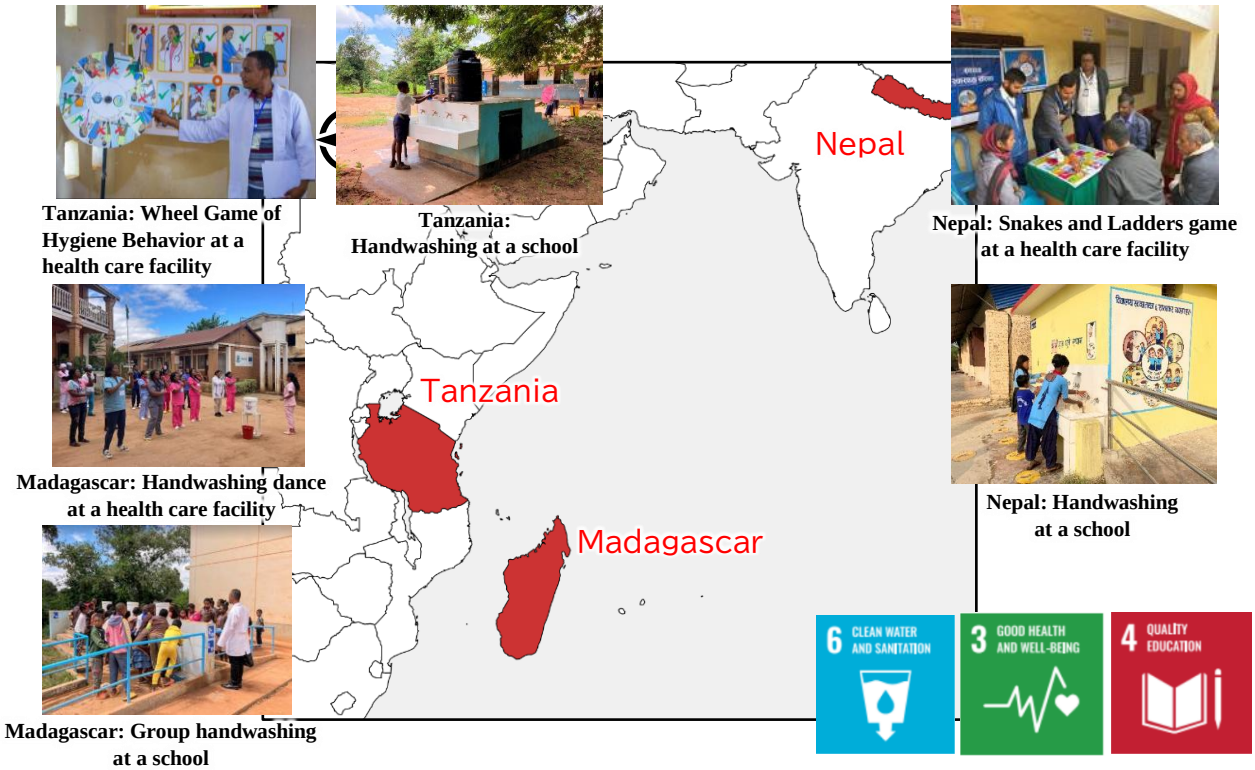
JICA Brief Note

Data Collection Survey on Improvement of Hygiene Behavior in Schools and Health Care Facilities in Collaboration with International NGOs

- Deriving lessons from facility improvement and comprehensive hygiene awareness activities -

December 2024



Tanzania: Wheel Game of Hygiene Behavior at a health care facility

Tanzania: Handwashing at a school

Nepal: Snakes and Ladders game at a health care facility

Madagascar: Handwashing dance at a health care facility

Nepal: Handwashing at a school

Madagascar: Group handwashing at a school

1. Why improve hygiene behavior in schools and health care facilities?

According to the World Health Organization (WHO), access to safe WASH[a] could have saved the lives of 1.4 million people (equivalent to 2.5% of global deaths in 2019) who died from diarrheal diseases, acute respiratory infections[b], soil-borne parasitic diseases[c], and undernutrition[1]. Safe WASH services are needed to protect against diarrheal diseases and acute respiratory infections, and one measure individuals can take is handwashing with soap, which is considered one of the most cost-effective investments in public health[2].

In addition, according to the guidance for the prevention of new coronavirus disease 2019 (COVID-19) prepared by WHO[3], hand hygiene (hygiene behavior) in homes, schools, and health care facilities is considered a very important component along with drinking water safety.

Meanwhile, WHO and the United Nations

[a] Water, Sanitation, and Hygiene are referred to as WASH from the initial letters of the three, and it is important that they be addressed in an integrated manner.

[b] General term for syndromes caused by pathogens that refer to acute upper respiratory (rhinitis, sinusitis, otitis media, pharyngitis, laryngitis) or lower respiratory tract infections (bronchitis, bronchiolitis, pneumonia).

[c] A disease in which adult worms parasitize the human intestine through soil in which the eggs or larvae of an infectious parasite are harbored.

Children's Fund (UNICEF) are jointly monitoring the water supply and sanitation components of the Sustainable Development Goals (SDGs), and the Joint Monitoring Program (JMP) released the document "Hygiene baseline pre-COVID-19" in April 2020, which summarizes the current status of hygiene behavior in households, schools, and health care facilities. The document summarized the global situation of hand hygiene before COVID-19 became an issue, by country and region as a baseline, and stated that at the global level (developing countries only), 40% of households and 50% of schools did not have access to hand washing facilities with soap. In addition, the report could not disclose data on health care facilities, which are the most important facilities for COVID-19 control, due to insufficient data on access to handwashing facilities equipped with soap.

Addressing WASH improvement in schools and health care facilities has a positive impact not only from a health perspective, but also from an economic perspective. For example, improving WASH in health care facilities not only improves the health status of mothers, newborns, and young children, but also improves early childhood development, child nutrition, and has a positive impact on long-term health from a life course perspective. Also, improving WASH in schools, including preschool, not only ensures equitable access to quality education, but also leads to improved health, better attendance, better academic performance, and lifelong health habits, and healthy people with quality education contribute to the economic growth of the region and the nation.

JICA has not only provided safe water supply through water supply improvement projects and the dispatch of overseas cooperation volunteers but has also installed hygienic toilets and promoted handwashing. JICA has also undertaken numerous capacity-building activities, including the construction of schools and health care facilities, and the training of teachers and medical personnel. Although handwashing facilities have been installed when schools and health care facilities are constructed, there are no systematic reference materials on improving hygiene behavior in schools and health care facilities, and little support has been provided to encourage people to change their handwashing behavior.

In this study, pilot activities related to improving hygiene behavior in schools and health care facilities were conducted in Sub-Saharan Africa (Madagascar and Tanzania) and South Asia (Nepal) in collaboration with an international NGO. Based on the findings and information collected through these activities, the study aims to prepare an office reference document on improving hygiene behavior in schools and health care facilities and to disseminate the results and findings.

2. Overview of pilot activities

2.1 Overview of the pilot activities and the framework used to design the activities

The pilot activities of this study were conducted in collaboration with WaterAid, an international NGO working specifically in the area of Water, Sanitation and Hygiene (WASH). Pilot activities were conducted in 74 elementary school (30 in Madagascar, 30 in Tanzania, and 14 in Nepal) and 45 health care facilities (15 in each country) in three countries in Sub-Saharan Africa (Madagascar and Tanzania) and South Asia (Nepal), with the main objective of improving sanitation and hygiene behavior, including improvement of water supply and sanitation facilities.

WaterAid used the Behavior-Centered Design (BCD) framework developed at the London School of Hygiene and Tropical Medicine in the U.K. to design the activities for this pilot. The BCD framework is an approach to behavior change that combines theories of behavior change with a

process for designing intervention content, and incorporates findings about how the brain learns. Figure 1 shows the overall picture of the BCD Framework and the ABCDE process. At the center of the diagram is the theory of behavior change, which consists of Surprise, Re-evaluation, and Performance. Surprise is the disruption of established patterns of behavior by introducing something new. Re-evaluation is the process of convincing the brain that the new behavior will lead to the desired outcome. implementation is the process of making new behavior easier and more likely to occur. In other words, in order to change behavior, it is necessary to first attract attention with surprise, then make the new behavior perceived as attractive through reevaluation, and then make execution possible by creating opportunities in the appropriate environment. To design the content of the intervention that will make this change, a five-step process of Assess, Build, Create, Deliver, and Evaluate, placed outside of the diagram, shall be followed. In this study, this process consisted of assessing the current status of WASH services, developing hypotheses on the determinants of behavior through formative research [d], creating interventions for WASH facility development and hygiene behavior improvement activities, implementing WASH facility development and hygiene behavior improvement activities, and evaluating the effectiveness of the interventions.

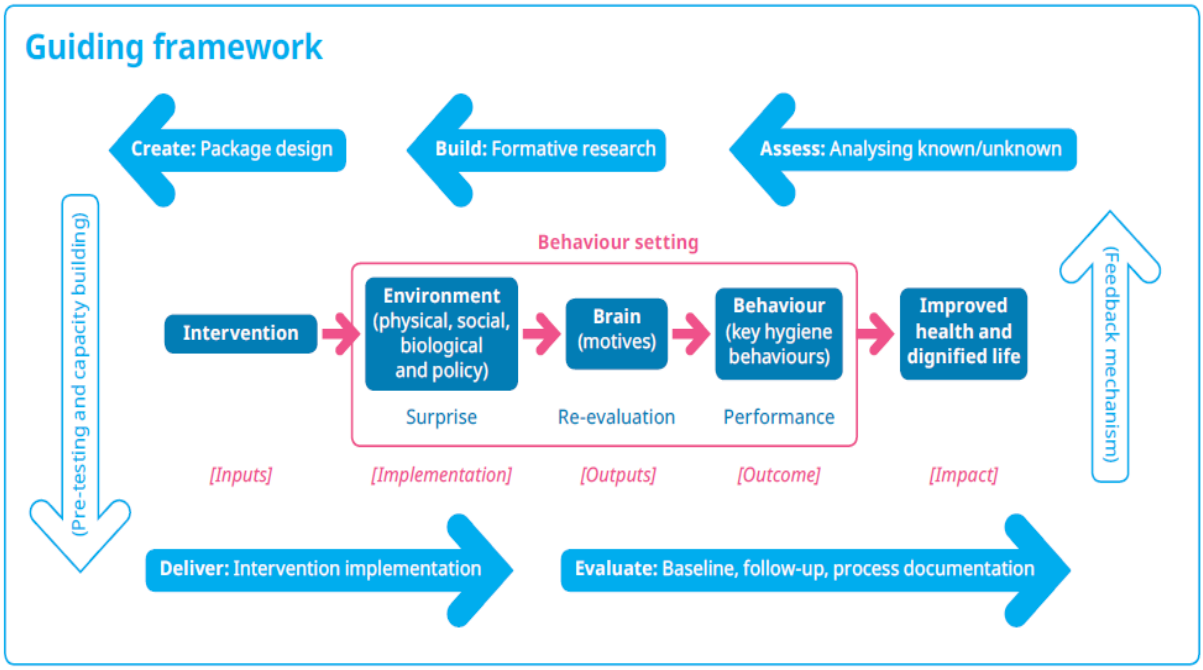


Figure 1: Behavior-Centered Design (BCD) framework used in this study[4]

2.2 Stages of the ABCDE Process

The following is a description of the activities performed at each stage of the ABCDE process.

(1) Assess：Evaluation of the current status of WASH services

A field survey of all schools and health care facilities was conducted to assess the current situation and identify problems and needs. In addition to the field survey at the level of each facility, national and regional policies were also surveyed. An assessment of the current state of hygiene behavior in schools and health care

[d] A preliminary survey to design an effective behavior change program that includes an understanding of the thoughts, feelings, attitudes, and culture of the target population with respect to their current habits and behaviors, and an investigation of a wide range of contextual factors that may influence their behavior as well.

facilities is presented.

1) Assessment of the current status of hygiene behavior in schools

The JMP's WASH in Schools stage definition of hygiene behavior is shown in Table 1. The results of a preliminary survey assessing access to WASH services in target schools based on this definition revealed that many schools had not reached the Basic service level and lacked handwashing facilities with access to soap and water.

Table 1: Stage definitions of hygiene behaviors in JMP WASH in schools

Level	Hygiene Behaviors
Basic service	School has handwashing facilities with water and soap available
Limited service	School has handwashing facilities with water but no soap
No service	School has no handwashing facilities or handwashing facilities without water

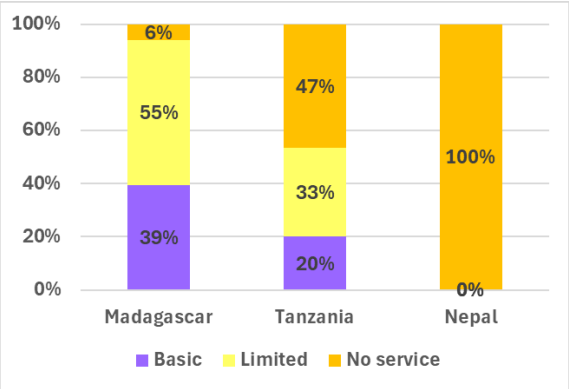


Figure 2: Results of the preliminary survey on the service level of hygiene behavior in schools

2) Assessment of the current status of hygiene behavior in health care facilities

The JMP's stage definitions of hygiene behaviors for WASH in Health Care Facilities are shown in Table 2. The JMP's stage definitions of hygiene behaviors for WASH in Health Care Facilities are shown in Table 2. A preliminary survey assessing access to WASH services in the target facilities based on this definition revealed that many facilities had not reached the Basic service level and lacked handwashing facilities with access to soap and water or Alcohol-Based Hand Rub (ABHR).

Table 2: Stage definitions of hygiene behaviors in JMP WASH in health care facilities

Level	Hygiene Behaviors
Basic service	Functioning hand hygiene facilities (water and soap and/or alcohol-based hand sanitizer) are located within 5 meters of the clinic site and toilets
Limited service	There is a functioning hand hygiene facility in either the clinic or the toilets, but not both
No service	No functioning hand hygiene facilities at the clinic site or in the toilets

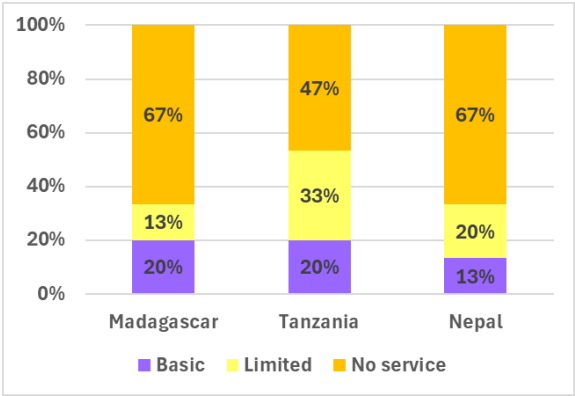


Figure 3: Results of the preliminary survey on the service level of hygiene behavior in health care facilities

(2) Build: Building a hypothesis of the determinants of behavior through formative research

The knowledge of child and health care workers, current hygiene behaviors, determinants of behavior (social beliefs, motivations, barriers, etc.), and points of contact that trigger behavior change were investigated, and hypotheses of inhibitors and facilitators of behavior change were formulated. Formative research was conducted using semi-structured questionnaires, structured observations,

key person interviews, and focus group discussions. The following is a summary of the main barriers and motivations identified from the results of the formative research in schools and health care facilities.

Formative research was conducted using semi-structured questionnaires[e], structured observations[f], key person interviews, and focus group discussions[g].

Table 3: Summary of main barriers and motivations in schools

Main Barriers	Main Motivations
Hygiene behavior: water is not available, and hands cannot be washed due to frequent water cutoffs. Lack of water and soap for handwashing. Forgetting to wash hands. Handwashing facilities are inaccessible and not easy to use.	・Appropriate hygiene behavior can prevent illness. Not washing hands causes discomfort and disgust. Handwashing can be done if handwashing facilities are available. ・They feel that toilets are clean and safe. There is a social norm that others defecate in toilets. They avoid open defecation and contribute to a clean environment. ・Keeps the school clean, aesthetically pleasing, and presentable. Respect the environment. Ensure a clean learning environment. There is motivation by teachers to keep the environment clean. ・Learn about menstrual hygiene at school.
Drinking water: There is a lack of drinking water supply facilities and water tanks in schools.	
Sanitation: There is a lack of clean and functioning toilets. Water is not available in toilets. There is no gender-friendly toilets, and they are not safe to use.	
Waste: There is a lack of cleaning staff and cleaning equipment. There is no cleaning schedule and no systematic management mechanism.	
Menstrual Hygiene: Worried that someone will see them change clothes. There is no clothes to change into.	

Table 4: Summary of main barriers and motivations in health care facilities

Main Barriers	Main Motivations
Hygiene behavior: handwashing facilities are inadequate or not properly located; soap and water are inadequate. Other staff members do not practice hygiene behavior, so they do not do it themselves. Staff forget to wash their hands.	・Disease can be prevented through proper hygiene behavior. ・Appropriate hygiene behaviors can protect patients and community members. ・The implementation of good hygiene practices is considered exemplary behavior and is respected by peers and the community. ・Health care facility staff who practice good hygiene behaviors feel clean, safe, proud, and dignified. ・Having a well-equipped handwashing facility not only creates a reputation among patients, but also helps prevent infections among health care workers, thus enhancing the safety and reputation of the facility.
Drinking water: Water treatment is perceived as complicated and time-consuming. Access to treated water is limited.	
Sanitation facilities: Toilets are not clean and there are no separate toilets for staff and patients or gender or disability sensitive toilets.	
Environmental cleaning: There is a lack of cleaners. Staff are too busy. There is no rotation or schedule for cleaning.	
Waste: Staff lacks knowledge of waste separation. Lack of incinerators, garbage cans, pits, and containers for waste separation.	
Menstrual hygiene: There is a social taboo regarding menstruation. There is also a lack of facilities to dispose of menstrual hygiene products.	

[e] Questionnaire method that combines pre-prepared questions (structured portion) and open questions that can be answered freely (unstructured portion)

[f] An observation method in which the items and methods to be observed are clearly defined in advance and conducted in a uniform procedure.

[g] A survey method in which a small number of target participants are gathered and asked to discuss a specific topic to obtain information

(3) Create: Creation of WASH facility maintenance details and interventions for hygiene behavior improvement activities

1) Plan for WASH facility improvement

The WASH facility improvement policies shown in Tables 5 and 6 were prepared to ensure that the WASH facilities would meet the Basic service level of the JMP and be able to promote behavior change. Priority was given to the renovation of existing facilities rather than the construction of new facilities, and new construction would be undertaken only when renovation of existing facilities was uneconomical or impossible. Note that the scope of improvements to be made will vary depending on the conditions and needs of each school and health care facility.

Table 5: School WASH facility improvement policies

Facility	Improvement Policy
Handwashing Facilities	Group handwashing facilities (near toilets and playgrounds) with water and soap available and adequate drainage
Sanitation Facilities	Separate boys and girls toilet building with shower rooms in the girls' toilet building to deal with menstrual hygiene and accessible to people with disabilities
Water Supply Facilities	Basic water supply services (rainwater storage facilities, elevated water tanks, drinking water treatment facilities, etc.)
Waste Management	Waste sorting containers, waste collection and incineration pits, incinerators
Environmental Cleaning	Provision of cleaning tools

Table 6: Policies for the improvement of WASH facilities in health care facilities

Facility	Improvement Policy
Handwashing Facilities	Handwashing facilities at the point of care with water and soap permanently available within 5 meters of the toilets and with adequate drainage facilities
Sanitation Facilities	Separate toilet buildings for men, women and persons with disabilities with shower rooms
Water Supply Facilities	Basic water supply services, including rainwater storage facilities, elevated water tanks, and drinking water treatment facilities
Waste Management	Waste sorting containers, incinerators, placenta (placenta) pits, ash pits, sharp (needles) pits
Environmental Cleaning	Provision of cleaning tools

2) Formulation of interventions for hygiene behavior improvement activities

Two interventions were formulated for the hygiene behavior improvement activities.

One is a single nudge intervention for schools (targeting Madagascar and Tanzania only), and the other is a comprehensive hygiene behavior change package intervention combining multiple hygiene behavior change approaches for both schools and health care facilities (targeting three countries). Nudges are concepts developed in fields dealing with human behavior, such as behavioral economics and behavioral science, and are defined as positive reinforcement measures that influence group or individual behavior and decision-making.

(i) Single nudge intervention

As a single nudge intervention, a handwashing cartoon for Madagascar and a handwashing song for Tanzania were adopted as a single nudge. Through discussions with government officials, a total of five nudges were developed: two cartoons for Madagascar and three songs for Tanzania.

For the handwashing cartoon for Madagascar, JICA worked with a Japanese artist to lead the design of a story-based cartoon booklet that communicates key messages about the importance of handwashing and hygiene behaviors (Figure 4 (left)). Another cartoon, led by WaterAid, was

designed to highlight the important timing of handwashing in children's daily lives (Figure 4 (right)). Both cartoons were produced in the form of a booklet for children, a flipchart for teachers to use during read-aloud sessions, and a poster for classroom walls.

Figure 4：Developed single nudge (handwashing cartoon introduced in Madagascar)
URL: https://www.jica.go.jp/activities/issues/water/sanitation/index.html

The first of the three handwashing songs produced for Tanzania was created by WaterAid based on the results of preliminary and formative research, using emotional motivations such as disgust and a sense of belonging, and adapted to local conditions (Figure 5 (top)). The second song is a Tanzanian version of a handwashing song created by an overseas cooperation volunteer sent to Madagascar (Figure 5 (middle)), and the third song is based on a song created by a Japanese comedian and arranged by the JICA Zambia office (Figure 5 (bottom)). All songs emphasize the importance of handwashing, and a video featuring local artists and children was also produced.

Figure 5：Developed single nudge (handwashing songs introduced in Tanzania)
URL: https://www.jica.go.jp/activities/issues/water/sanitation/index.html

(ii) Interventions of a comprehensive hygiene behavior change package

The comprehensive hygiene behavior change package intervention is designed to change multiple hygiene behaviors not only handwashing, but also other behaviors such as maintaining clean toilets and access to safe water, and includes not only handwashing cartoons and handwashing songs developed with single nudges, but also the nudge such as footprint marks from toilets to handwashing facilities, and game elements in the sessions to promote hygiene behavior change. These are to be combined and implemented as a single package.

To design the hygiene behavior change package, a three-day workshop was held in each country, bringing together government officials, creators, artists, behavior change and public health experts,

school teachers, and health facility staff. The workshops worked with the previously developed creative process overview materials, including a definition of the design principles guiding the creative process, a summary of the key findings of the formative research, and the motivations and barriers to be addressed in the hygiene behavior improvement interventions. The design principles include which behaviors to focus on, who the primary and secondary target groups are, in what settings the intervention will be implemented, duration and frequency of the intervention, branding, inclusiveness, gender considerations, emotions to be used, and implementation methods.

The following insights (insights and findings) about schools and health care facilities were derived during the workshop, and intervention ideas for hygiene behavior improvement activities were designed in line with these insights and compiled into a hygiene behavior change package.

Table 7: Examples of insights used to design hygiene behavior change packages for schools and health care facilities

School	Schools with bright, clean handwashing facilities look better and are more popular with students; teachers and students who practice the six hygiene behaviors feel clean, safe, confident, proud, dignified, and comfortable. They also reduce school absenteeism, ensure a brighter future, and prevent illness.
Health Care Facility	Clean health care facilities with handwashing facilities are attractive to patients; health care workers, facility staff, and cleaning staff who practice the five key hygiene behaviors feel clean, proud, and dignified. Health care workers who practice key hygiene behaviors are top-notch and prevent themselves, their families, and their patients from contracting infectious diseases. They are respected, serve as role models, and help prevent the spread of disease in their facilities and communities.

The hygiene behavior change package was created in each country for schools and health care facilities and consists of two parts: a static nudge for key behaviors and a hygiene behavior change promotion session.

(a) Static nudges to promote important actions

Static nudges are non-movable items placed on the wall or floor, such as footprint marks placed on the flow line from the toilet to the handwashing facility or pointing marks placed at the handwashing facility to encourage handwashing.

Figure 6: Example of developed static nudges

(b) Hygiene behavior change promotion sessions

The promotion sessions were designed to encourage children and health facility staff to practice key hygiene behaviors. Six 45- to 60-minute promotion sessions were conducted at each site, incorporating a variety of activities to ensure that key hygiene behaviors were practiced. The sequence of each session consisted of an opening session, which included washing hands with soap, singing, and dancing before the activity began, followed by an activity with game elements, such as the Snakes and Ladders game (backgammon) and a life game between those who wash their hands and those who do not, and a closing session that included a review and Commitments were made.

Figure 7: Examples of developed hygiene behavior change packages

(4) Deliver: Implementation of WASH facility improvement and sanitation behavior improvement activities

1) Implementation of WASH facility improvements

Based on the WASH facility improvement plan developed in the Create step, WASH facilities were rehabilitated and constructed. The rehabilitation/construction period was approximately 10 months.

For the rehabilitation and construction of WASH facilities at schools, group handwashing facilities were constructed in schoolyards and other areas where people can wash their hands in groups, and handwashing facilities were also installed near toilets. For water supply facilities, rainwater storage tanks and elevated water tanks were installed to allow natural flow of water for use in handwashing facilities and sanitation facilities, and a water purification system was installed to treat small amounts of water for drinking purposes. In sanitation facilities, barrier-free toilets were installed for the disabled, and shower rooms were installed for menstrual hygiene. For waste management and environmental cleaning, color-coded trash cans and incineration pits were installed.

Figure 8: Examples of improved WASH facilities in schools

For the rehabilitation and construction of WASH facilities in health care facilities, handwashing facilities were installed at care points and near toilets. For water supply facilities, rainwater storage tanks and elevated water tanks were installed, as in the schools, to allow natural flow of water to the handwashing facilities and sanitation facilities, and a water purification system was also installed to treat small amounts of water for drinking purposes. Sanitation facilities, like schools, were equipped with barrier-free toilets for people with disabilities, and shower rooms for postpartum and menstrual hygiene. For waste management and environmental cleaning, color-coded trash cans, incinerators, placenta pits, and sharps pits were installed.

Figure 9: Examples of improved WASH facilities in health care facilities

Figure 11: Example of a hygiene behavior change promotion session in health care facilities

2) Implementation of hygiene behavior improvement activities

A baseline survey was conducted after the rehabilitation and construction of WASH facilities, and hygiene awareness through a single nudge was conducted in intervention groups of schools in Madagascar and Tanzania. Hygiene awareness through the hygiene behavior change package was also implemented in all schools and health care facilities in the three countries. The implementation of hygiene awareness-raising is shown in Figures 10 and 11.

Figure 10: Example of a hygiene behavior change promotion session in schools

(5) Evaluate: Evaluation of Intervention Effectiveness

Intervention effects were evaluated using two study designs: a randomized controlled trial (RCT) with a control group in schools in Madagascar and Tanzania and a comparative study of before-and-after without a control group.

Table 8: Study design and target facilities

Study Design	Target Facilities
RCT	Schools in Madagascar and Tanzania (30 schools in each country)
Comparative Study of Before and After	Schools in Nepal (14 schools) and health care facilities in three countries (15 facilities in each country)

The RCT was conducted to determine whether the effects of the nudge intervention persist in the home environment by comparing the handwashing behavior of children with a single nudge intervention at school and at home. A control and intervention group of schools were selected as a cluster RCT[h] for implementation.

The before-and-after comparative study was conducted to determine whether the hygiene

[h] A study design in which communities and institutions are grouped together as one cohesive group (cluster) and randomized (random assignment). In this study, each school was assigned to an intervention group and a control group that received no intervention.

behavior change package intervention led children and health care facility staff to wash their hands with soap or alcohol-based hand sanitizer (Alcohol-Based Hand Rub: ABHR) at key times (e.g., after using the toilet, before touching patients)

As part of the evaluation process, baseline surveys were conducted in schools and health care facilities in all three countries after rehabilitation and construction of WASH facilities, and intervention evaluation was conducted in Madagascar and Tanzania in RCT follow-up surveys after intervention with a single nudge. In Nepal schools and health care facilities in all three countries, intervention evaluation was conducted in an endline survey after intervention with a hygiene behavior change package.

3. Comparison of Pilot Activities

3.1 Summary of Intervention Effectiveness Evaluation of Pilot Activities

The following are the results of the evaluation of the intervention effects of the pilot activities, in which the surveyors observed whether the children and health care facility staff washed their hands using soap and other products at critical times. The three critical times in schools were “after using the toilet,” “after playing outside,” and “before eating.” In health care facilities, the nine critical times were “before touching a patient,” “before a clean or sterile operation,” “after being exposed to body fluids,” “after touching a patient or wound,” “after touching the patient's surroundings,” “before wearing personal protective equipment,” “after removing personal protective equipment,” “after using the toilet,” and “before eating or feeding someone,” “after removing personal protective equipment”, “after using the toilet”, and “before eating or serving food to others”.

3.2 Evaluation results from a single nudge RCT

(1) Schools in Madagascar

The effect of the intervention with a single nudge (handwashing cartoon) was evaluated by RCT. The evaluation results are shown in Figure 12. The single-nudge intervention was implemented over a 6-week period. For the intervention group, the single nudge intervention resulted in a 27-point increase in handwashing with soap “after using the toilet” during the intervention period and a large decrease to 11% at the RCT follow-up survey after the cooling-off period following the end of the intervention, a 3-point decrease compared to the baseline survey. For the control group, there was a 7-point increase at the time of monitoring with no intervention, and a 10-point decrease to 8% in the RCT follow-up survey compared to the baseline survey. In terms of Difference in Difference (DID) between the intervention group and the control group, the intervention group outperformed the control group by 7 points. These results suggest that although the intervention group showed a positive effect of the single nudge intervention compared to the control group, both groups showed a decrease in the percentage of handwashing behavior compared to the baseline survey, suggesting that the intervention did not lead to a long-term change in hygiene behavior.

The timing of each survey is as follows.

- Baseline survey: January to March 2023
- Monitoring: June 2023
- RCT follow-up survey: September to November

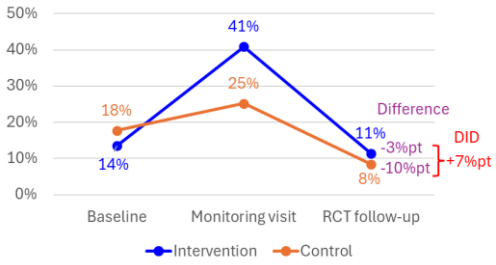


Figure 12: Results of observations of handwashing with soap after using the toilet by school children in Madagascar.

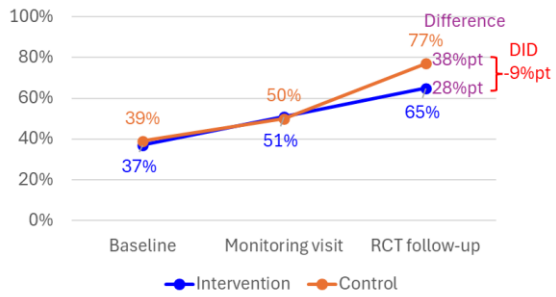


Figure 13: Results of observations of handwashing with soap after using the toilet in Tanzanian school children

(2) Schools in Tanzania

The effectiveness of the intervention with a single nudge (handwashing song) was evaluated by RCT. The evaluation results are shown in Figure 13. The single nudge intervention was implemented over a 10-week period. For the intervention group, the single nudge intervention resulted in a 14-point increase in handwashing with soap "after using the toilet" during the intervention period and a 65% increase at the RCT follow-up survey after the cooling period following the end of the intervention, a 28-point increase compared to the baseline survey. For the control group, there was no intervention but an increase of 11 points during monitoring and 77% at the RCT follow-up survey, an increase of 38 points compared to the baseline survey. The intervention group was 9 points below the control group in terms of Difference in Difference (DID) between the intervention group and the control group. These results indicate that while the intervention group did not show any effect of the single nudge intervention compared to the control group, both groups increased their percentage of handwashing behavior compared to the baseline survey.

The timing of each survey is as follows.

- Baseline survey: February to March 2023
- Monitoring: August-September 2023
- RCT follow-up survey: November-December 2023

3.3 Evaluation results from a before-and-after comparative study of a hygiene behavior change package

(1) Schools in Nepal

The effectiveness of the intervention with the hygiene behavior change package was evaluated through a before and after comparison. The evaluation results are shown in Figure 14. The hygiene behavior change package intervention was implemented for a period of approximately 24 weeks. The results of the observation of handwashing with soap "after using the toilet" increased significantly from 24% in the baseline survey to 81% in the first monitoring session after starting the intervention, and 94% in the endline survey after the cooling period following the end of the intervention, an increase of 70 points compared to the baseline survey. It is inferred that repeated exposure to key behavioral messages throughout the six hygiene behavior change sessions led to a high retention rate of hygiene behavior

The timing of each survey is as follows.

- Baseline survey: May-June 2023
- First monitoring: October 2023
- Second monitoring: December 2023
- Endline survey: March 2024

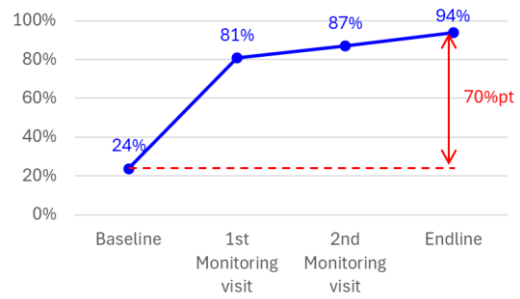


Figure 14: Results of observations of handwashing with soap after using the toilet by school children in Nepal

(2) Health Care Facilities in Madagascar

The effectiveness of the intervention with the hygiene behavior change package was evaluated through a before and after comparison. The evaluation results are shown in Figure 15. The hygiene behavior change package intervention was implemented over a period of approximately 16 weeks. The results of the observation of hand hygiene with soap or ABHR at nine key timings were 68% in the baseline study and 96% in the end line study, an increase of 28 percentage points. It is inferred that the hygiene behavior change package intervention is effective in promoting the hand hygiene among staff.

The timing of each survey is as follows.

- Baseline survey: March-April 2023
- Endline survey: June-July 2024

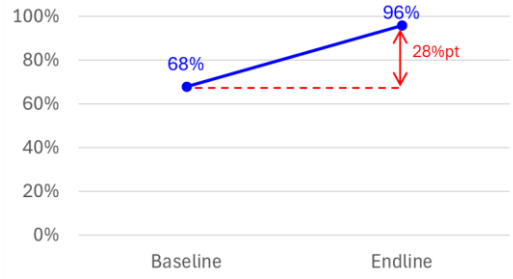


Figure 15: Results of observations of hand hygiene at critical times for staff in health care facilities in Madagascar

(3) Health Care Facilities in Tanzania

The effectiveness of the intervention with the hygiene behavior change package was evaluated through a before-and-after comparison. The evaluation results are shown in Figure 16. The hygiene behavior change package intervention was implemented over a period of approximately 12 weeks. The result of the observation of hand hygiene with soap or ABHR at nine key timings was a 25-point increase, from 40% in the baseline study to 65% in the endline study. It is inferred that the hygiene behavior change package intervention is effective in promoting the hand hygiene among staff.

The timing of each survey is as follows.

- Baseline survey: February to March 2023
- Endline survey: May 2024

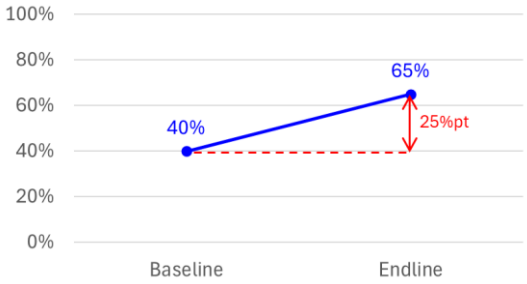


Figure 16: The results of observations of hand hygiene at critical times for staff in health care facilities in Tanzania

(4) Health Care Facilities in Nepal

Health Care Facilities in Nepal

The effectiveness of the intervention with the hygiene behavior change package was evaluated through a before and after comparison. The evaluation results are shown in Figure 17. The hygiene behavior change package intervention was implemented over a period of approximately 20 weeks. The result of the observation of hand hygiene with soap or ABHR at nine key timings was 11% in the baseline survey and 85% in the endline survey, an increase of 74 points. It is inferred that the hygiene behavior change package intervention is effective in promoting hand hygiene among staff.

The timing of each survey is as follows.

- Baseline survey: December 2023
- Endline survey: March 2024

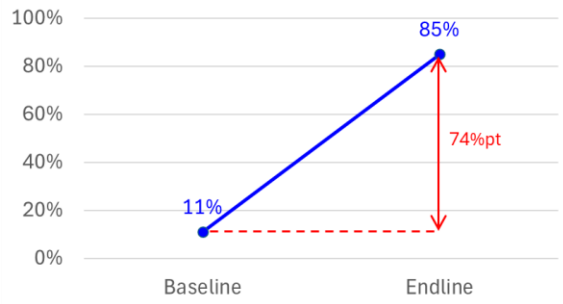


Figure 17: The result of the observation of hand hygiene at critical times by the staff of health care facilities in Nepal

4. Basic approach to forming cooperation on improving hygiene behavior in schools and health care facilities

In this study, in addition to the implementation of the above-mentioned pilot activities, a work reference document on improving hygiene behavior in schools and health care facilities was prepared based on the findings obtained through the activities and the information collected. It consists of seven chapters: overview, current situation and cooperation trends, explanation of keywords, initiatives of other development partners, basic concepts and points to consider in cooperation formation, points to keep in mind when implementing cooperation, and case studies of pilot activities.

The following is a summary of the basic ideas on cooperation formation as presented in Chapter 5 of the work reference material.

(1) Understand the situation and specific conditions of the target group: understand their access to water, climate, socioeconomic conditions, cultural background, existing WASH facilities, hygiene habits, etc., and plan effective improvement measures.

(2) Combination of "rehabilitation and improvement of WASH facilities," "capacity development," and "hygiene awareness raising aimed at making hygiene behavior a habit": These elements should be addressed in an integrated manner to achieve sustainable improvement.

(3) Rehabilitation and improvement of WASH facilities as a prerequisite for behavior change: Without appropriate facilities, hygiene behavior cannot be practiced. Attention should be paid to the adoption of technology and universal design appropriate to local conditions, as well as durability and ease of maintenance.

(4) Capacity development for continuity: Enhance the capacity necessary for the continuity of WASH facilities and behavior change, including proper use, establishment of maintenance and management systems, and securing budgets.

(5) Conduct continuous hygiene awareness raising to make hygienic behavior a daily habit: Through practical guidance and continuous follow-up, establish hygienic behavior as a daily habit.

(6) Implementation of hygiene education: Incorporate hygiene education into school class curricula and provide education appropriate for different age groups

(7) Conduct monitoring and evaluation: Check the condition of WASH facilities and the adherence to hygiene behaviors on a regular basis and establish a system to promote improvement.

(8) Self-supporting development through step-by-step improvement and self-effort: Based on current issues and needs, prioritize and promote step-by-step improvement and self-efforts.

(9) Application to various educational and health care projects: Integrate WASH improvements into conventional projects to improve overall health.

(10) Collaboration with diverse partners: Work with local communities, local governments, NGOs, and others to achieve effective and sustainable improvements.

(11) Consideration for gender and vulnerable groups: To ensure equal access to WASH services for all people, emphasis will be placed on

consideration for women and people with disabilities.

In addition to the above ideas, the report also provides considerations regarding stakeholders, cooperation approaches, cooperation schemes, and sectors. WASH improvement in schools and health care facilities is a multi-sectoral approach based on Education x WASH and Health x WASH. It is possible to achieve goals that are difficult to achieve with interventions in only one sector (education sector, health sector, and WASH sector), and it is possible to achieve better results by strengthening inter-sectoral collaboration, maximizing synergies, and integrating monitoring and evaluation indicators。 In addition, incorporating nutrition, agriculture, and other sectors could make the intervention even more multifaceted.

5． Challenges faced and lessons learned through the pilot activities

5.1 Challenges and lessons learned from understanding the current situation

(1) Importance of Securing Water at Health Care Facilities

At the health care facilities in the pilot areas in Madagascar and Tanzania, families of pregnant women needed to bring 20 to 60 liters of water to the health care facilities to secure water during childbirth. With the installation of rainwater storage tanks and other equipment in the pilot activities, the need to bring water during childbirth has been eliminated, reaffirming the importance of securing water at health care facilities.

(2) Introduction of WASH facilities which are easy to maintain and clean

Existing WASH facilities in schools and health care facilities are not properly maintained and cleaned, and some users are not willing to use them due to odors and other problems. It was necessary to introduce WASH facilities that are easy to clean, such as by scheduling cleaning for maintenance, securing water for cleaning, and providing floors with good drainage.

5.2 Issues and lessons learned from WASH facility improvement

(1) Introduction of WASH facilities in consideration of water availability

The construction and rehabilitation of WASH facilities should consider local conditions such as water availability, climatic conditions, and cultural practices. In particular, if water-intensive handwashing and sanitation facilities are constructed without taking water availability into account, they are more likely to be unsustainable.

(2) Challenges in installing water purification systems for drinking water

In some pilot activities, water purification systems combining several filters were installed to ensure potable water. It requires costs for maintenance and filter renewal, and there are concerns about sustainability, such as whether institutions can bear the cost of such renewal at the facility level. However, it can be positioned as a temporary measure until the installation of a water supply system in the community in the future.

5.3 Issues and lessons learned from hygiene awareness activities

(1) Introduction of innovations in the implementation of group handwashing activities

During the group handwashing activity conducted as part of the school pilot activities, it was observed that precious water was being wasted by not turning off the faucet and leaving the water running during handwashing. In addition, there were lines of students waiting in line to wash their hands during group handwashing activities and breaks. It is necessary to raise awareness of the need to turn off faucets after wetting hands, to increase the number of simple handwashing facilities that do

not consume much water, and to fill plastic bottles with diluted liquid soap to wash hands while waiting in line.

(2) Introduction of cost-effective hygiene awareness activities and hygiene awareness that can be practiced on a daily basis

The handwashing song and handwashing cartoon interventions implemented in the pilot activities alone did not lead to long-term hygiene behavior change. One of the possible reasons for this is that the process of "repeating handwashing behavior" and "developing the association between the situation and the behavior" that leads to handwashing habituation was lacking. On the other hand, although the hygiene behavior change package was effective in changing hygiene behavior, it is necessary to find a way to secure financial resources that would allow this to be widely deployed in other areas and to implement it with a small budget.

One idea is to implement daily initiatives that can be sustained without a budget. For example, in schools, appropriate hygiene behavior could be practiced by introducing nudges, group handwashing activities, group cleaning activities, and other hygiene awareness activities such as daily handwashing instructions and bell ringing. In health care facilities, practices of hygiene behavior could be featured on the agenda of regular team meetings, for example, to reflect individual hygiene behavior.

(3) Maintenance of nudges

Footprint nudges from toilets to handwashing facilities have problems with dirt and mud covering the footprint marks, making them difficult to see and causing the colors to fade and disappear over time. Daily cleaning and periodic repainting of the nudges are necessary to maintain the nudges.

5.4 Challenges and lessons learned in maintaining WASH facilities and budgeting for soap and other consumables

In the pilot activities, the team responsible for budget planning and fundraising for WASH facilities, O&M, and consumable costs was established as well as building a system to keep WASH facilities clean and strengthening their capacities. Also, activities such as assistance in obtaining budgets were conducted. The identification of annual expenditures and the acquisition of budgets for these expenditures are essential for the sustainable use of WASH facilities and still remain as a challenge for the future.

(Implementation period: November 2020 - December 2024)

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