Bats, parachutes and bridges

How can epidemiologists improve global health research practice?

Epidemiologist **Sandra Alba** is part of a team that developed a new set of guidelines to address issues of research integrity and fairness in international health research collaborations. She explains what the guidelines hope to achieve, and how

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Imagine the scenario. A group of epidemiologists are investigating the origins of a new infectious disease in and around an area where "patient zero" is thought to have lived. The epidemiologists hypothesise that a certain type of bat may be responsible for spreading the disease. They plan a household survey, hoping to link the occurrence of disease with people's contact with these animals. They carry with them pictures of the bats to show, but disappointingly, in interview after interview, people report having never seen the creatures.

That is until during one interview, when a perplexed researcher notices one of the bats flying overhead. Now it is the respondent's turn to be confused. "What, that one?" they ask. "But it's so big! The bat in the picture is tiny compared to this one. We don't have tiny bats here, only big ones. You should have said it was big!"

This is a textbook example of what can go wrong with "parachute studies" – a term used to describe research projects conducted by researchers who are "parachuted in" and lack familiarity with a local situation, and who disregard local knowledge, systems and expertise (n.pr/3q5cYOs). This "tiny bat" story – hypothetical though it is – is emblematic of a much wider set of problems in global health, concerning research integrity and research fairness.

Tiny bat, bigger problems

Integrity and fairness, and the lack thereof, feature prominently in our "tiny bat" story. On the issue of research integrity, we have a photo which poorly represents the bat in question. It is an ill-designed survey tool, developed in a hurry and not adequately pre-tested, which will lead to information bias. If a respondent had not pointed out the researchers' error, the epidemiologists may have unwittingly drawn the wrong conclusions from their investigations but still published their findings anyway, meaning that those study findings are unlikely to be reproducible (unless other studies use a similarly flawed survey tool!). Irreproducibility of findings is a concern as it can fuel mistrust of science. It is also a research integrity issue: irreproducibility may arise from innocent mistakes, or poor research methods (as in the "tiny bat" story). At worst, it can be the result of deliberate misconduct and fraud.

As for the issue of research fairness, imagine that our epidemiologists are from a European university, travelling to sub-Saharan Africa to

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conduct their research. This information recasts the story as one involving researchers from high-income countries working in a low-income setting, which therefore prompts a number of critical questions about study conduct. Was the study conducted in close collaboration with local researchers? Were local communities and local decision-makers consulted to develop useful and relevant research questions? If the poor choice of bat photo is anything to go by, the answer to these questions is, probably not.

The lack of local involvement likely means the study will have limited impact at the local level, where the research is conducted. Involving local researchers, communities and decision-makers helps to ensure not only better quality research, but also better and more effective communication of research findings to those who need to act on the results. And, in the long term, the involvement of local researchers ensures the development of strong local research capacity to tackle other (perhaps even more) relevant issues.

When we talk about "research fairness" in this context, we refer specifically to "power imbalances in global health" resulting from researchers in high-income countries being funded by organisations in high-income countries to conduct research in low- and middle-income countries. Such power imbalances can prevent local stakeholders from shaping the research agenda and competing on a level playing field in international scientific arenas.

Bridging the issues

In order to jointly address the issues of research integrity and research fairness in global health, a team at KIT Royal Tropical Institute developed a set of good practice guidelines for epidemiology in consultation with researchers from Asia, Africa and Latin America.[1] These BRIDGE guidelines draw from existing guidelines focused on research integrity (bit.ly/3gyJtSn; bit.ly/35uKmVt; bit.ly/3vxLSRl) and initiatives to increase research fairness (bit.ly/3wNve1L; bit.ly/3gyXdfP; bit.ly/35trTZB) with the aim of helping researchers in international research collaborations produce technically sound, impactful findings. The result is a set of practical tips for funders and researchers at each stage of a study, from conception and planning to the writing up of results.

A number of items from the guideline's "study preparation" and "data collection" checklists could have helped with the "tiny bat" study. During study preparation, for instance, BRIDGE advocates for the need to "Plan and execute research in partnership with local researchers" and to "Establish the knowledge gap by searching the literature (peer-reviewed publications and grey literature) as well as by consulting (local) experts, representatives of affected populations and end-users". Thus, early on in the study, the BRIDGE guidelines could have helped ensure that the researchers had a reasonably good understanding of the study population's concerns and viewpoints.

Meanwhile, during data collection, the guidelines emphasise how important it is to "[u]se valid and reliable research instruments" and to "[p]ilot-test, and if possible, field test all research instruments prior to the start of effective data collection". It is possible that pre-testing the photograph-based tool to measure the frequency of bat sightings would have revealed its flaws. Elsewhere, the guidelines remind researchers to "[e]nsure that research instruments are locally adapted and culturally appropriate" and to "[s]elect data collection staff according to technical as well as cultural criteria". A reflection on these criteria might have helped the researchers realise that relying on a photo in the context of the "tiny bat" study was culturally inappropriate.

The criteria for study preparation and dissemination/communication have a strong emphasis on redressing existing power imbalances in global health research by putting local stakeholders and local researchers at the centre of the research endeavour. Indeed, the guidelines aim to ensure that local stakeholders (e.g., national and local representatives of ministries of health, health facility workers and community members) are engaged early on in the study to ensure that the research deals with *their* priority problems – not those of the research team. For example, it is realistic to think that, in the "tiny bat" study, local stakeholders may have preferred that researchers work to strengthen routine surveillance systems for this new infectious disease, rather than study its origin, as the former is likely to have more tangible benefits for the local population's health.

The guidelines also offer a blueprint to go beyond tokenistic involvement of local researchers, by ensuring that they are in a position to lead analysis and dissemination efforts. For instance, the guidelines prompt researchers to agree on publication plans, data-sharing agreements and professional development (e.g., training and coaching) early on in the study. These criteria aim to strengthen the local research system, which is paramount in order to enable a comprehensive response to *all* diseases which affect a local population – not just those of interest to a particular group of outside researchers at a particular point in time.

Tiny bats or big bats – making mistakes and learning from them is an integral part of any scientific endeavour. Mishaps along the way can be expected and no set of guidelines will ever be enough to safeguard research from all possible blunders. But the BRIDGE guidelines hopefully can help researchers steer clear of questionable and unfair research practices that may arise, and work towards a long-term positive impact on local research systems and communities. ■

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Reference

1. Alba, S., Verdonck, K., Lenglet, A., *et al.* (2020) Bridging research integrity and global health epidemiology (BRIDGE) statement: Guidelines for good epidemiological practice. *BMJ Global Health*, **5**, e003236. bit.ly/3xSIodS

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