims: Millions of villagers in Bangladesh drink groundwater containing elevated levels of arsenic from their own well water even though arsenic safe water is often available within short walking distance. Well water arsenic testing has been shown to reduce arsenic exposure; however there have been no studies looking at the effectiveness of having a local villager conduct the well testing program.

Methods: We conducted a cluster-based randomized controlled trial(RCT) of 1000 households in 20 villages to investigate the impact of having a local person present within a village in comparison to an outside person conducting water arsenic testing and arsenic education in Singair, Bangladesh. Six months after the intervention the rate of well switching and the change in urinary arsenic from baseline was determined. This is the first RCT of arsenic education conducted in Bangladesh using a biological outcome indicator.

Results: The trained arsenic testers were able to convince 58% of study households with unsafe wells to switch to alternative drinking water sources. Although we did not find a statistically significant difference between the local and outside tester villages, this overall rate is more than twice the rate of well switching observed in areas that only received well testing from the nationwide Bangladesh Arsenic Mitigation Water Supply Project(BAMWSP). Furthermore the urinary arsenic levels of all study participants with unsafe wells that switched to safe drinking water sources($<50\mu\text{g As/L}$) dropped from an average of $215\mu\text{g As/g creatinine}$ at baseline to $133\mu\text{g As/g creatinine}$ at follow-up, a 38% reduction in average urinary arsenic content. Those with unsafe wells that did not switch had an average urinary arsenic of $235\mu\text{g As/g creatinine}$ at follow-up.

Conclusions: The success of this intervention demonstrates that training upazila level staff to provide arsenic testing and education is an effective means of reducing arsenic exposure in villages in Bangladesh.