Learning from Failure in Environmental and Public Health Research

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Source: Environmental Health Insights, 16(1)

Published By: SAGE Publishing

URL: https://doi.org/10.1177/11786302221104067

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Environmental Health Insights
Volume 16: 1–2

DOI: 10.1177/11786302221104067

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KEYWORDS: Failure, WASH, sanitation, water, hygiene

RECEIVED: March 21, 2021. **ACCEPTED:** March 24, 2022.

TYPE: Learning From Failure in Environmental and Public Health Research - Editorial

FUNDING: The author(s) received no financial support for the research, authorship, and/or publication of this article.

DECLARATION OF CONFLICTING INTERESTS: The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Environmental and public health research endeavours regularly fail. Sometimes this means that programmes do not achieve their stated aims; other times these failures are setbacks that can be rectified with sufficient reflection and action.[1] In the worst cases, the purported 'beneficiaries' of research and practice are harmed through the unintended consequences borne of admirable intentions.[2] These tales of failure are rarely shared publicly, in part due to a culture of covering up things that go wrong, both individually and institutionally.

We have spent the past few years working on a water, sanitation and hygiene (WASH) initiative where we are encouraging colleagues and organisations within our sector to 'speak-up' when things go wrong. This has included hosting game shows at conferences,[3] conducting participatory research with frontline WASH staff,[4] writing editorials[5] and developing and promoting The Nakuru Accord: failing better in the WASH sector.[6] Given the successes we have already seen in shifting working cultures in WASH, we believed a journal Special Collection where a broader array of professionals from a variety of environmental and public health fields could share their experiences was a timely and valuable contribution to literature, research and practice.

The call for this Special Collection offered researchers the opportunity to share when things had gone wrong, or where their hypotheses had been proven wrong and returned null results. We also encouraged thought pieces on the importance of failure in innovation and how to incorporate failure, and its discussion, into the daily practices of organisations. We hoped that this sharing of lessons learnt would mean that other professionals could avoid making the same mistakes; investing in research which may waste time or money, or negatively impact the well-being of those involved.

We were not disappointed. The papers accepted for publication in this collection focussed on 3 aspects of failure:

- Failures in environmental and public health programme implementation, including a lack of community engagement in developing solid waste sites in Malawi,[7] the improper use of personal protective equipment to prevent COVID spread in Thailand[8] and the lack of diversity in senior levels of WASH organisations[9];
- Failures in environmental and public health monitoring and measurement, including a discussion on how randomised controlled trials fail to capture the full complexity of WASH interventions within multi-sectoral systems,[10] why better standard procedures are needed for measuring phosphorous in wastewater,[11] how sharing soil testing data through mobile technology is a low priority for farmers in Ghana and Kenya,[12] and how plastic waste from water quality testing creates landfill, but there currently is no reliable method for reusing plastic filtres without impacting on measurement quality[13];
- How we can learn from failures in environmental and public health and embed these lessons into our organisations.[14,15]

Overall, the papers in this Collection demonstrate that failures happen everywhere: in the laboratory, when engaging with communities, in organisational leadership and even when talking about failure. Attempting to completely rid our work of failures is impossible, but we should work to fail better and ensure that we are not recreating the same failures time and time again.

The interdisciplinary nature of environmental and public health research, particularly WASH, means that there is a need to engage with a wide range of people and disciplines during projects. We need to recognise the strength that this brings to our work but also that it comes with challenges of its own. As such, we must learn how to better communicate between research fields and sectors, and how to apply learning and engagement tools that come from diverse disciplines. Whilst specialists are an important part of the puzzle of successful environmental and public health research, individuals who can build bridges and communicate ideas between those specialist areas are just as important, and their value is often overlooked.

In moving towards ways of working that encourage us to fail better, we must acknowledge that it is easier to accept and respond to failures where we can attribute failure to someone or something else. Recognising this is a vital first step in developing systems that allow individuals, organisations and sectors to approach failure in new and more fruitful ways. These systems need to be more accommodating of experimentation,

incorporate greater flexibility into work and ultimately provide greater transparency so that we can be held accountable for both our successes and our failures.

We hope that this Special Collection will encourage further environmental and public health researchers, as well as editors of journals within this discipline, to publish more work on things that have gone wrong along the way. It is through learning from the missteps of others that we are able to avoid them ourselves, and ultimately, the people we work with, institutions we work for and donors who fund us, will thank us for wasting less of their time, money and patience.

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