Clinical Trial Protocol
Iranian Registry of Clinical Trials

11 Sep 2026

Effectiveness of a Multi-Component School-Based Educational Intervention on Improving Water, Sanitation, and Hygiene (WASH) Practices among Primary School Children in Rawalpindi: A Randomized Controlled Trial

Protocol summary

Study aim

To evaluate the effectiveness of a multi-component school-based Water, Sanitation and Hygiene (WASH) intervention in improving observed handwashing with soap (HWWS), WASH-related knowledge, attitudes and practices (KAP), and reducing illness-related absenteeism among primary school children in peri-urban Rawalpindi, Pakistan.

Design

Two-arm parallel-group cluster randomized controlled trial with school-level randomization, usual-care control, and assessor-blinded outcome assessment.

Settings and conduct

Public primary schools in the peri-urban areas of Rawalpindi District, Pakistan. Schools were randomized to intervention or control groups. Assessments were performed at baseline, immediately after the intervention, and at 3-month follow-up.

Participants/Inclusion and exclusion criteria

Inclusion criteria: Children aged 6–12 years enrolled in grades 2–5 at selected public primary schools, with written parental/guardian consent, child assent, and school approval. Exclusion criteria: Students with cognitive or sensory impairments affecting participation, >50% absenteeism during baseline or intervention, enrollment after randomization, or those outside the target age group or grades.

Intervention groups

Participants received a 4-week multi-component WASH intervention comprising interactive hygiene education, continuous soap provision, environmental behavioral nudges (painted footprints and mirrors), and student-led WASH committees to reinforce handwashing behavior.

Main outcome variables

Observed handwashing with soap (HWWS) behavior, measured using a structured non-intrusive observation (SNIO). Secondary outcomes included WASH KAP scores, illness-related absenteeism, and sustainability of handwashing behavior at 3 months.

General information

Reason for update

Acronym

SWIFT Trial

IRCT registration information

IRCT registration number: **IRCT20230814059147N2**
Registration date: **2026-07-06, 1405/04/15**
Registration timing: **retrospective**

Last update: **2026-07-06, 1405/04/15**
Update count: **0**

Registration date

2026-07-06, 1405/04/15

Registrant information

Name

Paaras Suleman

Name of organization / entity

National University of Medical Sciences, Rawalpindi

Country

Pakistan

Phone

+92 332 6439622

Email address

dr.faisalahmadani@gmail.com

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2025-11-01, 1404/08/10

Expected recruitment end date
2025-11-07, 1404/08/16
Actual recruitment start date
2025-11-01, 1404/08/10
Actual recruitment end date
2025-11-07, 1404/08/16
Trial completion date
2026-07-31, 1405/05/09

Scientific title
Effectiveness of a Multi-Component School-Based Educational Intervention on Improving Water, Sanitation, and Hygiene (WASH) Practices among Primary School Children in Rawalpindi: A Randomized Controlled Trial

Public title
Effectiveness of a Multi-Component School-Based Educational Intervention on Improving Water, Sanitation, and Hygiene (WASH) Practices among Primary School Children in Rawalpindi
Purpose
Treatment
Inclusion/Exclusion criteria
Inclusion criteria:
-Male and female students enrolled in grades 2 through 5. Written informed consent from parents and administrative approval from the school head Student assent provided following a child-friendly explanation of the study procedures
Exclusion criteria:
Documented cognitive or sensory impairments that would have significantly hindered comprehension of the interactive educational sessions. Students with more than 50% absenteeism during the baseline month or the active intervention phase, as this prevented the child from receiving the minimum "intervention dosage" required for habit formation. Students who joined the school after the randomization process was completed. Non-eligible Age/Grade Profile: Students who did not fall within the target age bracket of 6–12 years or were not officially enrolled in grades 2 through 5 at the time of the baseline assessment.
Age
From **6 years** old to **12 years** old
Gender
Both

Phase
2-3
Groups that have been masked

- Outcome assessor

Sample size
Target sample size: **188**
Actual sample size reached: **188**
Randomization (investigator's opinion)
Randomized
Randomization description
A simple cluster randomization method with a 1:1 allocation ratio was used, with the school serving as the unit of randomization to minimize contamination between students within the same institution. Eligible public primary schools from the selected peri-urban areas of Rawalpindi were assigned unique identification numbers, and an independent researcher generated the random allocation sequence using a computer-generated random number function in Microsoft Excel. No stratification was applied because all participating schools had comparable geographical and administrative characteristics. Allocation concealment was maintained until completion of baseline data collection by restricting access to the allocation sequence to the independent researcher. Owing to the nature of the intervention, blinding of participants and school staff was not feasible; however, outcome assessors remained blinded to group allocation during data collection to minimize observer bias.
Blinding (investigator's opinion)
Single blinded
Blinding description
Owing to the nature of the multi-component school-based intervention, blinding of participants, teachers, and intervention providers was not feasible. However, outcome assessors were blinded to group allocation during baseline, post-intervention, and follow-up data collection to minimize observer bias. Thus, the study employed an assessor-blinded (single-blind) design.
Placebo
Not used
Assignment
Parallel
Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee
Name of ethics committee
Armed Forces Post Graduate Medical Institute Ethical Review Committe
Street address
CMH Rd, Rawalpindi,
City
Rawalpindi
Postal code
46000
Approval date
2025-08-25, 1404/06/03
Ethics committee reference number
613-AAA-ERC-AFPGMI

Health conditions studied

1

Description of health condition studied
Poor hand hygiene (inadequate handwashing practices) among primary school children
ICD-10 code
A09

ICD-10 code description
Infectious gastroenteritis and colitis, unspecified

2

Description of health condition studied
Acute upper respiratory infection,
ICD-10 code
J06.9
ICD-10 code description
Acute upper respiratory infection, unspecified

Primary outcomes

1

Description
Observed handwashing with soap (HWWS)
Timepoint
At baseline, post-intervention (4 weeks), and 3-month follow-up.
Method of measurement
measured using a Structured Non-Intrusive Observation (SNIO)

Secondary outcomes

1

Description
WASH Knowledge, Attitude and Practice (KAP) score
Timepoint
Baseline, immediately after the 4-week intervention, and 3-month follow-up
Method of measurement
Validated 73-item WASH KAP questionnaire (composite KAP score)

2

Description
Illness-related absenteeism
Timepoint
Throughout the study and at 3-month follow-up
Method of measurement
School attendance registers cross-verified with parental illness reports

3

Description
Sustainability of handwashing behavior (behavioral slippage)
Timepoint
3-month follow-up
Method of measurement
Structured Non-Intrusive Observation (SNIO)

Intervention groups

1

Description
Intervention group: Participants in the intervention group received a 4-week multi-component school-based Water, Sanitation and Hygiene (WASH) intervention comprising four integrated components: (1) four weekly 45-minute interactive hygiene education sessions delivered by trained investigators using age-appropriate presentations, demonstrations, storytelling, discussions, and practical handwashing exercises; (2) continuous provision of commercially available hand soap at designated school handwashing stations throughout the intervention period; (3) environmental behavioural nudges, including painted footprints leading from toilets to handwashing stations and mirrors installed above the stations to encourage handwashing with soap; and (4) establishment of student-led WASH committees supervised by teachers to reinforce hygiene practices, promote peer support, monitor soap availability, and encourage maintenance of handwashing facilities.
Category
Behavior

2

Description
Control group: Participants in the control group continued their routine educational activities according to the standard government primary school curriculum throughout the 4-week study period. No additional WASH-specific intervention, including interactive hygiene education sessions, continuous soap provision, environmental behavioural nudges (painted footprints and mirrors), or student-led WASH committees, was introduced. Schools maintained their usual water, sanitation, and hygiene facilities and practices without modification.
Category
Behavior

Recruitment centers

1

Recruitment center
Name of recruitment center
Armed Forces Post Graduate Medical Institute Ethical Review Committe
Full name of responsible person
Dr Paaras Suleman
Street address
CMH Rd, Rawalpindi,
City
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46000
Phone
+92 334 3931815
Email
sulemanpaaras@gmail.com

Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Office of Research Innovation and Commercialization (ORIC) National University of Medical Sciences
Full name of responsible person
Dr Shahid Waseem (Director-ORIC)
Street address
CMH Rd, Rawalpindi,
City
Rawalpindi
Postal code
46000
Phone
+92 51 9270677
Email
oric@numspak.edu.pk
Web page address
https://numspak.edu.pk/oric/contact-us
Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
Office of Research Innovation and Commercialization (ORIC) National University of Medical Sciences
Proportion provided by this source
100
Public or private sector
Public
Domestic or foreign origin
Domestic
Category of foreign source of funding
empty
Country of origin
Type of organization providing the funding
Academic

Person responsible for general inquiries

Contact
Name of organization / entity
Armed Forces Post Graduate Medical Institute
Full name of responsible person
Dr Paaras Suleman
Position
General Physician
Latest degree
Medical doctor
Other areas of specialty/work
Public Health
Street address
CMH Rd, Rawalpindi,
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Person responsible for scientific inquiries

Contact
Name of organization / entity
Armed Forces Post Graduate Medical Institute
Full name of responsible person
Dr Paaras Suleman
Position
General Physician
Latest degree
Medical doctor
Other areas of specialty/work
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Person responsible for updating data

Contact
Name of organization / entity
Armed Forces Post Graduate Medical Institute
Full name of responsible person
Dr Paaras Suleman
Position
General Physician
Latest degree
Medical doctor
Other areas of specialty/work
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Sharing plan

Deidentified Individual Participant Data Set (IPD)

Yes - There is a plan to make this available

Study Protocol

Yes - There is a plan to make this available

Statistical Analysis Plan

Yes - There is a plan to make this available

Informed Consent Form

Undecided - It is not yet known if there will be a plan to make this available

Clinical Study Report

Yes - There is a plan to make this available

Analytic Code

Undecided - It is not yet known if there will be a plan to make this available

Data Dictionary

Yes - There is a plan to make this available

Title and more details about the data/document

De-identified Individual Participant Dataset (IPD) and Study Documents De-identified individual participant data underlying the published results, including the study protocol, statistical analysis plan, data dictionary, informed consent forms, and study instruments (WASH KAP questionnaire and Structured Non-Intrusive Observation checklist), will be made available upon reasonable request to the corresponding investigator. Data will be shared after publication of the primary study findings for researchers with a methodologically sound proposal, following approval by the principal investigator and institutional ethics requirements. Participant confidentiality will be protected by removing all personal identifiers.

When the data will become available and for how long

By December 2026

To whom data/document is available

All the people related to public health

Under which criteria data/document could be used

For public health issues related to hand hygiene

From where data/document is obtainable

by emailing the Dr Paaras Suleman : Dr Paaras Suleman sulemanpaaras@gmail.com 0334-3931815

What processes are involved for a request to access data/document

Researchers requesting access to study data or documents should submit a written request to the corresponding investigator describing the research objectives, intended use of the data, and analysis plan. Requests will be reviewed by the principal investigator and, where required, the institutional ethics committee to ensure scientific merit and protection of participant confidentiality. Approved applicants may be required to sign a data-sharing agreement before receiving de-identified data and study documents. Data will normally be made available within 4–8 weeks of approval.

Comments