



Handwashing Research Summary: What we learned about handwashing in the second quarter of 2015

Between April and June 2015 17 relevant peer reviewed handwashing studies were identified.

Measurement of handwashing behavior

One study in Bangladesh directly observed handwashing behavior, and found that frequency of handwashing after defecation in 1,000 households was around 32%.¹ A study in India demonstrated that embedding electronic loggers in soap is an effective technique to observe handwashing behavior.²

Two further surveys measured handwashing frequency through self-reporting: in Turkey, 91% of the general population reported “always” washing their hands after using the toilet, 67% before cooking and 61% before eating. Women, older people, and more educated people were more likely to report doing so. The most common times for handwashing reported in that survey were after using the toilet, after waking up, after touching trash, and after picking the nose.³ Meanwhile, 47% of farmers and veterinarians tending to farms in the United States and Thailand reported “always” washing their hands and 35% “sometimes” after contact with animals; their handwashing likelihood was not associated with the type of animal being farmed.⁴

Behavior change

Knowledge

Three studies explicitly related knowledge to handwashing behavior. In Cambodia, if farmers understood the risk of animal-transmitted infections, they were more likely to wash their hands⁵, and in Nigeria, knowledge of Ebola transmission routes made people more likely to wash their hands (though when asked to demonstrate, only 2.2% of more than 5,000 people washed all parts of their hands).⁶ However, in Ethiopia and Haiti, knowledge about why to wash hands was associated with less frequent handwashing.⁷

Emotional motivators

A study in Nigeria found 58% of people reported starting regular handwashing in response to fears of Ebola.⁶ Another study found that the most effective psychological determinants for handwashing behavior in Haiti were coping planning (establishing plans to overcome anticipated barriers and distractions to a behavior), strength of commitment to handwashing, disgust and social norms; in Ethiopia, the same study found the most effective determinants to be nurture, social norms, perception of risk severity of not washing hands, disgust, and self-efficacy.⁷

Link to sanitation

Hygiene and defecation practices in India were found to be closely linked: a study of schoolchildren found latrine users were almost three times more likely to report using soap to cleanse their hands after defecation compared to children who sometimes or always defecate openly (52% vs. 17%).⁸



Implementation in schools

A randomized controlled trial in Denmark assessed the feasibility and impact of implementing hygiene education and mandatory pre-lunch handwashing in 43 schools. The researchers found teachers were reluctant to integrate handwashing into their pre-existing lesson plans, and only a third of teachers supported the pre-lunch handwashing intervention. Almost half of teachers stated beliefs that the time needed for handwashing disrupted education, and that time taken for handwashing could be better spent teaching or eating lunch. Accessible and high-quality facilities, and designated handwashing time strongly influenced the likelihood of the handwashing intervention being implemented. Over the course of a year, despite buy-in and implementation challenges, the schoolchildren's self-reported frequency of handwashing before lunch increased from 56% to 70%.⁹ Barriers were similar to those identified in the Turkey survey: forgetting, lack of convenient handwashing station, and having insufficient time.³

Handwashing 'hardware'

A cross-sectional survey of 526 schools in Nicaragua found 81% of schools had no handwashing stations and 74% of schools lacked soap; 95% of the schools that did have soap acquired it from parents of students, rather than through a dedicated budget.¹⁰ In the Danish trial of school-based handwashing promotion, inconveniently-located sinks and lack of soap and paper towels were identified as important barriers for implementing daily handwashing.⁹ Indeed, a study in India looked at "hardware"-related determinants for handwashing, and found that making soap available next to the toilet in households (in addition to at handwashing stations) increased the probability of overall daily handwashing with soap by 73%, and after using the toilet, probability of handwashing with soap increased by 172%.²

Installing low-cost portable handwashing stations in healthcare facilities in Western Kenya proved to be a sustainable intervention, delivering an increase of adequate handwashing facilities from 53% at baseline to 79% after 18 months; furthermore, a modest increase in handwashing was observed in households located near these healthcare facilities.¹¹

Cleansing agents

Observation of 1,000 households in Bangladesh found that 19% of people cleaned their hands with soap, and a further 13% with ash/soil after defecation, and 27% of caregivers cleaned their hands with soap, and a further 10% with ash/soil after cleaning a child who had defecated. There was a general perception that ash and soil are as effective as soap after fecal contact.¹ Meanwhile 61% of schoolchildren studied in Bihar, India reported using soil, 36% soap, 1.9% ash and 0.5% water only to wash their hands after using the toilet; choice of material varied by caste, with 53% of children from Caste 1 reporting exclusive use of soap for hand-cleaning compared with 21% of children from Castes 2 to 6 and 17% of Muslim children.⁸

Benefits of handwashing

Intestinal parasite infection and anemia

In Ethiopia, schoolchildren who received household interventions to promote handwashing with soap were 68% less likely to become infected by intestinal parasites than children left to continue with existing habits and practices.¹² A different study in India found that absence of a hand-washing station at the schools was independently associated with *A. lumbricoides* infection.⁸



Influenza

In Spain, schoolchildren were less likely to develop influenza if they washed their hands more than five times a day and after touching contaminated surfaces; this effect was not seen in pre-school children.¹³ Another case control study in Bangladesh also found that pre-school children's handwashing habits were not associated with their risk of influenza.¹⁴

Hepatitis A

An investigation of an outbreak of Hepatitis A in rural China found that the more people washed their hands, the less likely they were to develop Hepatitis A infection.¹⁵

Nutrition

An Ethiopian study found that children whose homes did not have a handwashing facility were more likely to be underweight than those whose household did have a handwashing facility¹⁶; the intestinal parasite study in Ethiopia found that schoolchildren who received household interventions to promote handwashing with soap were 61% less likely to be anemic.¹²

Phthalate esters

Increasing frequency of handwashing was found to reduce urinary evidence of exposure to phthalate esters in Taiwanese girls.¹⁷

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