# Handwashing and Behavior Change in Bangladesh

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**Sector(s):** Education, Health, Labor Markets

**Fieldwork:** MOMODa Foundation

**Sample:** 156 classrooms across 26 public primary schools paired with 775 rural households across 52 villages

**Target group:** Children Primary schools Students Rural population Families and households

**Outcome of interest:** Health outcomes Health

**Intervention type:** Behavioral economics Information Water, sanitation, and hygiene Edutainment

**AEA RCT registration number:** AEARCTR-0004746

**Research Papers:** Behavioral Transmission: Evidence from a Public Health Campaign in Bangladesh

**Partner organization(s):** MOMODa Foundation, Weiss Family Program Fund for Research in Development Economics

Handwashing with soap is crucial to decrease infant and child mortality rates in low and middle-income countries. Researchers conducted a randomized evaluation to test the impact of an edutainment intervention at schools and the provision of handwashing resources at home on handwashing at school and at home. The edutainment intervention increased handwashing at school and decreased handwashing at home, reducing total handwashing. Similarly, inducing children to wash more at home led to considerably less washing at school. These findings suggest that encouraging behavior change in one setting may crowd out like behavior in another setting.

## Policy issue

Handwashing with soap is one of the most cost-effective practices against bacterial and viral contamination. Moreover, it is crucial to decrease infant and child mortality rates in low and middle-income countries, where bacterial and viral diseases claim over one million lives each year.

Hygiene interventions, among other educational interventions, tend to assume that lessons imparted in the classroom will positively impact behavior in the household, and vice versa. Still, there is limited evidence of positive transmission of behavior across settings. Likewise, most existing research relies on self-reported data to analyze changes in behavior. Can change in behavior go beyond contexts?

## Context of the evaluation

The evaluation took place across 52 villages in the Gaibandha District of Bangladesh. The primary schools in the study population had an average of 36 students per class and six grade levels. The typical teacher was a woman who had completed thirteen years of education and teaching experience of around fourteen years. Additionally, the average household head was a mother of 35 years and four years of schooling.

In this setting, 22 percent of households knew that colds could spread between people, and less than 20 percent mentioned using soap before cooking. A shortage of materials did not explain the low use of soap, as over 90 percent of households had soap, and 99 percent had access to tube wells with potable water.



Children wash hands in Bangladesh

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### Details of the intervention

Researchers conducted a randomized evaluation to test the impact of an edutainment intervention at schools and the provision of handwashing resources at home on handwashing at home and at school. As part of the intervention, researchers provided a soap dispenser mounted on the wall which included a time-stamped sensor, designed in collaboration with the MIT Media Lab, and provided liquid soap. The time-stamped sensor provided an objective measurement method and allowed the researchers to overcome measurement challenges that can come from relying only on self-reported outcomes.  At schools, researchers varied handwashing rates by randomizing a hygiene edutainment program across classrooms. At households, researchers randomized the distribution of hand soap dispensers and randomly varied the share of students per classroom who had a dispenser at home.

The study sample included 150 classrooms from 26 public elementary schools corresponding to 775 rural households in 52 villages. Each participating household had at least one child in the sample classrooms and participating students needed to have attended at least 60 percent of school days in the prior month. All classrooms had access to soap dispensers.

The study sample was stratified by school and the intervention was randomized at the classroom level:

1. Edutainment high-saturation group (37 classrooms): Students in this group watched a series of short videos on hand hygiene sourced from publicly available programs twice per week, with content rotating every six weeks. Additionally, 332 students were given access to soap dispensers at home.
2. Edutainment low-saturation group (39 classrooms): Students in this group watched the same edutainment videos as in the high-saturation group, but only 87 students were given access to soap dispensers at home.
3. No edutainment high-saturation group (28 classrooms): Students in this group did not watch any videos, and 260 students were given access to soap dispensers at home.
4. No edutainment low-saturation group (46 classrooms): Students in this group did not watch any videos, and only 96 students were given access to soap dispensers at home.

Researchers conducted initial surveys at schools and households in September and October 2019, respectively, accompanied by the installation of hand soap dispensers. The edutainment intervention occurred twice weekly after the baseline survey collection and the final delivery on March 14, 2020. Due to the Covid-19 pandemic restrictions, researchers conducted the final household surveys via phone in April 2020.

The main outcomes of interest were child health and daily handwashing rates. Child health outcomes were collected monthly by asking mothers to report the incidence of their child's diarrhea and respiratory illness. Researchers calculated daily handwashing rates for five months using the time-stamped sensor included in each hand soap dispenser.

In addition to receiving ethical review and approvals from an institutional review board, researchers made efforts to address and account for ethical questions by providing all households and classrooms in the study with hand soap dispensers and liquid soap. While this prevented the presence of a pure comparison group, it was informed by existing evidence of the positive benefits of dispenser provision on child handwashing behavior and health outcomes.

## Results and policy lessons

The edutainment intervention increased handwashing at school and decreased handwashing at home, reducing total handwashing. Similarly, inducing children to wash more at home led to considerably less washing at school. These findings suggest that encouraging behavior change in one setting may crowd out like behavior in another setting.

*Handwashing behavior at school*. The edutainment interventions increased daily handwashing rates in the classroom by 8.9 percentage points relative to the comparison group average of 25.2 percent (a 35 percent increase). Handwashing rates among classrooms in the edutainment groups persisted during the five-month evaluation, while those in comparison classrooms gradually decreased.

*School-to-home behavioral transmission.* Conversely, the edutainment interventions reduced handwashing behavior at home. On average, a student in an edutainment classroom washed 0.28 more times per day at school while a student and their family washed 0.37 fewer times per school day at home. Households with a child from an edutainment classroom decreased daily handwashing rates in the household by 0.37 percentage points relative to the comparison group average of 5.2 percent (a 7 percent decrease), suggesting that the intervention led to an overall negative impact on handwashing behavior for a child and their family.

*Home-to-school behavioral transmission.* Similarly, classrooms in the high-saturation groups showed lower washing levels at school. The daily handwashing rate for classrooms where 25 percent of students had hand soap dispensers at home was 3.3 percentage points lower relative to a 30.63 percent average for classrooms with only two children with dispenser (an 11 percent difference), suggesting there was no positive behavior transmission from households to the school.

Researchers found that decreases in handwashing in children’s homes in the edutainment group were driven mainly by lower handwashing rates in the after-school hours and on weekends.  Researchers suggest that two mechanisms might explain the

negative behavioral transmission of handwashing from school to home and home to school: handwashing at home may be crowded out as children wash more at school, and children may grow to associate hand washing with the classroom over the week.

*Child health.* Researchers found some suggestive evidence of an increase in the reported incidence of loose stool and respiratory infection symptoms among children in the edutainment groups.

Researchers found that a low-cost edutainment intervention at schools reduced overall handwashing. These unintended effects emphasize the importance of using caution when interpreting previous studies and the design of related programs. Moreover, while the study focuses on hand hygiene behavior, researchers cautioned that similar unintended effects might exist for other interventions where behaviors are expected to be practiced beyond the implementation setting, such as in workplaces or community-building efforts.