SOAPLAY | USING SOAP BARS AS AN ENVIRONMENTAL CUE (NUDGE) FOR HANDWASHING AMONG CHILDREN

Prepared by:
Markus Petersson,
markus@ecosoapbank.org

SOAPLAY™ Research Summary

Using Shaped Soap Bars as Environmental Cues ("Nudges") for Handwashing Amongst Children

Throughout the least developed countries, the burden of (highly) preventable illnesses continue to cause death and irreparable damage to the life and development of young children.[1] Handwashing with soap is the most cost-effective method to prevent hygiene-related illnesses and deaths.[2] This simple practice removes 92% of harmful germs and has been linked to important reductions in a range of deadly and debilitating diseases.[3]

Due to the immense lifesaving potential, significant efforts have been devoted to uncover new ways to improve handwashing promotion programs.[4] Today, there is a growing body of evidence suggesting that a key solution can be found within the subconscious realm of nudges and incentivizing cues.[5] The introduction of "nudges" (environmental cues for handwashing) has been a highly useful addition to handwashing promotion.[6] When children are targeted, tools that evoke notions of play and curiosity are proving to be especially potent drivers of change.[7]

Building on these insights, Eco-Soap Bank – a non-profit organization employing disadvantaged women to recycle leftover soap from factories and redistribute it to vulnerable communities in need – has launched a new nudge soap bar. SOAPLAY bars – recycled soap bars in a variety of fun shapes and colors made from 100% unused high-quality raw material from well-known soap manufacturers – are designed to tap into the sense of curiosity and play that has been shown to constitute key cognitive elements of childhood realities. Extensive testing has produced very encouraging results, showing that SOAPLAY represent a more affordable, impactful, and desirable handwashing promotion tool for children aged 0 to 12 years.

In the wake of these findings, SOAPLAY won the innovation award at the UNC Water & Health Conference 2025.

To rigorously evaluate the efficiency of SOAPLAY, Eco-Soap Bank have conducted two pilot studies – one in household settings and one in school settings – as well as full-scale school test in rural Tanzania. All tests were simple A/B pre-posttest randomized control designs comparing the effects of regularly shaped soap bars to SOAPLAY bars. Participants were randomly sampled and assigned to a control group (receiving regular soap) or an intervention group (receiving SOAPLAY). To generate a valid comparison, all participants received the same hygiene intervention - a short standard hygiene session followed by soap distributions - with the only exception being that one group received regular soap bars and one group SOAPLAY bars. All groups were assessed both before the intervention (baseline) and a few weeks after the intervention (endline). Change was

[1] Biran et al (2014): Effect of a behaviour-change intervention on handwashing with soap in India (SuperAmma): a cluster-randomised trial, *Lancet Global Health*, Vol. 2, pp. 145-154; Burns et al. (2018): Washing with hope: evidence of improved handwashing among children in South Africa from a pilot study of a novel soap technology, *BMC Public Health*, Vol. 18, No. 709
[2] Black, R. E., R. Laxminarayan, M. Temmerman, and N. Walker, (eds) (2016): *Reproductive, Maternal, Newborn, and Child Health. Disease Control Priorities*, third edition, volume 2., Washington DC, World Bank
[3] GHP, Global Handwashing Partnership (2021): Handwashing Handbook, available at: https://globalhandwashing.org/about-handwashing/
[4] See for example: Curtis A. Valerie, Lisa O Danquah & Aunger V. Robert (2009), Planned, Motivated and Habitual Hygiene Behaviour: An Eleven Country Review, *Health Education Research*, Vol. 24, No. 4, pp. 655-673
[5] See Dreibelbis and Watson (2020): Using Environmental Nudges to Improve Handwashing with Soap Among School Children, *London School of Hygiene and Tropical Medicine*
[6] Dreibelbis et al (2016): Behavior Change without Behavior Change Communication: Nudging Handwashing among Primary School Students in Bangladesh, International Journal of Environmental Research and Public Health, Vol. 13, No. 129
[7] Watson et al. (2019): Child's play: Harnessing play and curiosity motives to improve child handwashing in a humanitarian setting, *International Journal of Hygiene and Environmental* Health, Vol. 222, pp. 177-182

measured by comparing differences between baseline and endline results. Test methodologies for the pilot studies are summarized below, then followed by a brief description of the full-scale school test methodology.

Test Component	Pilot School Test	Pilot Household Test
Research Design	Simple A/B pre-post randomized control test	Simple A/B pre-post randomized control test
Target Population	School children aged 6-9 attending 4 temporary learning schools (TLS) in Rohingya IDP camps in Sittwe, Myanmar.	Children aged 9-12 residing in two villages in Preah Vihear district, Cambodia.
Data Collection	Pre-post Handwashing Survey	Pre-post Observations + Handwashing Survey
Sampling	Stratified Random Sampling (n = 180)	Stratified Random Sampling (n = 113)
Independent Variable	SOAPLAY bars vs. regular soap bars	SOAPLAY bars vs. regular soap bars
Dependent Variable	Handwashing behavior	Handwashing behavior
Outcome Indicators (operationalization)	1) Self-Reported handwashing practices 2) Self-Reported illness prevalence	1) Soap Usage 2) Self-Reported handwashing practices 3) Self-Reported illness prevalence

The full-scale test included 16,000 children attending 18 primary schools in Dabalo and Mpwayungu, Tanzania. The research focused on change within three main outcome indicators 1) observed handwashing after using the toilet 2) self-reported handwashing practices and illnesses 3) soap usage – reflecting the total soap volume (in kgs and grams) used in each school during the test period. Data was collected using pre-post direct observations and surveys in both the group receiving regular recycled soap and the group receiving SOAPLAY. In total, 8,050 observations and 6,728 surveys were completed during a 9-week test period.

Findings

The results offer new insight into the drivers of handwashing with soap among children. Across all tests, SOAPLAY was by far the preferred soap option for handwashing. A vast majority of children expressed a clear preference for using SOAPLAY and rated the soap as better than other soap bars they used in the past. A large proportion also reported that the use of SOAPLAY had made handwashing feel more fun and inspired them to talk more about handwashing with their family and friends. The preference for using SOAPLAY was also reflected in the realms of handwashing practices and health outcomes.

The full-scale school test found:

- Observed handwashing with soap after using the toilet increased from 23% at baseline to 88% after the SOAPLAY introduction.
- Children were 3.78 times more likely (95% CI: 3.4-4.1, p=<0.001) to wash their hands with soap after given SOAPLAY compared to baseline.
- Children in the SOAPLAY group were 7% more likely to wash their hands with soap after using the toilet compared to the control group (RR 95% CI: 1.04-1.09, p=<0.001).
- Children given SOAPLAY in school used 53% more soap during the test period than children given regular shaped soap, supporting the notion that there had been a higher overall handwashing rate among children in SOAPLAY schools.
- Children given SOAPLAY in school were 2.3 times more likely to have soap for handwashing at home after the school intervention compared to before (95% CI: 2.1, 2.5), indicating that the children had played a substantial active role in sharing and disseminating their hygiene routines from school within the home.
- Overall, children missing schools due to illness in the two weeks preceding the survey decreased by 35%.
- Diarrhea cases, as well as other general illness symptoms, declined by 43% across both groups.

The pilot school test found:

- Children given SOAPLAY in school were 3.5 times more likely (p = 0.008) to have washed their hands 3 times or more the day before, compared to the children given regular soap.[8]
- The overall handwashing score[9] improved by 20% (p = <0.001, d_s = 0.844) among children given SOAPLAY in school, and 11% (p = 0.255, d_s = 0.274) among children given regular soap bars.
- 64% of children in the SOAPLAY group washed their hands with soap at least two key moments the day before, compared to 37% of children given regular soap bars (p = 0.006, V = 0.337).[10]
- Providing SOAPLAY in school improved regular handwashing at key moments by 11% (p = 0.001) after using the toilet and 15% (p = 0.08) before eating, while regular handwashing among children in the control group decreased slightly between baseline and endline.

The pilot household test found:

- Children that washed their hands 4 times or more the day before at home increased from 8% to 37% (p=<0.001) in the SOAPLAY group, while the corresponding improvement in the control group was 11% to 22% (p=0.29). At endline, children with SOAPLAY at home were over twice as likely to have washed their hands with soap 4 times or more the day before, compared to children given regular soap bars (p=0.07).
- The overall handwashing score improved with an average of 34% among children given SOAPLAY at home, compared to 24% in the control group.
- Children given SOAPLAY were 1.75 times (p= 0.19) more likely to have wet soap at home during endline observations (indicating regular usage), compared to the children in the control group.

The findings offer strong new evidence suggesting the design of soap bars can help influence and instill healthy handwashing behaviors among children. Results are in line with earlier studies of "toy soap" (soap with plastic toys inside).[11] In stark contrast to these early nudge soaps, however, – which were very expensive and labor intensive to produce and did not represent viable alternatives for large-scale distribution in resource-scarce settings – SOAPLAY bars are both extremely affordable and already set-up for mass-production and distribution to vulnerable communities and humanitarian crisis areas across the world.

In a world of continued hygiene paucities, all gains are of utmost importance. To this end, SOAPLAY offers a highly affordable, incentivizing soap bar alternative ready for large-scale distribution. Either as part of a larger nudge-based handwashing package or on its own, SOAPLAY can add an important new dimension to handwashing promotion for children. With the aid of these affordable and attractive soap bars, it will now be possible to help more children engage with handwashing on a level that moves beyond abstract notions of germs and illnesses, and tap into the powerful realm of play in a way that subconsciously nudges them toward improved handwashing practices.

[8] No discernible difference in reported handwashing frequency between the control and intervention group at baseline measurements (p = 0.980), meaning that it is likely that the endline differences can be attributed to the type of soap bar distributed (since that was the only variable that changed between baseline and endline)
[9] To measure overall change, the main outcome concept – handwashing behavior - was operationalized through a series of sub-variables and indicators pertaining to self-reported HWWS practices and illness prevalence. Each indicator was assigned a score value, and a baseline/endline comparison of the average total scores provides an overall assessment of change
[10] Again, no difference in reported handwashing at key moments between the control and intervention group at baseline measurements (p = 0.898), meaning that it is likely that the endline differences can be attributed to the type of soap bar distributed
[11] Watson et al. (2019): Child's play: Harnessing play and curiosity motives to improve child handwashing in a humanitarian setting, *International Journal of Hygiene and Environmental* Health, Vol. 222, pp. 177-182