

Changing Handwashing Behaviors in Schools: Longitudinal Lessons from Kolkata



The city of Kolkata in India's West Bengal is home to over 14 million people with over 400,000 students in over 1,700 government schools.

From 2013-2025, Splash has improved handwashing in hundreds of primary and secondary schools through the installation of handwashing stations, hygiene education and soap drives.

Notably, these activities overlapped directly with the COVID-19 pandemic. The pandemic brought handwashing practices to the top of global dialogue and highlighted the lack of handwashing facilities and practices in schools around the world.

However, there is limited longitudinal evidence before, during and after the pandemic which explores the extent to which these practices maintained.

This brief outlines Splash's contribution to handwashing in schools and explores how handwashing practices changed over time by different types of students. We also investigate how handwashing, behaviors from the school spillover into household practice provides recommendations for future school-based handwashing initiatives.



BACKGROUND: BEHAVIOR CHANGE AND HANDWASHING IN SCHOOLS

In school settings, WASH interventions in the global south typically aim to improve both infrastructure and behaviors. This is often through water access and storage, improved water quality, gender-sensitive sanitation facilities, menstrual hygiene support, monitoring support, setting up a maintenance fund, handwashing stations, and hygiene-focused behavior change communication.

Hygiene focused behavior change - Drawing on 93 WASH in schools interventions identified in recent scoping review of WASH in schools in lower- and middle-income countries [1], 90 had a specific activities on behavior change promotion for handwashing, menstrual hygiene management, water treatment, water handling and drinking water safety.. However, this included a variety of activities such as posters, songs, clubs and nudges as illustrated in **Figure 1**.

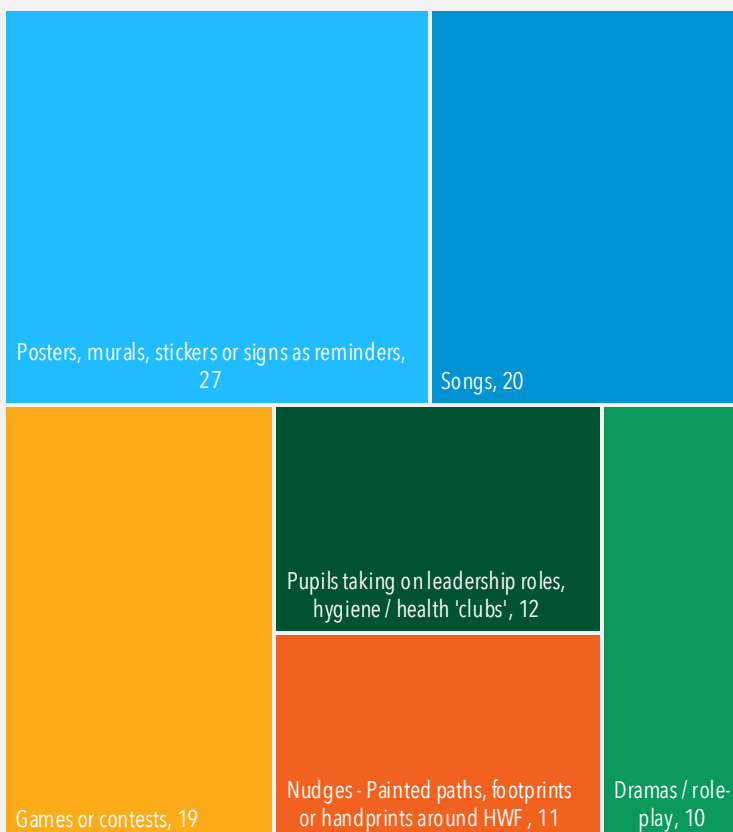


Figure 1: Treemap indicating the relative proportion of the types of activities used for behavior change promotion. Data from [1].

Handwashing - Importantly, when water is available, handwashing with soap interventions have the biggest impact on diarrhea when compared with sanitation or water quality activities [2]. Additionally, handwashing has been shown to significantly impact respiratory illness [3]. Yet there is significant nuance in these results and subsequent evidence has highlighted the importance of more holistic approach's including behavior change promotion for sustained practices [1].

To evaluate the impacts on handwashing for WASH in schools interventions, several recent studies have explored impacts on health, education, and sustained improved practices.

Water drop icon In Ethiopia, Splash's WISE program identified knowledge-based, emotional, and social interventions as facilitators for handwashing behavior change, while physical constraints and time limitations were barriers [7].

- In Indonesia, 450 intervention schools were compared against a control group of schools. Students who learned hygiene skills from teachers were more likely to wash their hands (after defecation and before eating), share hygiene knowledge with their parents, and less likely to openly defecate [4]
- In Bangladesh, a nudge-based pilot in two primary schools significantly improved post-toilet handwashing with soap practices [5].
- In Kenya, innovative handwashing stations with foaming soap, combined with behavior change promotion, significantly increased handwashing after toilet use. However, handwashing with soap remained low [6].
- In rural Andhra Pradesh, India, a 17-day school- and community-based campaign leveraging emotional drivers rather than knowledge, impacted handwashing with soap at the household level even at a 12-month follow up [8].



CONTEXT: HANDWASHING IN PROJECT WISE IN KOLKATA

Splash's support to school WASH overlapped significantly with the Coronavirus pandemic and the Swachh Bharat Mission. Nonetheless, the program was able to successfully support improvements in water, sanitation, handwashing and menstrual hygiene.

Behaviour change, hygiene education, teacher engagement and parent engagement were core components of this strategy.

These activities specifically aimed to create a spillover effect from schools into households so that that behaviours would be further sustained and

replicated by siblings, parents, and grandparents.

During the COVID-19 pandemic, Kolkata was classified as a 'red zone' which indicated the strongest restrictions and longest lockdowns.

Schools were closed for over 20 months between 2020 and 2022. Some schools offered online or community-based classes in 2021 and early 2022.

Not only did this influence the intervention timeline, but it also influenced the types of hygiene education activities. Hand hygiene became an important and critical step in stopping virus transmission and getting kids back to school [9].



Safe water - Access to water that is purified to meet or exceed WHO standards.



Sanitation - School toilets to ensure that they are hygienic and child-friendly.



Behavior Change - Education and training on handwashing with soap and proper use and maintenance of infrastructure.



Hygiene - Child-friendly handwashing stations, hygiene education training and soap drives.



Menstrual health - Menstrual health and puberty education to all children and parents.

Project WISE Behavior Change Activities

- School cabinet engagement
- Covid prevention awareness with posters and stickers
- Menstrual hygiene peer mentor training to adolescent girls
- Male engagement module to adolescent boys
- Handwashing promotion activities (for example, visibly dirty water from handwashing was collected in a clear glass container and displayed)

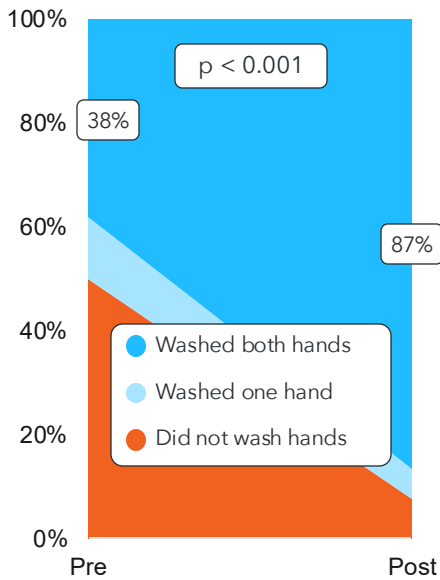
METHODOLOGY: LONGITUDINAL HANDWASHING OBSERVATIONS

While Splash's strategy involved multiple forms of hygiene behavior change, handwashing practices have been used as a proxy for monitoring and evaluating improvements. Within the schools it expected that handwashing occurs both before the midday meal and after using the toilet, the first of which has been determined as a feasible and observable for monitoring from parallel research in Addis Ababa [10].

The monitoring data includes 5,460 pre-midday meal observations of handwashing from randomly selected schools within Project WISE. 385 of these observations were conducted before the project with the remaining as routine monitoring of handwashing after the intervention was completed.



RESULTS: HANDWASHING BEHAVIORS OVER TIME



Overall handwashing practices significantly improved between the pre-intervention (n=385) and post-intervention (n=5,069) monitoring, with 92% of students washing one or both hands after the intervention (Figure 2).

Importantly these improvements were most pronounced in elementary aged students (Figure 3), with limited improvements for older students.

Additionally, female students were more likely to wash both hands at the baseline and during monitoring (Figure 4). While male students did see an improvement over time, boys were not as quick to take up the new practice.

To clarify the significance of these changes, p-value results from chi-square tests are displayed on each chart. There was a statistical difference between pre and post practice for all groups except students Grades 9-12, who had good handwashing practices from the start.

Figure 2: Handwashing practices before and after intervention.

BY GRADE

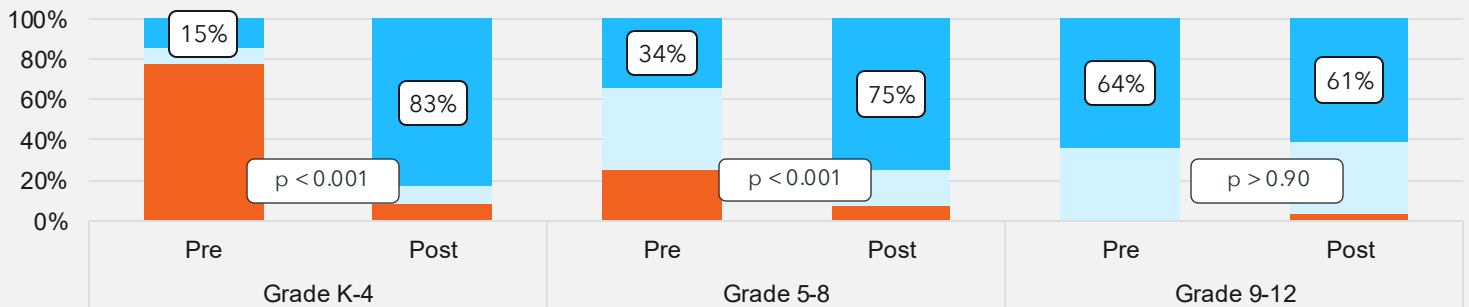


Figure 3: Handwashing practices before and after intervention, by grade.

BY GENDER

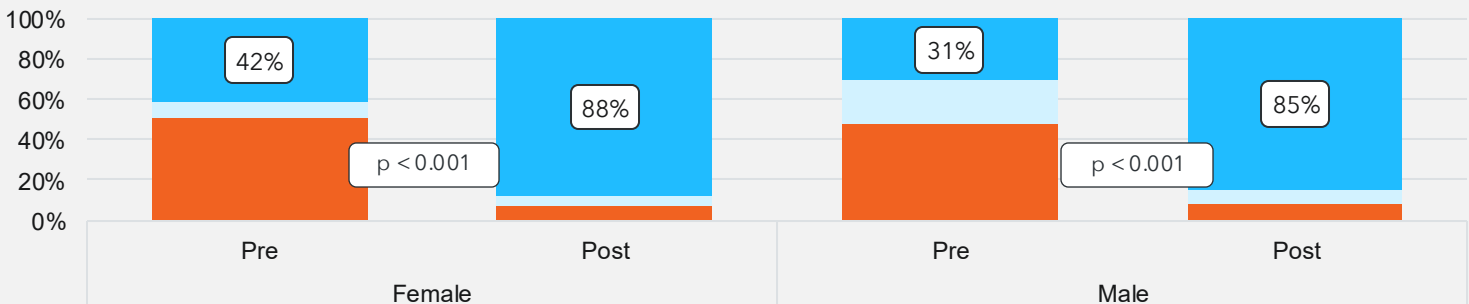


Figure 4: Handwashing practices before and after intervention, by gender.



RESULTS: HANDWASHING MATERIALS OVER TIME

Overall handwashing with water and soap also significantly improved between the pre-intervention, with 92% of students washing with water and soap and water after the intervention (Figure 5).

Aligning with the handwashing practices data, these improvements were also most pronounced in elementary aged students (Figure 6).

Additionally, female students were more likely than male students to wash with water and soap (Figure 7).

Once again, p-value results from chi-square tests are displayed on each chart. There was a statistical difference between pre and post practice for all groups except students Grades 9-12.

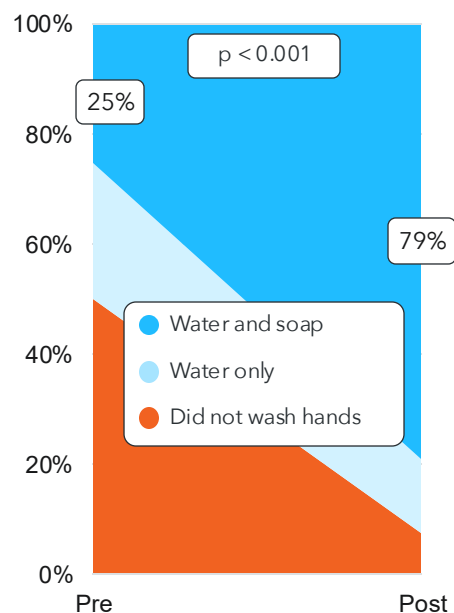


Figure 5: Handwashing materials before and after intervention.

BY GRADE

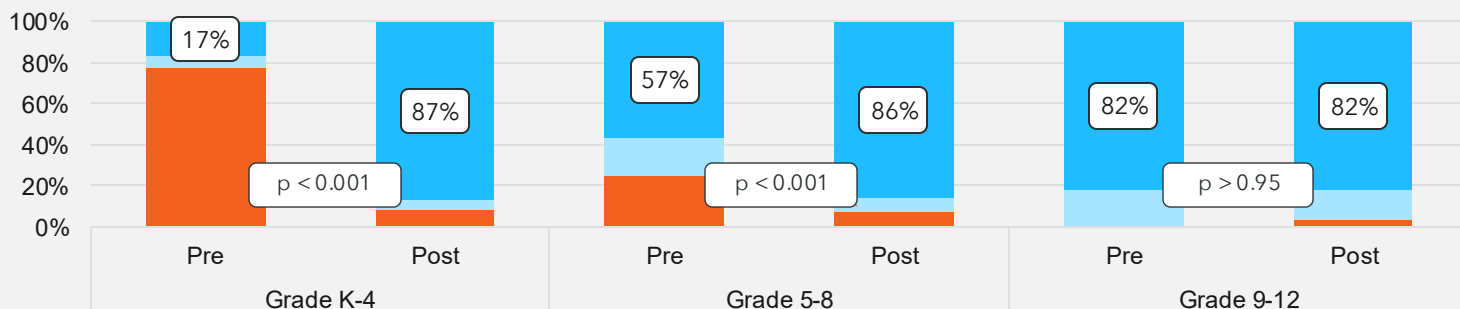


Figure 6: Handwashing materials before and after intervention, by grade

BY GENDER

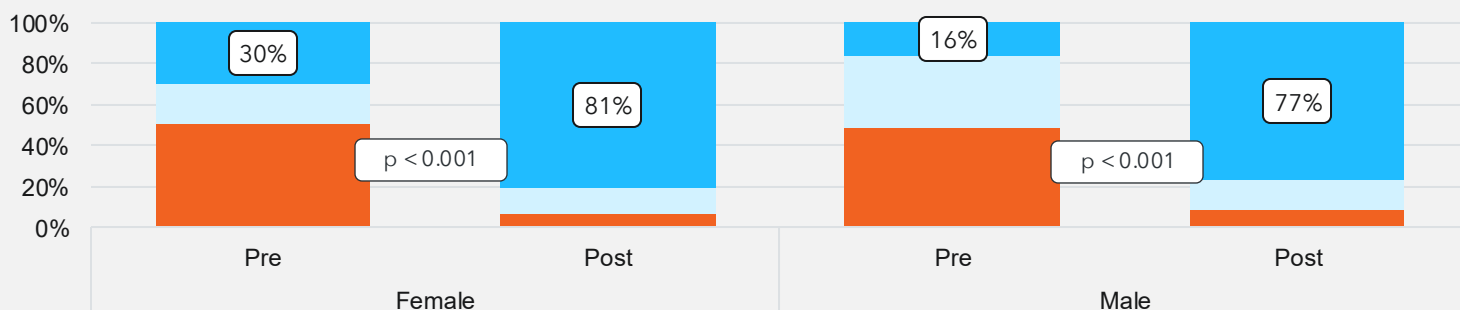


Figure 7: Handwashing materials before and after intervention, by gender



RESULTS: DURABILITY OF HAND HYGIENE

The sustainability of handwashing practices was also tracked over time using the same routine monitoring data.

As can be seen in **Figure 8**, handwashing practices remained quite stable across three time-phases post intervention: 3-9 months, 9-18 months, and 18+ months.

These results indicate a strong durability of handwashing practices over time when the enabling environment such as infrastructure, nudges and norms are included into the supporting strategy.

Future research could follow up after several year to further explore this sustainability after Project WISE has been completed. For example, it is yet to be understood how much the monitoring activities influenced practice.

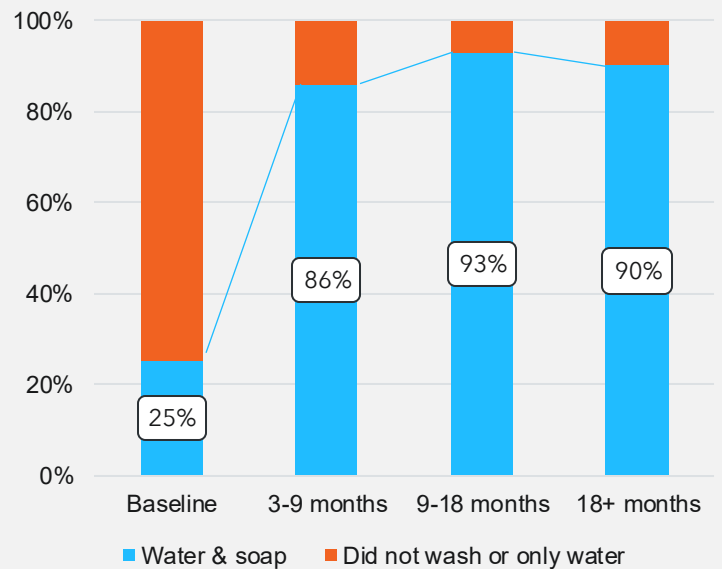


Figure 8: Sustained handwashing practices with soap before the midday meal from routine monitoring from October 2023.

LESSONS & RECOMMENDATIONS


Drawing on Splash’s experiences of supporting improvements in handwashing infrastructure and behaviors, we have identified nine key lessons and recommendations:

- **Largest gains among youngest students** — Grades K–4 improved the most: *water & soap* rose from ~15% → ~83% and *no wash* fell ~77% → ~8%; upper grades changed less due to stronger baselines.
- **Reinforced by national & public-health messaging** — Program years overlapped with Swachh Bharat/Swachh Vidyalaya and COVID-19, creating multi-year, multi-channel reminders that accelerated uptake and maintained salience.
- **Make MH education inclusive and routine** — Co-ed modules for boys and girls; female facilitators effectively led boys’ sessions; pair information with private changing spaces to build empathy and reduce teasing.
- **Institutionalize supply monitoring** — Keep soap checks routine and transparent; mobilize PTAs/local partners for rapid replenishment so behavior isn’t undermined by stock-outs.
- **Work through existing systems** — Strengthen Government-mandated Child Cabinets (RTE Act) and use Parent–Teacher Meetings (PTMs) to embed hygiene oversight and accountability.
- **Elevate student leadership** — Position Child Cabinet members to monitor soap availability and cue pre-meal HWWS; link their remit to regular hygiene checks.
- **Engage parents for reinforcement** — Leverage PTMs and soap drives (~99% of participating schools) to extend positive reinforcement into homes and close supply gaps.
- **Invest in teacher capacity** — ToT equips teachers to sustain messaging and adapt delivery; schedule periodic refreshers to maintain fidelity.
- **Prioritize age-specific, activity-based learning** — Use practical “trigger” demos (e.g., dirty-water glass exercise) to convert knowledge to behavior, especially for younger learners.



REFLECTIONS: HYGIENE BEHAVIOR RIPPLE EFFECTS

There is increasing evidence, that behavior change promotion in schools *can* influence household behaviors and behaviors of caregivers and siblings. However, the efficacy of the intervention [11], age of the children [12], and ways of engaging caregivers/siblings are all critical. The academic literature provides examples of handwashing, water treatment, and even toothbrushing; several examples of this evidence on handwashing are provided below.

 In Splash research from Addis Ababa, 43% of interviewed households (n=90) learned something about hand hygiene from their children in a Splash supported school, with 60% learning about water treatment and 27% learning about sanitation [13]. This theory of change is summarized in **Figure 9**.

- In Zambia, children have spread awareness of handwashing by building handwashing stations [14] at home, and by sharing handwashing practices [12].
- In Vietnam, while children were less likely to influence their parent, but they were able to correct and encourage siblings to handwash with soap [15].
- In Peru, children felt more comfortable to speak to their parents in the Amazonia regions, but less in the Andean regions due to culture differences around child communications [15].
- In India, rates of handwashing increased to some extent at home and greatly in schools, after a school handwashing intervention [16].

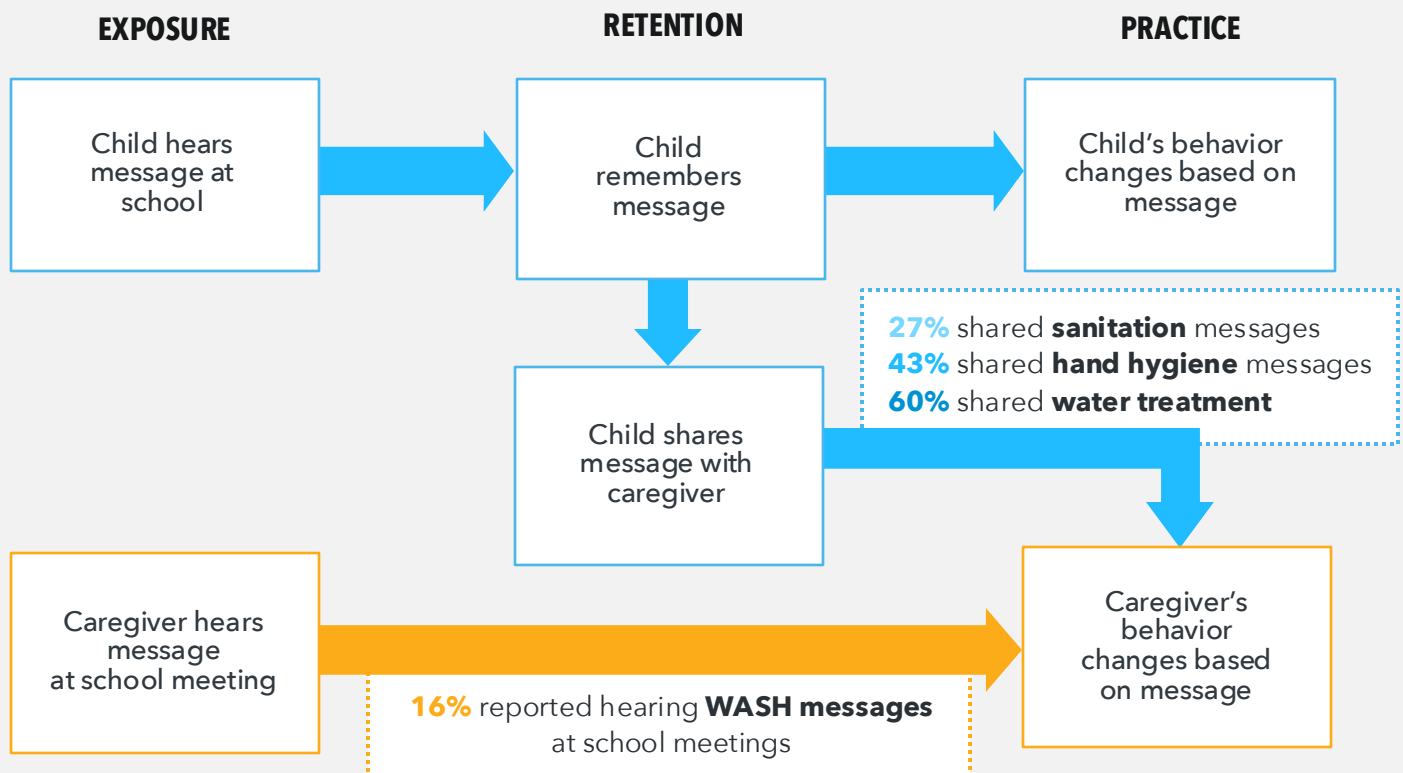


Figure 9: Simplified chain of learning model from school to household [13]



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Further information:

splash.org/our-work/project-wise

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