Water, Sanitation and Hygiene in Humanitarian Crises: setting the research agenda up to 2030

Executive Summary

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ABOUT ELRHA

We are Elrha. A global organisation that finds solutions to complex humanitarian problems through research and innovation.

We are an established actor in the humanitarian community, working in partnership with humanitarian organisations, researchers, innovators, and the private sector to tackle some of the most difficult challenges facing people all over the world.

We equip humanitarian responders with knowledge of what works, so that people affected by crises get the right help when they need it most. We have supported more than 200 world-class research studies and innovation projects, championing new ideas and different approaches to evidence what works in humanitarian response. Elrha has two successful humanitarian programmes: Research for Health in Humanitarian Crises (R2HC) and the Humanitarian Innovation Fund (HIF).

The R2HC aims to improve health outcomes for people affected by humanitarian crises by strengthening the evidence base for public health interventions. Our globally-recognised research programme focuses on maximising the potential for public health research to bring about positive change and transform the effectiveness of humanitarian response.

The HIF aims to improve outcomes for people affected by humanitarian crises by identifying, nurturing and sharing more effective and scalable solutions. The HIF is our globally-recognised programme leading on the development and testing of innovation in the humanitarian system. Established in 2011, it was the first of its kind: an independent, grant-making programme open to the entire humanitarian community.

The views expressed in this paper are those of interviewees and the authors and are not necessarily those of Elrha.

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ABBREVIATIONS AND ACRONYMS

AEA	Average expert agreement
AFR	African Region
AMR	Antimicrobial resistance
CATI	Case-area targeted intervention
CBO	Cash-based organisation
CHNRI	Child Health and Nutrition Research Initiative
DBP	Disinfection by-product
EEHF	Emergency Environmental Health Forum
EMR	Eastern Mediterranean Region
EUR	European Region
FGD	Focus group discussion
FRC	Free residual chlorine
FSM	Faecal sludge management
GWC	Global WASH Cluster
HHWT	Household water treatment
HIF	Humanitarian Innovation Fund
HWISE	Household Water Insecurity Experiences
IDP	Internally displaced person
IPC	Infection, prevention and control
KII	Key informant interview
LAC	Latin American Countries
LSHTM	London School of Hygiene & Tropical Medicine
MHM	Menstrual hygiene management
NFI	Non-food item
NGO	Non-governmental organisation
OCV	Oral cholera vaccine
POU	Point of use
PWD	Person with disabilities
ROA	Region of the Americas
RPS	Research priority score
SEAR	South-East Asian Region
STH	Soil-transmitted helminth
TWG	Technical working group
WASH	Water, sanitation and hygiene
WHO	World Health Organization

FOREWORD

In 2023, the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) anticipates that a record 339 million people will need humanitarian assistance and protection – a significant increase from 274 million people at the beginning of 2022.

Given that humanitarian emergencies are occurring at increasing rates and affecting a growing number of people, evidence-based strategies and new solutions – including in water, sanitation and hygiene (WASH) – are vital to ensure that people's essential needs are met, and that they can live in dignity and are protected from WASH-related diseases.

Seeking to strengthen the collective commitments and strategic engagement of stakeholders active in the WASH sector, the Global WASH Cluster (GWC) in 2020 launched the Humanitarian WASH Road Map 2020–2025. It includes a specific initiative that focuses on research and innovation, recognising that in the context of increasing numbers of more complex humanitarian crises, evidence-based strategies are needed to ensure the delivery of high-quality and accountable WASH interventions to people affected by crises.

Building on an existing collaboration with the GWC, Elrha's Research for Health in Humanitarian Crisis (R2HC) programme commissioned a WASH research priority-setting exercise to support implementation of the road map. Using the rigorous Child Health and Nutrition Research Initiative (CHNRI) method, Lauren D'Mello-Guyett from the London School of Hygiene & Tropical Medicine (LSHTM), Daniele Lantagne from Tufts University, and Monica Ramos from the GWC led the WASH research prioritisation. This was a consultative process undertaken in collaboration with GWC member organisations, the wider WASH community of practice and other stakeholders.

Elrha is committed to supporting efforts to ensure that practitioners and health responders have timely access to evidence-based knowledge and solutions. We encourage researchers and practitioners to address the key research questions identified through the priority-setting exercise, and hope that policymakers and donors will also support this research agenda. Continued investment in research in humanitarian settings is vital if we are to ensure effective, ethical and appropriate humanitarian response to deliver WASH services to people affected by crises.

Anne Harmer
Head of R2HC Programme, Elrha

EXECUTIVE SUMMARY

Background

Humanitarian crises are occurring at increasing rates and affecting a growing number of people. In 2021, when this research was commissioned, an estimated 306.5 million people needed humanitarian assistance. Drivers of crises often intersect, compounding the risk of and exposure to crises. Socioeconomic fragility, conflict, climate change and infectious disease outbreaks, including COVID-19, have all played a role in increasing the number of vulnerable people globally.

With a growing number of people at risk, evidence-based strategies to aid decision-making and selection of effective, appropriate and efficient interventions for people affected by or at risk of humanitarian crises are increasingly important. Water, sanitation and hygiene (WASH) interventions should provide sustainable access to safe water and sanitation, and promote good hygiene practices with dignity, comfort and security. While WASH interventions are commonly implemented as part of humanitarian response activities, five systematic reviews conducted between 2015 and 2021 concluded that there is limited good-quality evidence on the effectiveness of WASH programmes and interventions in humanitarian crises.

The Global WASH Cluster (GWC) in 2020 launched the Humanitarian WASH Road Map 2020–2025, articulating the need to enhance the capacity of the WASH sector to deliver a predictable, quality humanitarian response through strengthened collective commitments and strategic partnerships. Partners and partner consortia developed and designed initiatives that would build the capacity and resources needed to deliver quality WASH responses. A specific initiative was developed by the London School of Hygiene & Tropical Medicine (LSHTM) and Tufts University on research and innovation that included the need for a more evidence-informed humanitarian WASH response.

Building on an existing collaboration between the GWC and Elrha, Elrha's Research for Health in Humanitarian Crises (R2HC) programme commissioned a WASH research priority-setting exercise. Using a rigorous research methodology, Lauren D'Mello-Guyett from LSHTM, Daniele Lantagne from Tufts University and Monica Ramos from the GWC led the WASH research prioritisation, in collaboration with a team of WASH academics and practitioners.

Goals and objectives

The WASH in crises research agenda has three objectives:

1. To identify areas of consensus on research gaps that should be prioritised to meet WASH policy and practice needs.
2. To direct donor funding towards these priorities.
3. To foster a collaborative environment for WASH in crises research that facilitates dialogue between implementers, researchers and policymakers.

Overview of methodology

A consultative approach, based on the Child Health and Nutrition Research Initiative (CHNRI) method was used to identify WASH research priorities in a transparent, consultative, comprehensive and replicable way. The CHNRI method has been used to prioritise multiple health topics and was adapted for the WASH in crises research agenda as a ten-step process (Table 1).

Table 1. Overview of the WASH in crises research agenda methodology

1. Selection of process managers	The project team comprised individuals from LSHTM, Tufts University, Action contre la Faim and GWC.
2. Selection of set of most useful and important criteria	The team defined five criteria by which research questions were critiqued when prioritising the research. The agreed criteria by which to judge research questions included: impact; answerability; relevancy; potential for translation; and implementability.
3. Specification of context in space, impact of interest and context in time	The project team decided on the following scope of the research: • Target populations – all countries and communities affected by or at risk of humanitarian crises (conflict, displacement, complex emergencies, disasters triggered by natural hazards, climate-induced shocks and WASH-related disease outbreaks) • Geographical scope – global, regional, country and local levels • Time scale: – present day to 2030 • Outcomes of interest – any outcome of interest
4. Rapid literature review of WASH in humanitarian crises	A rapid scoping review of the literature on WASH in humanitarian crises was conducted to inform the listing of research questions. A total of 498 journal articles were reviewed and used to generate WASH in crises research questions.

5. Key informant interviews	27 key informant interviews (KIIs) and four focus group discussions (FGDs) were arranged with WASH researchers, technical working groups (TWGs), and member and observing agencies of the GWC. Participants were asked to detail existing research questions within their agency or TWG, including published, ongoing or planned research, and what they perceived were WASH research gaps.
6. Systematic listing of research questions	Research questions were collected and compiled from the rapid scoping review; and KIIs, FGDs and other discussions among the project team. Initially, 932 research questions were listed; after de-duplication and removing questions that were not relevant, 250 remained.
7. Selection of technical experts to reflect on research questions	14 technical advisors reviewed the list of 250 research questions, reducing the list to 130.
8. Scoring of research questions	An online survey was developed and circulated via existing networks, mailing lists, contacts and social media, and posted on the GWC website. For each research question, respondents were asked to judge whether each question met each criterion by indicating "Yes" (allocated 1 point), "Maybe" (0.5 points), "No" (0 points) or "Not my Area of Expertise" (no input), respectively.
9. Calculation of scores and ranking of research questions	Over 1,500 people were invited to score the research questions; 286 took part. For each research question, the weighted research priority score (RPS) and weighted average expert agreement score (AEA) were calculated. Scores were converted into research prioritisation scores ranging from 0% to 100%.
10. Feedback and revisions	Final revisions were made with the technical advisors, which resulted in two pairs of questions being merged within the top 20 research priorities. The WASH in crises research agenda thus resulted in 128 research questions.

Research priorities for WASH in crises

Based on the prioritisation scores, the top 20 highest-scoring research questions were identified based on the collective perspectives of 286 individuals in 65 countries. Respondents were predominantly from the African Region (AFR) (33%), European Region (EUR) (24%) and Eastern Mediterranean Region (EMR) (15%); the majority were male (67%) and most respondents took the survey in English (81%). Respondents had on average 13 years' experience working in WASH and/or humanitarian programmes (range: 1–45 years). Respondents had expertise in all types of WASH interventions or aspects of humanitarian programmes (see Figure 5 in Annex 2.2 for a breakdown of respondents' expertise).

Table 2 presents the top 20 research priorities for WASH in crises. In order of frequency mentioned, the top 20 highest-scoring research questions focused on the following WASH intervention areas:

- distribution of hygiene materials or non-food items (NFIs)
- improvements to the design and implementation of WASH in crises programmes (especially inclusion of women, girls, people with disabilities (PWDs) and older adults)
- improvement of access to and use of sanitation facilities, and reduction of exposure to faeces
- behaviour change for hand, personal and domestic hygiene
- improvement of access to water sources and/or quantity of water
- addressing the burden of and risk factors for WASH-related health and non-health outcomes
- WASH-related climate change interventions
- WASH policy, coordination and/or governance.

The identified priority research questions highlight the need to optimise delivery of existing interventions to maximise their impact on people affected by or at risk of crises, as well as the need to develop or improve existing interventions and strategies.

Table 2. Top 20 research priorities for the WASH in crises research agenda

#	WASH category	Research question	Weighted average expert agreement (AEA) score (%)
1	Distribution of hygiene materials or non-food items (NFIs)	What are the best strategies for the maintenance and operational sustainability of handwashing infrastructures (eg, handwashing stations, facilities or stands) in crises?	100.0
2	Improvements to the design and implementation of WASH in crises programmes	What adaptations to WASH programmes or WASH services (including hardware and software) are appropriate, inclusive and effective for people with disabilities (PWDs) in crises?	98.0
3	Distribution of hygiene materials or non-food items (NFIs)	What WASH non-food items (NFIs) are appropriate, effective and cost-effective for distribution to households during disease outbreaks (eg, cholera, Ebola, hepatitis E, typhoid, COVID-19)?	96.0
4	Improvements to the design and implementation of WASH in crises programmes	How can we improve consultation with women and girls to design and provide safe, accessible WASH facilities and infrastructure (eg, sufficient water access, locks on sanitation facilities, bathing areas, appropriate menstrual hygiene management (MHM) products and disposal appropriate to needs and cultural beliefs) in crises?	95.2
5	Improving access to and use of sanitation facilities, and reducing exposure to faeces	What additional features can improve the experience and use of sanitation in humanitarian contexts (eg, lighting, locks, privacy screens, space for menstrual hygiene management (MHM), roofs, torches), particularly by women and girls?	93.6
6	Improving access to and use of sanitation facilities, and reducing exposure to faeces	How effective are existing technologies and approaches in improving sanitation uptake among people affected by crises, particularly among people with disabilities (PWDs) and young children in humanitarian crises?	93.1

7	Behaviour change interventions to improve hand, domestic and food hygiene practices	How can we identify, define and categorise the determinants and motives of hand hygiene behaviour in crises and among different population groups (eg, children, adults, people with disabilities (PWDs), etc), and at different stages of an emergency (acute, post-acute and protracted phases)?	92.5
8	Behaviour change interventions to improve hand, domestic and food hygiene practices	How can we improve and sustain hygiene practices in different humanitarian contexts (eg, disasters triggered by natural hazards, protracted crises, disease outbreaks (eg, cholera, Ebola, hepatitis E, typhoid, COVID-19, etc))?	92.4
9	Improving access to and use of sanitation facilities, and reducing exposure to faeces	How can we improve satisfaction with and use of sanitation facilities among people affected by crises, particularly among women and girls regarding menstrual hygiene management (MHM) infrastructure and services?	91.3
10	Distribution of hygiene materials or non-food items (NFIs)	What are the effectiveness and cost-effectiveness of in-kind distribution of WASH items (eg, soap, hygiene kits, menstrual hygiene management (MHM) materials, chlorine water treatment, water containers, etc) on health and non-health outcomes among people affected by crises?	90.6
11	Improvements to the design and implementation of WASH in crises programmes	What are the most effective methods to identify/ monitor WASH needs in host communities and urban centres impacted by population influxes?	89.9
12	Improving access to water sources and/or quantity of water	How effective is improved access to safe water (eg, coverage of water points and distribution networks) in controlling and preventing disease outbreaks (eg, cholera, Ebola, hepatitis E, typhoid and COVID-19)?	89.6
13	Improvements to the design and implementation of WASH in crises programmes	How does poor access to WASH contribute to increased risk of gender-based violence in humanitarian settings?	89.6

14	Behaviour change interventions to improve hand, domestic and food hygiene practices	How can hygiene promoters reduce disinformation or myths associated with outbreak-prone diseases (eg, cholera, Ebola, hepatitis E, typhoid and COVID-19)?	88.4
15	Burden of and risk factors for WASH-related health and non-health outcomes	What are the health outcomes (eg, increased incidence of disease, increased morbidity, increased mortality and/or increased incidence of poor mental health outcomes, etc) related to WASH experienced by people affected by crises?	88.1
16	Climate change interventions	What designs or adaptations are required for climate change-resilient water supply and sanitation infrastructure that are appropriate and effective in humanitarian contexts?	86.3
17	Distribution of hygiene materials or non-food items (NFIs)	How can organisations work with people to determine what are the most appropriate products to include in hygiene kits in different response phases (eg, acute, post-acute and protracted) or for different population groups (eg, families with young children, child-headed households, people with disabilities (PWDs), adults with incontinence, etc)?	85.9
18	WASH policy, coordination and/or governance	What are effective mechanisms to build the capacity of WASH professionals who work in emergencies?	85.8
19	Improving access to and use of sanitation facilities, and reducing exposure to faeces	What are the effectiveness and cost-effectiveness of sanitation promotion campaigns on health and non-health outcomes among people affected by crises?	85.7
20	Improving access to water sources and/or quantity of water	How can organisations support people affected by crises in accessing safe, sufficient and reliable drinking water supplies at reasonable cost?	85.6

Recommendations

The WASH in crises research agenda has identified the key evidence gaps of greatest importance to the WASH humanitarian community of practice and established a prioritised list of critical research questions.

All stakeholders are invited to use this research agenda to encourage, inspire and enable relevant and high-quality research that will be used to inform humanitarian response. A collaborative and coordinated environment is required to advance research on WASH in crises; and to strengthen capacity to identify, finance and implement relevant research to answer key humanitarian WASH questions.

The following actions are required to promote the success of the WASH in crises research agenda:

- **Academics** should adopt this research agenda and address priority evidence gaps, collaborating with humanitarian practitioners to ensure the appropriateness and relevance of research, using existing data or designing new studies, as appropriate.
- **Collaborative research teams** – comprising academics and practitioners, including from countries affected by crises – should be established to ensure evidence generated is relevant and appropriate to inform decision-making, policies, strategies, guidelines and practice.
- **Humanitarian organisations** should provide leadership to promote the importance of staff engagement with evidence and its pathways through to practice. WASH practitioners at national, regional and global levels must be supported to use new evidence generated to inform their programmes and humanitarian response.
- **WASH stakeholders**, collectively, should promote the use of knowledge brokers to bridge the gap between research and practice, and support research synthesis and translation to ensure evidence is accessible and available to end users.
- **Donors** should adopt this agenda to guide research investments and ensure funds are used efficiently to address the priority challenges and research questions identified. Interested donors could consider pooling resources to fund research that addresses the top 20 challenges.
- **The WASH community**, collectively, should use the WASH in crises research agenda to align efforts to build the evidence base, and guide investments in appropriate and effective WASH programmes until 2030.

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