

Principles for increasing equity in WASH research: understanding barriers faced by LMIC WASH researchers

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ABSTRACT

Introduction There have long been critiques of colonial legacies influencing global health. With growing public awareness of unjust systems in recent years, a new wave of calls for antiracist and decolonisation initiatives has emerged within the sector. This study examined research inequities in the water, sanitation and hygiene (WASH) sector, centring the perspectives of researchers from low-income and middle-income countries (LMICs), to identify barriers faced by WASH researchers in order to support more equitable changes in this subsector of global health. **Methods** Nineteen semistructured interviews were conducted with researchers of different backgrounds regarding nationality, gender and research experience. Researchers from eight countries were asked about their experiences and direct observations of discrimination across various stages of the research process. Five interviews were conducted with key WASH research funders to assess perceptions of obstacles faced by LMIC researchers, successes achieved and challenges faced by these organisations when working towards more equitable research processes within the WASH sector. **Results** The results were analysed using an emergent framework that categorised experiences based on power differentials and abuse of power; structural barriers due to organisational policies; institutional and individual indifference; othering speech, action and practices; and context-specific discrimination. The social-ecological model was combined with this framework to identify the types of actors and the level of co-ordination needed to address these issues. Researchers who worked in both LMICs and high-income countries at different career stages were particularly aware of discrimination. Ensuring pro-equity authorship and funding practices were identified as two significant actions to catalyse change within the sector. **Conclusion** Sector-wide efforts must centre LMIC voices when identifying research questions, conducting research, and in dissemination. Individuals, organisations and the entire WASH sector must examine how they participate in upholding inequitable systems of power to begin to dismantle the system through the intentional yielding of power and resources.

Results The results were analysed using an emergent framework that categorised experiences based on power differentials and abuse of power; structural barriers due to organisational policies; institutional and individual indifference; othering speech, action and practices; and context-specific discrimination. The social-ecological model was combined with this framework to identify the types of actors and the level of co-ordination needed to address these issues. Researchers who worked in both LMICs and high-income countries at different career stages were particularly aware of discrimination. Ensuring pro-equity authorship and funding practices were identified as two significant actions to catalyse change within the sector.

Conclusion Sector-wide efforts must centre LMIC voices when identifying research questions, conducting research, and in dissemination. Individuals, organisations and the entire WASH sector must examine how they participate in upholding inequitable systems of power to begin to dismantle the system through the intentional yielding of power and resources.

INTRODUCTION

The linkage between global health and colonialism can be traced from its origins to

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ The water, sanitation and hygiene (WASH) sector lags behind the larger global health community in discourse surrounding decolonisation, equity and justice. However, diversity, equity, and inclusion (DEI) efforts within the field show the sector is cognizant of the change needed to embody equity in health and research.

WHAT THIS STUDY ADDS

⇒ This study provides qualitative data, a collection of narratives and reaffirms the challenges faced by low-income and middle-income country (LMIC) WASH researchers fortifying the applicability and relevance of decolonisation and equity-building initiatives.

HOW THIS MIGHT IMPACT RESEARCH, PRACTICE OR POLICY

⇒ This study intends to bolster research equity and decolonisation efforts in the WASH sector by providing WASH-specific data. As a result of this study, key actors such as organisational leaders, funders of WASH research and journals that publish WASH research can see clear examples of how their organisational policies and even interpersonal actions may disenfranchise LMIC researchers.

current global health paradigms, especially continued partnerships between former colonising countries and colonised countries.^{1 2} Global health is 'Western modernity masquerading as the universal quest for scientific knowledge and healing'.³ The contemporary global health model derives 'from colonial and tropical medicine, which were designed to control colonised populations and make political and economic exploitation by European and North American powers easier'.⁴ Colonial history deeply informs the current function and operation of global health by determining who has power, resources and control of the episteme.⁵ Multilateral organisations, which often set the global health agenda and control much of its funding, have

been heavily criticised for allowing international politics to affect their operations resulting in vast inequities in funding allocations and the politicisation of health information.^{5 6} These organisations are also considered tools for advancing the economic and political power of their key members who are largely former colonising countries, which can be seen as preserving empires' control of former colonies.^{7 8} Additionally, private philanthropy, foundations and non-governmental organisations also have active roles in perpetuating such inequalities, promoting the 'hegemony of neoliberal institutions while reinforcing the ideology of the Western ruling class'.^{9 10}

Water, sanitation and hygiene (WASH) is a distinct subsector within global health. There are various actors addressing components of Sustainable Development Goal 6 to 'ensure availability and sustainable management of water and sanitation for all', including the global monitoring system of the WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation, and Hygiene, academic conferences and a distinctive sectoral recognition led by UNICEF within the humanitarian cluster system. Within the context of WASH, there is an increasing focus on inequity, especially on gendered user experiences of WASH services and disparities in sectoral leadership.^{11 12} However, there are no similar efforts to address inequities in WASH knowledge systems. The history of global health undoubtedly influences the power dynamics of WASH knowledge systems, favouring high-income country (HIC) institutions and researchers and marginalising low-income and middle-income country (LMIC) researchers, institutions and communities. However, the extent to which global health literature directly applies to the WASH context is uncertain. Recently, scholarly interest in antiracism and decolonisation has increased seemingly due to increased awareness of racialised state violence (via police brutality) and economic and health inequities highlighted by the global COVID-19 pandemic. More academics have begun to examine the colonial conditionings of academia resulting in increased visibility of longstanding injustices in systems within universities and the scientific literature.^{13–16}

Global health research funding is often awarded to or routed through HIC institutions even when research is being conducted within LMICs.¹⁷ HIC researchers frequently enter LMICs and establish HIC-led and staffed facilities to extract research, which often results in a limited impact on the LMIC's health systems and research capacity.² Low rates of LMIC authorship of academic publications exemplify the nominal extent to which global health institutions have contributed to capacity-building initiatives in the Global South.¹⁸ Consequently, there is little scholarly research that has been conducted to understand barriers and inequalities faced by researchers who are based in or come from LMICs.¹⁹ This project aimed to investigate inequalities in the WASH sector by centring the experiences of LMIC researchers, examining the root causes of inequity and exploring feasible strategies for moving toward a more

equitable future. It is pertinent to acknowledge the interconnectedness and complexity of colonialism, imperialism and other modes of domination that influence the current state of WASH to begin to address violence and harm. The primary objective of this work was to build an anonymised base of evidence from which future research, guidance and initiatives that support LMIC research can be built, ensuring that the contributions of LMIC researchers are not marginalised, but centred.

Theoretical framing

While decolonisation and antiracism may be understudied in a WASH context, critical theorists in the past several decades have created sizeable bodies of literature, including well-defined concepts of decolonisation, intersectionality and epistemic violence, which were used as the framing for this study. Kessi *et al*'s definition of decolonisation, that is, 'a political and normative ethic and practice of resistance and intentional undoing – unlearning and dismantling unjust practices, assumptions, and institutions – as well as persistent positive action to create and build alternative spaces and ways of knowing', was used.²⁰ Intersectionality highlights that experiences of discrimination are often not due to a single facet of an individual's personality and is thus 'a lens through which you can see where power comes and collides, where it interlocks and intersects'.²¹ The concept of epistemic violence emerged from the critical postcolonial feminist scholarship of Gayatri Chakravorty Spivak; however, the following definition was used 'violence against one's status as a knower; one's role as a creator and communicator of knowledge... the dismissal of people as credible sources of information, because of our presumptions about them'.^{22 23}

METHODS

The primary method of data collection was through semistructured interviews with LMIC researchers which were then analysed using an iterative coding process. The interview guide was designed after conducting a literature review and a series of discussions that included input from additional LMIC researchers external to the core research team. Open-ended questions were used to capture a depth of experiences regarding discrimination faced by LMIC researchers in the research process.

Interview guide

The semistructured interview guide (see online supplemental file 1) elicited experiences with discrimination faced by LMIC researchers and mitigating strategies to combat discrimination. Participants were prompted to voice their own experiences or those they directly observed. Directly observed incidents were included partially to provide anonymity related to describing personal experiences that could be traumatic or potentially harm their careers. Additionally, observations also broadened the potential information gleaned from the participants without compromising the data by including

second-hand information. Responses were limited to these situations to avoid including unverified reports in the study while also providing participants with the option to respond that they had no relevant examples to share for any question(s). In consideration of the positionality of the researchers informing the research outcomes, the interview guide was formulated with neutral clarifying and prompting questions to minimise the bias of the research team influencing the study's findings. The interview guide was not piloted; however, feedback was elicited from LMIC researchers and incorporated into the finalised guide. A similar but separate semistructured interview guide was developed for interviews with donor representatives (see online supplemental file 2), who were invited to focus their responses on organisational experience.

Participants were provided with a definition of discrimination to mean 'the unjust making of a distinction on the basis of some attribute about that person by a person or policy that reinforces inequalities'. In facilitating nuanced discussions of the various challenges faced, questions were grouped based on aspects of the research cycle, which included funding acquisition, project execution and research dissemination, along with more general career advancement.

Research participant selection

The study participants were LMIC researchers targeted to capture the experiences of men and women in early-career and late-career stages in approximately equal proportions. The outreach decisions were made to capture a breadth of experiences of researchers at different points in their careers and of different gender identities to better understand the effect of these identities on discrimination faced by researchers.

The intention was to recruit as many participants as willing and able to form an evidence base capturing a microcosm of the WASH research landscape. Existing networks and the social media platform Twitter were leveraged to recruit interested participants who were then directly contacted. Twitter was specifically used to recruit female late-career researchers. Nineteen LMIC-origin researchers were interviewed. Study participants included LMIC-origin researchers with a majority of participants being based in LMICs and some based in HICs. Most participants in LMICs had experience collaborating with HIC partners or received funding from HIC institutions. Participants were also at a range of research institutions including universities, non-governmental organisations and international organisations. The study population was not considered to be statistically representative as the project was exploratory and was conducted with the intent to take a tractable first step to advance research equity.

Early-career researchers were defined as those who, if they had received a PhD, had done so in the past 5 years. Late-career researchers were defined as researchers who had received a PhD at least 10 years ago, had obtained

funding as lead investigators for at least three projects and had at least one full-time staff member or student. These definitions were established not to comprehensively cover the types of participants in the research ecosystem, but to intentionally involve those seeking their funding at an early-career stage versus those who were focused on developing and retaining staff and growing a team or organisation.

We further reached out to representatives of significant funders in the WASH research space to (1) gauge institutional awareness of research inequity, (2) gather information on ongoing equity initiatives and (3) better understand institutional barriers. Five interviews were conducted with six donor representatives.

All participants were informed that the purpose of the study was to gain an understanding of their perspectives and then synthesise and anonymise experiences to then communicate the reality of power imbalances in the sector while minimising personal risk. Participants were also told that sharing personal or organisational names was not necessary and that they would not be identified in any way except by gender or career status.

Interviews, transcription and coding method

Semistructured interviews were conducted remotely and recorded via Microsoft Teams between March and September 2021. Participants participated in informed consent before the interviews. Approximately half of the interviews were conducted with two members of the study team present and half with only one study team member. Only participants and researchers were present during the interviews and no repeat interviews were conducted. The recordings were then uploaded to an automated transcription website and manually cleaned by a member of the study team. Transcripts were then independently coded by at least two members of the research team using the Dedoose software package.²⁴

Data was stored on a password-protected server, and any identifying details were removed from the transcriptions.

Multiple members of the team reviewed transcripts and participated in coding; the collaborative processes used in this study allowed for dialogue and comparing notes to ensure that research findings reflected the data collected with limited bias from individual researchers.

Patient and public involvement

Patients and the public were not directly involved in the design of this study or the formulation of research questions and outcome measures. At the 2021 University of North Carolina Water and Health Conference, two large group discussion sessions were hosted by the research team sharing preliminary research findings and cogenerating a list of feasible actions to be taken across the WASH sector and by different stakeholders to facilitate a more equitable research process with attendees.

Reflexivity and research team formation

The research team is composed of four early-career women of colour of LMIC origin or with ties to LMICs in the Caribbean, Southeast Asia or Africa and one late-career American man. All authors hold or are pursuing higher education degrees and currently work or study in the USA. Please see online supplemental file 3 for an expanded reflexivity statement.

From the outset of this project, six other LMIC-origin WASH researchers were consulted on the direction of the work, including asking about their desired level of involvement (see online supplemental file 4) The WASH researchers consulted were happy to be involved but did not want to be authors of this initial paper. In all cases where a reason was provided, it was because of concerns about repercussions, although there may have been other unstated reasons. As there also was not significant funding for this initial work enlisting the formal collaboration of researchers would mean they would be under or unpaid, it seemed preferable to embark on this exploratory work imperfectly with the hope of sparking follow-up conversation and research.

RESULTS

Participant characteristics

The study included a total of 25 participants of which 19 (76%) were LMIC WASH researchers and 6 (24%) were donor representatives. Of all LMIC-originated researchers, 58% were early-career researchers and 42% late-career researchers. Researchers were from eight different countries in sub-Saharan Africa and South Asia. There were 58% women researchers and 42% men researchers in the LMIC researcher subset and 50% men and women in the donor representative subset. In total, 44% of participants identified as men and 56% as women. A summary of the participants' characteristics is provided in table 1. Most researchers were based in LMICs, although some were based in HICs but of LMIC

origin. One donor representative was of LMIC origin but was based in an HIC, and the other donor representatives were of HIC origin and were based in HICs.

Coding framework

Interviews were analyzed by grouping similar challenges expressed by researchers, then arranging these groups into a hierarchy of codes and subcodes based on relationships observed. The data-derived codes were as follows:

1. Power differentials and abuse of power.
2. Structural barriers due to organisational policies.
3. Institutional and individual indifference.
4. Othering speech, action and practices.
5. Context-specific discrimination.

A more descriptive visual of the coding structure describing codes and providing quotes as examples was developed, as shown in table 2. With deeply complex and nuanced issues such as discrimination, oppression and inequity, the recounted experiences described had points of convergence and interrelation as did the codes generated from them. Therefore, many cases were categorised by multiple codes.

Power differentials and abuse of power

Participants reported cases of overt abuse of power as well as power differentials that resulted in inequitable and unchallenged assumptions or defaults within the research process. Researchers noted experiences of inequitable distribution of authorship and acknowledgement based on power and privilege. HIC-LMIC partnerships are typical in the WASH research space. In these instances, HIC researchers were either awarded prime authorship and desirable leadership roles by default or would demand these positions. In some cases, this was because funding was directly awarded to the HIC institution (sometimes due to funder policies); consequently, the principal investigator, often a senior researcher from an HIC organisation, would prioritise their graduate students for prime authorship roles.

Table 1 Participant characteristics of LMIC WASH researchers and donor representatives

Participant characteristics		LMIC-originated WASH researchers	Donor representatives
Per cent of total participants		76%	24%
Region of origin	Sub-Saharan Africa	74%	
	South Asia	26%	
	South America		17%
	North America		50%
	Europe		33%
Career stage	Early career	58%	
	Late career	42%	
Gender	Woman	58%	50%
	Man	42%	50%

LMIC, low-income and middle-income country; WASH, water, sanitation and hygiene.

Table 2 Emergent framework for understanding discrimination and barriers to equity

Code	Subcode	Funding acquisition	Project execution	Research dissemination
Power differentials and abuse of power	Disregard for local researchers and community members	Inability of LMIC researchers or affected communities to establish their own research questions as grant calls typically have set research priorities. “The priority of the sector, or maybe the priority of the research itself. Sometimes some of these topics that are coming in to be addressed in the particular context could probably not be quite meaningful or quite needful or quite demand responsive to the needs of the users on the ground.” Researcher 14—Early-career woman		LMIC researchers and communities are often not engaged thoroughly during research projects which leads to unrepresentative and inaccurate results that are platformed and disseminated “Sometimes observations or findings have been missing, interpreted for lack of appreciation of the local context in which the observations are made. I think I recall distinctly a couple of situations in studies where you have international collaborators participate in some observational work in behavioral research and they observe particular behavior in the field and they have their own interpretation, which is very far from what we would really understand as being communicated.” Researcher 13—Late-career man “Even the selection of the researchers themselves, sometimes we can get like BIPOC people, a bit thrown into research for the sake of this. Oh, there’s one person who’s BIPOC, in the end, even if you look at the write-ups that are coming out [or] even if you look at the citation, you’ll rarely see BIPOC people, or we’ll even really see something from [the local context].” Researcher 14—Early-career woman
	Lack of LMIC representation on review committees	Lack of LMIC representation on grant review committees lends itself to biases against LMIC researchers		Lack of LMIC representation on publication review committees lends itself to biases against LMIC researchers “A number of African researchers are coming up [with] alternative journals because they feel like sometimes after writing like your manuscript is not good [based on the] number of times you get rejected. And so, they’re trying to come up, you know, with the para journal. So that, that could be a leveled playground for Africa was published so their voices could be heard.” Researcher 3—Early-career woman

Continued

Table 2 Continued

Code	Subcode	Funding acquisition	Project execution	Research dissemination
	Inequitable balance of responsibilities		LMIC researchers are assigned primarily to fieldwork, data collection and non-technical tasks without opportunity to pursue analytic work or interests in writing “So you will find that the fieldwork has to be done in the low-income countries by low-income country researchers, the high-income country researchers will often want to take the role of almost monitoring and supervising only, and not putting their hands to the wheel or getting their shoes dirty in the field, but really calling the shots from arm’s length... you know, then they want to be in charge and lead.” Researcher 13—Late-career man	
	Inequitable distribution of authorship and acknowledgement		HIC collaborators are often given prime authorship or leadership roles automatically without consideration of LMIC researchers’ contributions or credentials. Additionally, LMIC researchers are sometimes unnamed and unacknowledged in published works despite contributing significantly to the project. “Authorship is that sort of thing whereby you take the heavy lifting and then at the end, they end up saying this one is going to be their first author. And the question is, why would they be the first author? I did the heavy lifting on this one.” Researcher 5—Early-career man “We had that terrible experience where one of the partners actually solely wrote an article with her name alone on it. [We contributed to the] paper by data collection, answering many questions, giving writing reports, and then this person turns out to write a paper on her own... [This] set a terrible precedent considering that she’s not come even down yet to collect that data.” Researcher 16—Late-career woman	
	Internalised pressure to perform on part of marginalised researchers	LMIC researchers feel the burden of proving competency and work harder than peers to disprove stereotypes and receive similar status or acknowledgement “You really need to work extra to prove what you can do because there’s this kind of stereotyping see you either because someone feels English is not, your first language has already placed you at a level of, you cannot match up or you cannot meet up, or what do you, what is it that you can give up?... You really need to prove who you are. [You] really need to work extra hard to show that you can. So that supports that kind of stereotyping because of your background or where you’re coming from was already there. You really need to break these barriers for you to get on.” Researcher 3—Early-career woman		

Continued

Table 2 Continued

Code	Subcode	Funding acquisition	Project execution	Research dissemination
Structural barriers due to organisational policies	Incompatibilities between funder and recipient systems	<p>Grants require collaboration with HIC institutions often routing money through HICs reduces funds available for LMIC-based research and capacity building significantly</p> <p>“There’s [often] a requirement in there that says that you need to have a partner from [HIC country]. So if they are given the grants, you can’t just apply if you think your university or institution is qualified, but you have to look for a partner from outside that is based in the donor country in order to be eligible.” Researcher 10—Late-career woman</p> <p>“But what I realized, especially when I interacted with the program officer from [HIC Funder]. There was some legal requirements that made it easier to work with a European organization, and that made it a bit easier in terms of the accounting, accountabilities, et cetera.” Researcher 2—Late-career man</p>		
	Incompatibilities between research community priorities and local university/institution roles	<p>LMIC universities sometimes lack resources to successfully apply for grants as well as graduate-level funding compared to HIC universities that are competing for awards</p> <p>“For postgraduate education, the opportunities in [LMIC] are limited primarily because of funding. Not that we don’t have the MSC programs here, but after first degree, most students who like to secure a scholarship, financial aid, or something to pursue postgraduate studies in [LMIC], and opportunities are a bit limited...The programs’ quality is good. No, two ways about that. The problem we have is funding.” Researcher 2—Late-career man</p>	<p>Withdrawal of funding during project execution due to funders’ priorities changing leading to incomplete projects and lack of trust between LMIC researchers and funders and LMIC researchers and the communities they are engaged in</p> <p>“One [project] also ended prematurely because the funding agency, [they] changed priorities to cover that work in the last minutes, which I, again, found in itself unethical.” Researcher 9—Early-career man</p>	<p>LMIC researchers are at a disadvantage to attend in-person conferences due to incompatibilities between immigration regulations and conference protocols that is, visa turn-around times being longer than the time between conference acceptance and conference proceedings</p> <p>“Conference decisions to even attend a particular conference may not come maybe five months in advance. Maybe you are not sure whether you have a budget for it. And then maybe a month to the time they say well we can make a little budget available for you to attend this conference. So quickly, you have to mobilize and get your documents ready [for visa applications] ...I remember once they’ll say they will not give you a visa. And then the question is why? because you didn’t show this or show that or do this? I think for me, what is more frustrating has nothing to do with the conference. It has more to do with the visa processes and the stress you have to go through. They don’t even seem to recognize the role you have to play in workshops. They’re wondering what you are going to do there, thinking you won’t come back and that kind of thing.” Researcher 10—Late-career woman</p>

Continued

Table 2 Continued

Code	Subcode	Funding acquisition	Project execution	Research dissemination
	Lack of informal networks and insider knowledge by LMIC researchers	<p>LMIC researchers often were not exposed to in-person networking opportunities leading to a gap in insider knowledge about grant opportunities and other insider knowledge such as the sharing of successful proposals that provides 'a leg up' in grant applications</p> <p>"We realized that some [HIC] universities had strong networks and had resources to support the academics to become more competitive, to win projects." Researcher 2—Late-career man</p> <p>"You need to be in a kind of an institution, for example, you need to be in a kind of a network whereby if there is a potential funding and you can be notified, then you can take an initiative on whether you can apply for that particular kind of funding." Researcher 9—Early-career man</p>		
	Discriminatory policies related to staff costs, indirect or other costs	<p>Discrepancies in indirect cost rates due to funding and institutional rules lead to LMIC researchers being paid significantly less through grants than HIC researchers. Project funding is sometimes disproportionately allocated to HIC staff in LMIC/HIC partnerships allowing for funds to be used for unnecessary travel instead of building LMIC research capacity.</p> <p>"[Many larger HIC funders allow HIC-based] institutions to charge many times in direct or institutional overheads, even up to 40%, of our institutional allowance, [we] can only charge 8%." Researcher 13—Late-career man</p> <p>"For example, those who are on projects from those countries, if you look at their participation in terms of work like collecting data, the most critical parts of the work, most of the work is here. And if you look at the budget, the allocation budget is really small where a lot of work is being done, but the location of the budget is small and most of the budget is lifted to [HIC] partners." Researcher 6—Late-career woman</p> <p>"There were a few cases where that particular component of the work can be done by nationals, but you still have to find internationals flying in to do the same. So, you could see that some of these trips [and their costs] are probably not justified." Researcher 2—Late-career man</p>		<p>Conference and publishing fees are a major hurdle to LMIC researchers disseminating their work in academic spheres.</p> <p>"Due to lack of travel funds or lack of funding, most of the researchers from low- and middle-income countries cannot attend. And that's happened because most of the time researchers from low- and middle-income countries are actually sub-awardees of many grants. So usually, the sub-awardee grants are limited to project management or project execution. And the dissemination part is actually most of the time led and run by the main recipient." Researcher 1—Early-career man</p> <p>"I've had the opportunity of getting financial assistance to attend some of these conferences. But there are some that I've missed because either I didn't have funding for that, or I just didn't have finances to travel or even finances for registration." Researcher 7—Early-career woman</p>

Continued

Table 2 Continued

Code	Subcode	Funding acquisition	Project execution	Research dissemination
Institutional and individual indifference	Impacts of English as the predominant language for everyday interactions and knowledge dissemination	English being the primary language of the research process reinforces the hegemony of English as a global language reinforcing imperialist and colonial ideals while displacing researchers for whom English is not the first language	Project meetings carried out in English in non-English speaking settings to accommodate HIC researchers with some translation for field staff “A lot of researchers prefer to use researchers who are fluent in English. The field researchers struggle to basically communicate properly, empathize or understand much of their target research community.” Researcher 19—Late-career Man	Academic English as the primary language of dissemination serves as a barrier for LMIC researchers in publishing and presenting at conferences even when researchers are competent in Standard English “Some of our supervisors, who are from developed countries, consider our English really poor and say we should not write. And sometimes I argue that if I don't write then how will I learn?” Researcher 1—Early-career man “How often happens in this English language, which is not the language of the people on whom I do with whom I do the research? So, I would like to think that other than funding, I think language is the biggest barrier. Not like, yeah, not like English but academic English as like the hegemonic power of English as a language.” Researcher 12—Early-career woman
		“The research funding and policy work that comes gets done in English. You could have high-quality researchers for whom English is not their first language and might be extremely competent in writing language [their country's primary] language or other languages and probably can write better than, or as well as someone who's extremely gifted in English. But by virtue of the fact that a lot of the research opportunities, a lot of the output has to be generated in English, this disadvantages them significantly.” Researcher 17—Late-career man		
		Use of Western metrics when evaluating competency	Researchers and WASH practitioners without PhDs were excluded in the research process based on preference for PhD holders “[On some funding calls] I cannot apply as I am from a low and middle-income country. And also, I don't have a Ph.D. So, both are a barrier.” Researcher 1—Early-career man “I've observed that in water and sanitation work, [there's] not only researchers or people with PhDs are involved, but it's also different people from different backgrounds and different fields, research assistants and community, and different people. I think sometimes in certain projects, if you're not highly educated or if you don't have a certain title, you're not necessarily included that much [and your contribution isn't valued].” Researcher 4—Early-career woman	

Continued

Table 2 Continued

Code	Subcode	Funding acquisition	Project execution	Research dissemination
Otherring speech, action and practices	From funders or funder representatives	<p>Funding calls with restrictive eligibility requirements such as citizenship, years of experience, and degree requirements reinforce power structures that marginalise researchers preventing career progression and limiting research capacity building</p> <p>“If you're a junior researcher and you're trying to write grants or apply for certain grants [there] can be a barrier not having enough experience and not enough network. And so, it seems like you have to have a lot of making sure you have a lot of this and that to be able to qualify to apply.” Researcher 1—Early-career woman</p> <p>“A criterion [for funding in HICs often is] that it applies to only permanent residents or [HIC] citizens, but even when the research is interesting, you can't go for it [as an LMIC researcher in a HIC].” Researcher 5—Early-career man</p>	<p>Funders sometimes micromanage LMIC-led projects eroding researcher autonomy and trust</p> <p>“Some donors who like to poke their nose in the business of the grantees in trying to micromanage the work, they actually don't realize that they are just being discriminatory. We have some research funders here right now in my institution who try to interfere in every aspect of what we do. And to an extent, I think that if you are going to do this yourself, why don't you just call yourself a research institution and do it yourself?” Researcher 13—Late-career man</p>	

Continued

Table 2 Continued

Code	Subcode	Funding acquisition	Project execution	Research dissemination
	From journals, publishers and peer reviewers			<p>Publications are often biased only in publishing LMIC research when there is an HIC author and institution attached to the manuscript. LMIC-led work is not valued on the same level as HIC-led work leading to reviewers deeming work unfit based on 'science' or 'global appeal'</p> <p>"I wrote one of my articles and submitted it then I got reviews from one of the reviewers who was of the opinion that the work did not reflect what was going on across the globe. So I think he meant to say that the work was from Africa and so it didn't resonate with global perspectives." Researcher 7—Early-career woman</p>
	From communities in which research is conducted		<p>Women researchers are discriminated against in communities with patriarchal ideals, that is, assumptions about competency based on gender. Colourism also is another mode of discrimination experienced by researchers in community settings.</p> <p>"I think there is an assumption that there is a natural assumption and I really hate to say this, that the ability or competence levels may not be that great because, you're in an LMIC." Researcher 8—Early-career woman</p> <p>"[Sometimes] the external person doesn't have as much experience as the local staff but comes in and is expecting to sort of lead or direct the local staff." Researcher 10—Late-career woman</p>	
Context-specific discrimination	Caste-based discrimination		<p>Caste, color, and class discrimination lead to increased vulnerability of researchers and research subjects in the project execution phase</p> <p>"You'll see that many white-collar jobs often are exclusive of people who identify with the lower caste within the caste system. Within the government offices and NGOs, [but] you'll often find that while these tend to be the communities that tend to be beneficiaries, they're not necessarily included as staff or professional workers." Researcher 18—Early-career woman</p> <p>"I think I remember some years back on a particular project and you will see that the number of times you may be in a meeting or a workshop or seminar, and you may be making some issues, but you see that it's been ignored, but when a counterpart of another color agrees on the same or similar, and then you get to know that it's well-accepted, recognized and pushed on for further discussion." Researcher 11—Late-career man</p>	

Continued

Table 2 Continued

Code	Subcode	Funding acquisition	Project execution	Research dissemination
	Tribal discrimination		<p>Tribalism is experienced by researchers in community and organisational settings in tandem with gender-based discrimination leading to researchers being sidelined on projects</p> <p>“Sometimes when you want to interview women, maybe their spouses are not necessarily okay with them doing that. In some countries, male domination is very huge. Being a woman, if they see when you’re doing work around, they don’t see you as someone who is really doing work, you’re just a woman.” Researcher 4—Early-career woman</p> <p>“I’ve experienced opportunities that [I] have been side-lined based on gender and in the part of the country where I’m living. It probably happens in other regions of the country, but we also have a problem of people being discriminated against based on which tribe they come from, which would be more tribalism. In some instances, it is often hard to rise to certain positions if you are not from a particular region, like my current case where I’m working in a region where I’m not from.” Researcher 15—Early-career woman</p>	

HIC, high-income country; LMIC, low-income and middle-income country; WASH, water, sanitation and hygiene.

In many other cases, LMIC researchers were disproportionately assigned fieldwork and less technical tasks such as day-to-day data collection, while HIC researchers were able to focus on analysis, interpretation and writing. This division of labour translated to the HIC researcher maintaining primary ownership over the publication and future presentation opportunities. This workload imbalance stalled career advancement for LMIC researchers and even affected immigration or visa opportunities. Some LMIC researchers felt that despite meeting the metrics to earn leadership opportunities they were still not considered for advanced roles. Funders appeared to be aware of the power imbalances within the sector, especially the division of labour and recognition, and the resulting discrimination faced by LMIC researchers that led to career stagnation.

Participant #13, a late-career man researcher, reflected on the impact of restrictive funding calls with set research agendas influencing the type of knowledge production occurring in LMICs and limiting research capacity building:

Another huge frustration because you as an LMIC researcher [may] want to begin to indulge in more fundamental science or in more discovery, but often funding doesn't allow [LMIC researchers] to get into those spaces; it very much wants you to go in the field and collect samples.

There was often a disregard for community members' and LMIC researchers' input in research priorities that perpetuated a cycle of HIC-centred research agenda

setting. A lack of LMIC reviewers on both funding and publishing committees also amplified the problem.

Gender, age and seniority, as well as the intersection of these identities, were also a facet of power imbalances within the sector. Researchers with less work experience stated that they encountered additional barriers in the research process. Participant #19, an early-career woman researcher, reflected on gender inequality as a point of imbalanced power distribution:

There is [a] bias that comes with being a woman in the WASH sector...in terms of how much I have to work to ensure that my feedback is taken up or solicited or respected or incorporated.

The disparity of power and resources within the sector leads to an extractive and unidirectional relationship between HIC institutions and communities where research studies are situated. This power dynamic manifests into an internalised pressure to perform on the part of LMIC researchers due to external assumptions of incompetency. The sentiment of internalised pressure was more commonly expressed by women researchers.

Many participants noted that more gender equity initiatives are becoming a norm. A growing number of funding, education and research opportunities state that ‘females are especially encouraged to apply’. Most participants were pleased with these initiatives; however, some participants—both women and men—felt like men were being displaced by this initiative. Funder representatives

also noted that there were quotas and mandates intended to improve equity in the field and had mixed views on these initiatives. Funders also noted that their organisational policies affected equity in procurement, but generally said that the cost of monitoring the internal workings of grantees would be too high and that developing quantitative metrics would be needed for more equitable funding opportunities. Some funders have not been able to address the issues of community input, while others saw success by focusing on a small number of countries, deeply involving local stakeholders in developing research agendas and shifting power from HIC-based grantees to local stakeholders early in the research process.

Structural barriers due to organisational policies

Researchers in LMICs face many structural barriers that are attributed to either formal organisational policies or informal relationships. Foreign funders and local institutional systems were often fundamentally incompatible. Reporting requirements for foreign funders could often not be met by local university accounting systems operations, and LMIC institutions struggled to comply with the tax codes of foreign countries.

Funders were also often restricted either by having to contract directly with institutions in their own country or by legal restrictions on contracting processes between funders and recipients in certain countries. Participant #12, an early-career woman researcher, noted that the requirement of working with an HIC institution, which would ultimately benefit more financially from the arrangement, deterred LMIC researchers from applying for funding opportunities. Participants also reported that partnerships with HIC institutions seemed to be expected or outright required for grant applications to be successful, with HIC institutions often being the lead on proposals. This was a common practice even when there were no legal requirements.

Relatedly, the overall operations of LMIC universities were often viewed as incompatible with the research needs of the sector as LMIC universities placed more emphasis on education than on research and experiential learning. Participants also attributed this to limited funding for research in these institutions, stating that LMIC universities often lacked significant grant-making resources and pipelines of funded PhD and postdoctoral students in comparison to HIC universities. As a result, early-career researchers were often encouraged by different actors in the research ecosystem to go to HIC universities if possible.

Beyond official policies and systems, barriers existed due to a lack of ‘insider knowledge’ on the part of LMIC-based researchers. LMIC-based researchers often lacked in-person exposure to funders at international conferences or meetings in funders’ headquarters located in HICs. Several LMIC-origin researchers based at HIC institutions also noted that the experience of HIC institutions internally sharing successful proposals ultimately leads to

considerable advantages in these institutions receiving funding. Differences in exposure were compounded by other unjust practices. For example, when conference decisions are not given sufficiently far in advance, obtaining visas for some LMIC passport holders may be challenging leading to missed dissemination opportunities further delaying or disrupting career progression.

Finally, inequities related to fees and indirect costs tangibly demonstrated to researchers the disparity in how HIC-based and LMIC-based researchers are valued in global academia. LMIC-based researchers were often subject to locally based pay scales determined by their university, whereas HIC-based researchers would often charge higher standard rates or engage through consultancy agreements. On the topic of wages, participant #16, a late-career woman researcher, stated:

For the time that you're going to put into that project, ultimately you realize that you are underpaid and yet the bulk of the work is actually going to take place in this part of the world. And I've kind of found that always unfair.

There were also large discrepancies between indirect cost rates. Participant #13, a late-career researcher, noted that their LMIC institution was only able to allocate 8% of the grant amount for overheads, while HICs were able to charge up to 40%.

Funder representatives were aware of the challenges of formal contracting, especially those who were intermediaries funded by a country’s own broader aid budget, and several interviewees were actively working to address those barriers. Non-governmental funding agencies seemed to be slowly making changes, while funders representing government agencies were less optimistic. Few noted approaches underway to share more ‘insider knowledge’ gained by successful applicants over time or had solutions to address costing inequities between institutions. Some expressed awareness of individual organisations active in adjacent research spaces outside of WASH, especially around developing informal networks to foster collaborative bids. Others mentioned cross-cutting capacity-building efforts meant to offset differences in indirect cost rates, but such efforts were still in the early stages and there had been few efforts to co-ordinate or establish norms or guiding principles for these efforts.

Institutional and individual indifference

Institutional and individual indifference to inequity appeared in several ways. Apathy toward the challenges experienced by people of differing backgrounds was identified as a recurring theme throughout the interviews. The most significant obstacle researchers faced was the use of English as the primary language of dissemination. Researchers whose first language was not English expressed that the language barrier disadvantages them from competing with researchers whose first language is English, regardless of their academic competencies. This barrier is apparent in grant applications, selection to present at conferences, presence of translation services

at conferences and publication decisions. This indifference also occurred in the field, where meetings with HIC researchers would by default be conducted largely in English with some translation for field staff, rather than the other way around. Participant #8, an early-career woman researcher, spoke to the intersection of class and English speaker status, sharing that she noticed some “people that are not given a chance to speak, or cut off, or not taken seriously because they fail to articulate very well, whether that’s by socioeconomic status or literacy.” This intersectionality and the resulting harm are further explored by participant #19, a late-career man researcher, when reflecting on power hierarchies within the grouping of LMIC researchers:

LMIC researchers, those who are from an urbanized, English-speaking background, find it easier for career advancement and people who do not have. [It is] easier for career advancement because their projects have a higher chance of getting funded.

Additionally, it was observed that researchers from LMICs were being evaluated by metrics originating largely in HICs including formal credentialing and citation of works largely outside the context of the research setting, rather than on the benefit provided by the research on either its direct subjects or those in similar situations. Conventional academic knowledge is legitimised while indigenous and local knowledge and knowledge from lived experience are not valued without the accompaniment of graduate-level education. In the community setting, research populations are often not ‘the most marginalised’ as the research community does not have access to these populations as they do not represent them. Participant #17, a late-career man researcher, laments on the need to include indigenous and local perspectives in research:

Economic perspectives, social discrimination, or [association with better-off community members], potentially inhibit your ability to collect information from the truly marginalized...And therefore your own teams have to represent that diversity for you to be able to access.

The lack of culturally competent and equitable evaluation metrics invalidates the experiences of the LMIC researchers, who may face greater barriers to achievement on metrics such as authorship, mastery of standard and academic English, graduate-level education and years of experience. Over-reliance on such metrics often leads to stagnating or negative career trajectories and personal outcomes regarding position, status or leadership.

From a donor perspective, there was an acknowledgement that language issues were a challenge, but often limited their focus to trying not to review proposals with consideration for use of ‘proper English’. Few noted efforts that would affect their creation or translation before being seen by reviewers or related to activities after grants were awarded. Similarly, alternative impact metrics were sometimes noted as desirable to funders,

but there have been challenges in identifying appropriate and accessible metrics to be used.

Othering speech, action and practices

Othering speech, action and practices refer to the intentional and unintentional discrimination of an individual based on one or more social categories or identities that an individual may hold. Researchers often recounted experiences of feeling othered by funders, their own or other research institutions, organisations involved in publishing and even the communities in which research takes place.

The power dynamics between funders and researchers often resulted in othering practices that impeded LMIC institutions and researchers’ sense of agency. LMIC researchers noted experiences where they were micro-managed by funders and lacked autonomy throughout the research process. Throughout the publication process, researchers faced many discriminatory practices. A concern frequently raised was the biased review process for journal publications, where researchers perceived that LMIC institutions without strong partnerships with HIC institutions were not given equal access to publishing opportunities and insider information.

One early-career man researcher reflected on an experience that demonstrated publications preferred HIC credentials and scholars to their LMIC counterparts. The researcher noted that he worked at an HIC institution but serves as a guest lecturer at an LMIC institution when visiting home. He had worked with a student with interesting research questions, and they submitted a paper to a journal with their affiliation being the LMIC institution and it was rejected. Participant #5, an early-career man researcher, recounted:

We wrote it back with my affiliations as [HIC University] and putting me as the first author in the same journal, it was accepted.

Beyond othering practices by those within the sector, communities representing society as a whole also speak and act in ways that are discriminatory to researchers. Reported discrimination in the community was largely gender-based, however, some reported instances of racial and colour bias were reported. Participant #17, a late-career man researcher, noted that his team’s work takes place in a ‘fiercely patriarchal society’ where women researchers do not have the same access to information and resources as their male peers.

Participant #5, an early-career man researcher, recounted discrimination based on skin colour when their research team entered communities. He stated the way the team was able to collect the data eventually was by “deploy[ing] other people [from the area] with the electronic survey tools, so they can just be the ones that [research participants] are looking at.”

Funders infrequently mentioned this kind of interpersonal or interorganisational discrimination on their part as a topic of which they were aware or acting to address,

though some initiatives underway were noted in specific journals. More general societal discrimination was also infrequently mentioned, and though funders understandably viewed their ability to affect larger cultural values as limited, few microlevel solutions were brought up.

Context-specific discrimination

Context-specific discrimination refers to the issues of tribal discrimination, caste-based discrimination and other forms of discrimination characteristic to specific communities where research is taking place. There is significant convergence between these and other types of discrimination previously noted. Participant #17, a late-career man researcher, reflected on the interlocking oppressions that affect the research process:

When we look at the marginalized, we can go by traditional criteria, which in [this LMIC's] context families will consider either caste, or scheduled tribe, or those considered below the poverty line. But the reality is that discrimination and vulnerability in terms of poverty can transcend castes and economic statuses - a good example of it is women-headed households. Women in our zones will not necessarily fall into the scheduled caste or tribe. And yet can be extremely marginalized. Therefore, as researchers or development practitioners, you need to be open to the fact that discrimination takes multiple forms or marginalization can take multiple forms.

Funders rarely addressed discrimination at such context-specific levels, though some working in more limited geographies did bring up the issue, especially noting the non-homogeneity of LMICs and the idea that researchers from local institutions may be viewed as outsiders or foreigners to other locations within the same country.

DISCUSSION

This study sought to highlight the experiences of LMIC-origin researchers as a basis for establishing more equitable approaches to research and the generation of knowledge around WASH as a subsector of global health by better understanding the different modes of discrimination or injustices. The use of discrimination as a measure of inequity faced by LMIC researchers is contextualised with an awareness of the systemic oppression of racialised and gendered people as well as the colonial roots of systems of power that govern today's world.²⁵ The process of achieving equity, decolonisation and/or justice is reparative. From a sectoral perspective, there is an added value in achieving more accurate research leading to better health outcomes as well as more effective global knowledge and skill exchange.²⁵

The structure of the WASH sector, including the establishment of global targets primarily focused on minimum standards, and international collaborations between HIC and LMIC institutions and researchers all lend themselves to power disparities at the personal and

interorganisational levels. This is largely due to the deeply enmeshed history of global health, international development, humanitarian aid and academia in the context of colonial and imperial domination. The modern WASH sector is therefore situated at the convergence of multiple violent systems. Universities and research institutions also serve as the birthplace of epistemic violence in the context of colonialism. The physical, social and psychic violence of colonisation that forms the modern university as the sole credible producer and regulator of knowledge erases both the indigenous and local knowledges of colonised people and their validity.²⁶

The formation of international organisations is aligned with the decolonisation period of the 1940s–1960s when former colonies gained independence. While international organisations drive much of the international development initiatives, they have been critiqued as 'agents of former imperialist countries'²⁷ and actors functioning to foster and uphold neocolonialism.²⁸ Focusing on the impact of imperialism on global public health, Brown and Bell note that 'the [WHO's global strategy] represents merely an imperial approach to public health that attempts to integrate periphery countries into a largely western vision of global health governance'.¹ Humanitarian aid which has increasingly funded many global health initiatives has been described as an '[instrument] to serve the continuation of centuries of colonialism, warmongering, and economic exploitation.'²⁹ Global health philanthropy, though the actors are non-governmental, often also bolsters the hold of Western imperialism in the Global South.¹⁰

The current power differentials in the WASH landscape encourage inequitable research partnerships, conflicting research priorities and disparities in funding, authorship and recognition.^{18 30} The absence of LMIC representation within funding organisations and review committees perpetuates inequality within the sector. Incompatibilities across different levels of the research ecosystem result in inequity, but a lack of cognizance and prioritisation by powerful actors allows incompatibilities to persist. Internalised pressures encountered by LMIC researchers, lack of informal networks and discriminatory metrics hinder progression towards more just frameworks and practices in WASH research. While there is growing awareness of the presence of these issues in the WASH space, there is also complicity and inertia where structural violence and systems of injustice are concerned leading to a lack of solutions and actions to remedy the disproportionate discrimination faced by LMIC researchers throughout the research process and their careers.

Limitations

Although participants were diverse in terms of country of origin, there is no claim of representativeness considering the wide range of settings where WASH research is conducted. This limitation is attributed to both the size of the study and the method of recruitment via existing relationships and referrals. Additionally, the selection of



researchers active in the field does not capture the experiences of people who were not able to enter or continue in the field.

Many LMIC researchers interviewed noted that despite feeling frustrated by particular experiences, they did not realise the discriminatory nature of the incidents until further reflection, often when moving to another context such as working in an HIC. There was also hesitancy in labelling a policy or action discriminatory. Experiences are inevitably biased by the individual’s perspective which makes it challenging to objectively quantify discrimination and the outcomes. Finally, although representation based on national origin, gender and career stage was ensured, other significant categories of marginalisation such as sexuality and disability were challenging to observe without participants potentially risking job security, criminalisation and further discrimination.

From the margins to centre: imagining equitable WASH research

The WASH sector provides services to vulnerable communities primarily in the Global South. Research equity begins with the acknowledgement of systems of inequalities by all actors, specifically LMIC and HIC research institutions, funders, governments, multilateral organisations and scientific journals. The WASH sector speaks extensively of the inequities in access to WASH infrastructure and knowledge and the human right of access to clean drinking water and adequate sanitation. Several individuals have also penned articles both explaining the state of the WASH sector and calling for action to begin a decolonisation process, for example, see an article by Luseka.¹⁴ However, peer-reviewed literature on decolonising WASH research and larger knowledge generation practices is sparse. We must, therefore, draw on generations of scholars within the areas of postcolonial, decolonial, queer and ethnic studies as well as black and global feminist and liberation movements whose strategies and frameworks of justice and decolonisation can be used as a basis for improving equity in the context of WASH.

We have organised recommendations generated by this process at four levels based on the social-ecological model of behaviour including interpersonal, organisational, community/systemic and global/societal issues visually presented in table 3.³¹ This model was used to frame recommendations and highlight the different

actors needed to achieve equity from an individual to organisational to sectoral and then finally on a societal scale. Some issues at the interpersonal or organisational levels could be resolved by unilateral action, but many structural changes require collective action.

Based on this study’s findings and a review of global health literature, LMIC authorship is determined as a critical part of a more equitable research process and more accurate research findings. Authorship and other leadership opportunities for LMIC researchers allow access to more options for career advancement and agency in the research process.³² However, ‘approximately half the indexed publications on [community health] programmes are first authored by LMIC authors... The relative absence of LMIC lead and last authors in multi-country studies suggests an implicit international hierarchy in the field’.¹⁹ Inequitable authorship and research leadership experienced by LMIC researchers cannot be addressed without the disruption of the current status quo of neo-coloniality in WASH research. ‘Authorship per se is not the fundamental issue; undoing what those imbalances represent—a continuity of the colonial project in global health—is often the issue’.³³

At an organisational and community level, the practice of HIC researchers being automatically awarded prime authorship and leadership roles must be ended. Additionally, it must be recognised that excuses of LMIC researchers lacking research and academic writing capacity for successful projects only further strengthen colonialist and imperialist paradigms, as research methods and writing skills can be taught, while context-specific knowledge which local experts gained from lived experiences cannot be taught. As HIC researchers benefit from the power imbalance that has allowed the practice of excluding LMIC researchers from leadership and authorship roles, there is also the interpersonal responsibility of HIC researchers to acknowledge these unfair practices and advocate for LMIC researchers as project leads and first authors.

The results also found that epistemic violence is prevalent in the WASH research arena, as there are common assumptions of LMIC researchers’ competence based on nationality, command of the English language and other Western metrics as well as a disregard for community member input in the research process. This finding agrees with the literature that states ‘members of the global health community often witness a cycle in which researchers assume that locals in marginalised areas and members of marginalised groups do not have the capacity to contribute to research, and thereby bypass such people’s participation’.³⁴ The WASH sector must ask whether WASH is currently a space where LMIC researchers are empowered to share histories, context and non-Western ways of knowing to produce academic and community knowledge and then realign to realise this vision in the future. The epistemic injustice of discrediting researchers based on their national origin, ethnicity and higher education status, as well as furthering the

Table 3 Adapted version of the social-ecological model

Level	Description
Interpersonal	Between researchers and other individuals
Organisational	Within one organisation
Community/systemic	Between organisations within the sector
Global/societal	Social and cultural norms and policies larger than the sector

hegemony and colonial legacy of English as the global language, must be addressed. The maintenance of the culture of domination and hierarchy rooted in colonialism cannot materialise in just research practices. Rather than placing the burden on LMIC researchers to assimilate into unjust systems, we propose the following as the first steps in addressing the epistemic violence faced by LMIC researchers.

At the community and societal level, meaning within and beyond the WASH sector, funding agencies and journals must develop application requirements and standards that are not antagonistic to LMIC researchers, but culturally competent. Requirements for partnerships with HIC countries must go. Biases based on languages, geographies and educational attainment levels must be addressed, and context-specific safeguards must be put in place to protect LMIC researchers. Lived experiences and local and indigenous knowledge must be valued as valid sources of knowledge that inform research. Community-engaged and community-led research along with community-centric dissemination and evaluation practices are further recommendations for a more equitable research future. On the organisational front, there must also be shifts in cultures to prevent discrimination based on languages, geographies and educational attainment levels as well as advocacy and organising for the sector and societal changes to dismantle systems. Again, on an interpersonal level, everyone engaged in the WASH sector on an individual level must analyse their positionality and relationship to power and dominant cultures to enact changes in their behaviour such as unlearning assumptions and stereotypes of competence based on the colonial episteme.

Based on the findings of discriminatory funding and publishing practices that emphasise collaboration with HIC institutions and skew funding allocations between HIC institutions and LMIC ones, there is a need to further promote the development of research capacity in LMICs. Although funding calls that recommend or require collaboration with an HIC institution may intend to nurture international knowledge exchange, they may do more harm than good by inhibiting LMIC researcher career advancement and autonomy. Additionally, if not adequately resourced and planned, capacity building cannot be effective. Direct and indirect research funding is vital for increased justice in WASH research.

Global health and development have been charged with neocolonialism in thousands of scholarly articles over the years, including Beran *et al* who state that “despite the scale of capital inflows, huge gaps in infrastructure, management systems, and human capital remain for health systems, government and governance structures, and research institutes in LMICs.”³⁵ While these neocolonial practices in global health have contributed largely to the growth of the field, this growth does not result in proportional advancement in the LMIC countries, in target communities or LMIC researcher populations. New approaches to conducting and funding research

and building research capacity must be implemented to ensure that there is equity within the WASH ecosystem. At the organisational and community/sectoral level, funders and research institutions must rethink current processes that result in resources being routed through HIC institutions and trickling down to LMIC institutions and communities. While there are non-sectoral barriers that contribute to current practices, justice is not achieved by adhering to the status quo that is deeply informed by colonial world-making.³⁶

In global health, health equity and justice are frequently invoked and are representative of the work that the sector values and wishes to embody. With this consideration, funding agencies and donors must reconsider how current practices contribute to marginalisation. Global health actors cannot achieve equity without resisting legislations and regulations that contribute to inequity in the field. More explicitly, while it may be easier to work with an HIC institution due to symmetry in financial systems between funders and these institutions, the effort to ensure that LMIC institutions are not penalised by their LMIC status is the difference between maintaining thinly veiled discriminatory practices and a more just research future. While partnerships between LMIC and HIC institutions will continue, funding agencies could set more equitable standards for budget allocation and pay equity between LMIC and HIC researchers. Funding should be specifically allocated for capacity building to continue to sharpen the research skills of LMIC researchers and practitioners and for dissemination (publication fees, conference registration and travel). At an interpersonal and organisational level, there must also be resistance to the status quo to demand funders, conference organisers and publications to make the necessary changes to redevelop a WASH sector where the disenfranchisement of LMIC researchers and communities is minimized.

LMIC communities, researchers and institutions often experience being on the margins in WASH research. From interviews, it is evident that researchers with more than one non-dominant identity face multiple forms of discrimination in the research process, therefore this must be considered in addressing inequities in WASH. Women researchers, while especially encouraged to apply to funding calls and career opportunities, expressed still not feeling welcomed or included in their work environments due to patriarchal conditions. Especially encouraging women, minorities and people from marginalised backgrounds is a band-aid as there often is not adequate resource and infrastructural change for true inclusion. Early-career LMIC researchers need to overcome countless hurdles and bear the burden of proving themselves to a point of burnout to get opportunities that are often given to HIC researchers by virtue of being from an HIC or HIC institution, even over late-career LMIC researchers. Community members are only seen as research subjects, and often members of certain communities have societal roadblocks that prevent them from being researchers or WASH practitioners, leading

to doubled disenfranchisement. While the language of serving the most marginalised is often used in DEI work, this is seldom the reality.

Hooks, a prominent Black feminist scholar, stated that “to be in the margin is to be part of the whole but outside the main body.”³⁷ Decolonisation and improving research equity must centre LMIC stakeholders, bringing them to the forefront to tell their own stories, set research agendas and gain credit when due. Centring in this context requires the ‘yielding of power’ and resources to stakeholders who are of less privileged identities due to social and geopolitical factors.² Collective action to support equitable authorship, research funding and capacity-building programmes can begin to distribute the power and bring justice to those too long marginalised. The onus of building equity is on sector leaders, leaders of WASH-focused organisations, funders, conference organisers and publication boards who must reshape their operations to subvert cultures of domination and inequitable resource distribution.

CONCLUSION

As the question of decolonisation and equity in WASH research and practice continues to be raised, all actors involved in the research process must take action toward meaningful solutions. This study was intended to delve into the specific case of WASH research equity as a microcosm of global health and provide a basis for tangible investment in a more equitable WASH research landscape. LMIC researchers’ and funders’ experiences indicate the extensiveness of unjust practices within the WASH research ecosystem. Acknowledging the experiences of LMIC actors is an important first step to achieving equity. However, the roles of individuals and organisations who build and maintain oppressive systems within global health, and by extension WASH, must be examined and then dismantled. Without an intentional yielding of power, there can be no justice in WASH research and practice.

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Questionnaire: LMIC Researchers

Introduction

The purpose of this research study is to understand injustice and inequity faced by researchers in the Water, Sanitation, and Hygiene sector. We will explore this through four stages of research: Acquiring funding, executing projects, disseminating findings, and general experiences with funders. These findings will be used to begin a conversation including funders and researchers about ways to improve equity in research specifically in the WASH sector, but also with implications for other areas of global health.

In this questionnaire, I want to ask you about times that you have experienced unjust discrimination due to policies and practices designed by those in power to maintain that power. In the case of racism, we prefer to follow Ibram X. Kendi's definitions of terms surrounding racism. For example:

Racial inequity: when two or more racial groups are not standing on approximately equal footing

Racist policy: any measure that produces or sustains racial inequity between racial groups

Racism: a marriage of racist policies and racist ideas that produces and normalizes racial inequities

Racial discrimination: treating, considering, or making a distinction in favor or against an individual based on that person's race

Thus, by Kendi's account, racial discrimination is not inherently racist.

However, given that we are discussing discrimination not just on the basis of race, but also on the basis of sex, national origin, and a variety of other factors in this study, we will use the generic term "**discrimination**" to mean the **unjust making of a distinction on the basis of some attribute about that person by a person or policy that reinforces inequities.**

1. Can you tell us your name and current position as well as a bit about work history, especially as it relates to WASH research?
2. In your experience, what are the major categories used to describe people by which you've observed or experienced discrimination —for example, have you experienced or observed discrimination based on race/ethnicity, gender, sexual orientation, socioeconomic status, national origin, or other categories?

Funding acquisition

First, I'd like to talk about funding acquisition. By that, I mean the process of writing research grants, forming consortia, and determining roles and budgets for members of those consortia.

3. What is your experience with acquiring research funding?
(Prompt: *How long have you been working in research?*
About how many proposals have you submitted/had funded?
What is the approximate value of the total awards you've received?
Have you led or been a sub-awardee on research projects that have been led by an organization from a HIC? An LMIC?)

4. What are the biggest challenges you have faced in acquiring funding? How have you faced discrimination in doing so? (Please share ways that you have experienced or have direct knowledge of any such experiences)
(Prompt: *Are there any overt ways that you've experienced discrimination?*
Are there ways you experienced discrimination that were more subtle?
What assumptions have been made by HIC institutions about roles and budgets that were inappropriate?))

Project execution

Now, I'd like to talk about project execution. By that, I mean the process of designing the research, obtaining ethical approval, conducting the field work, and collecting and analyzing the data.

5. What is your experience with project execution?
(Prompts: *What kinds of research projects have you mainly been involved with?*
What roles have you played on projects?)
6. What are the biggest challenges you have faced in project execution? How have you faced discrimination in doing so? (Please share ways that you have experienced or have direct knowledge of any such experiences)
(Prompt: *What assumptions/decisions have been made about research design or ethics that were discriminatory?*
Are there any overt ways that you've experienced discrimination?
Are there ways you experienced discrimination that were more subtle?))

Dissemination

Now, I'd like to talk about dissemination. By that, I mean the process of interpreting, publishing, and presenting research.

7. What is your experience with dissemination?
(Prompts: *Have you published peer-reviewed articles?*
Have you presented at conferences?
What other roles have you played in dissemination?)
8. What are the biggest challenges you have faced in dissemination? How have you faced discrimination in doing so? (Please share ways that you have experienced or have direct knowledge of any such experiences)
(Prompt: *What assumptions/decisions have been made about roles for interpretation, writing, or making presentations that were discriminatory?*
Are there any overt ways that you've experienced discrimination?
Are there ways you experienced discrimination that were more subtle?))

Personal experiences

Finally, I want to ask more generally about your personal experiences with discrimination. Please only share what you are comfortable sharing, and you do not need to describe these experiences as your own

(feel free to talk about what you know has happened to others, as we will not discriminate between the two in analysis and interpretation).

9. How have you experienced discrimination in recognition, special opportunities, or career advancement? This may be from donors, other researchers, or other stakeholders.
10. What direct, overt experiences of discrimination have you had with individuals while being involved with research?

Conclusion

We will be compiling the experiences of our interviewees and will discuss them in a group of interviewees as well as donors, so know that we are not putting the onus on you to solve all the problems that we've explored.

However, we'd like to hear a bit about any potential solutions that you think should be explored.

11. Do you have any experiences with particular donors/grants/programs that specifically sought to reduce some of the discrimination you identified above? What were they and did you find them helpful? What could have been done differently to improve them?
12. Is there anything else you'd like to share on this topic that you haven't been able to share so far?

Thank you for your participation in this study.

Draft questionnaire: Funders

Introduction

The purpose of this research study is to understand injustice and inequity faced by researchers in the Water, Sanitation, and Hygiene sector. We will explore this through four stages of research: Acquiring funding, executing projects, disseminating findings, and general experiences with funders. These findings will be used to begin a conversation including funders and researchers about ways to improve equity in research specifically in the WASH sector, but also with implications for other areas of global health.

In this questionnaire, I want to ask you about times that you have experienced unjust discrimination due to policies and practices designed by those in power to maintain that power. In the case of racism, we prefer to follow Ibram X. Kendi's definitions of terms surrounding racism. For example:

Racial inequity: when two or more racial groups are not standing on approximately equal footing

Racist policy: any measure that produces or sustains racial inequity between racial groups

Racism: a marriage of racist policies and racist ideas that produces and normalizes racial inequities

Racial discrimination: treating, considering, or making a distinction in favor or against an individual based on that person's race

Thus, by Kendi's account, racial discrimination is not inherently racist.

However, given that we are discussing discrimination not just on the basis of race, but also on the basis of sex, national origin, and a variety of other factors in this study, we will use the generic term **"discrimination"** to mean the **unjust making of a distinction on the basis of some attribute about that person by a person or policy that reinforces inequities.**

1. Can you tell us your name and current position as well as a bit about work history, especially as it relates to research?
2. What is the role of your organization in funding, managing, and disseminating WASH research?
3. In your experience, what are the major categories used to describe people by which you've observed or experienced discrimination —for example, have you experienced or observed discrimination based on race/ethnicity, gender, sexual orientation, socioeconomic status, national origin, or other categories?

Perceptions of Discrimination

4. What (in your opinion) are the biggest challenges facing LMIC researchers? How are they experiencing discrimination in each of the following categories?
 - a. Funding acquisition
 - b. Project execution
 - c. Dissemination
 - d. Personal relationships

Organizational Experience

5. What are some discriminatory practices that you have identified within your organization?
6. What are the processes that you have put in place within your organization to improve equity in research?
7. What are some of the challenges you've faced in doing so?
8. In what ways do you feel that these processes are successful?

Potential Solutions

9. What are some of the changes that you'd like to see? What kind of organizational changes would you have to make to see them? What are the biggest obstacles to doing so?
10. What steps are needed to catalyze change across the sector and beyond? Who should lead in initiating these changes? How should they be held accountable?

Questionnaire v1.1: Funders

Introduction

The purpose of this research study is to understand injustice and inequity faced by researchers in the Water, Sanitation, and Hygiene sector. We will explore this through four stages of research: Acquiring funding, executing projects, disseminating findings, and general experiences with funders. These findings will be used to begin a conversation including funders and researchers about ways to improve equity in research specifically in the WASH sector, but also with implications for other areas of global health.

In this questionnaire, I want to ask you about your perceptions of unjust discrimination faced by researchers from low- and middle-income countries. We will use the generic term “**discrimination**” to mean the **unjust making of a distinction on the basis of some attribute about that person by a person or policy that reinforces inequities.**

1. Can you tell us your name and current position as well as a bit about work history, especially as it relates to WASH research?
2. What is the role of your organization in funding, managing, and disseminating WASH research?
3. In your experience, what are the major categories used to describe people by which you've observed or experienced discrimination —for example, have you experienced or observed discrimination based on race/ethnicity, gender, sexual orientation, socioeconomic status, national origin, age, disability, or other categories?

Perceptions of Discrimination

4. What (in your opinion) are the biggest challenges facing LMIC researchers? How are they experiencing discrimination in each of the following categories?
 - a. Funding acquisition (forming consortia, writing grants, allocating roles and budgets)
 - b. Project execution (ethical approvals, data collection, and analysis)
 - c. Dissemination (interpreting, publishing, and presenting results)
 - d. Personal advancement (opportunities for awards, recognition, and career advancement)

Organizational Experience

5. What are some policies and practices that you have identified within your organization that needed to be improved?
6. What are the processes that you have put in place within your organization to reduce discrimination and improve equity in research?
7. What are some of the challenges you've faced in doing so?
8. In what ways do you feel that these processes have been successful, or what will you do differently in the future?

Potential Solutions

9. What are some of the changes that you'd like to see? What kind of organizational changes would you have to make to see them? What are the biggest obstacles to doing so?
10. What steps are needed to catalyze change across the sector and beyond? Who should lead in initiating these changes? How should they be held accountable?

Reflexivity Statement

The research team is composed of four early-career women of color of LMIC origin or with ties to LMICs in the Caribbean, Southeast Asia, or Africa, and one late-career American man. All authors hold or are pursuing higher education degrees, and currently work or study in the United States, which may have resulted in elite capture or an imbalanced power dynamic in the context of this project. To better understand our position in the current WASH and global health landscape, and to contextualize the way our positionality — identities, experiences, and privileges — influence the conducting of this study, a few details on the background of each member of the research team is provided below.

Author Profiles

The first author (J-ML) is a Jamaican woman of Afro-Caribbean and Hakka Chinese heritage. She is a first-year doctoral student in Civil and Environmental Engineering with two (2) months of WASH field research experience and three (3) years of remote WASH project experience in Lesotho.

The second author (SB) is a young African-American woman of Guinean heritage. She was born in the Bronx in a low-income community and was raised in Conakry, Guinea. She is a first-generation student studying Computer Science. Her upbringing in Guinea has given her a firsthand understanding of the importance of WASH and fueled her interest in using technology as a way to transform global health.

The third author (KG) is a first-generation American. She is a Black woman and was raised in a low-income community. She has one (1) month of field experience collaborating with local health professionals and World Vision staff in rural Ghana on an independent research project examining gaps in women's mental health and the ways WASH is implicated in these gaps. Outside of the WASH sector, she has one (1) year of research on social justice practices and policy in the Netherlands and the United States to devise solutions for both countries.

The fourth author (JL) is a Malaysian woman of southeastern Chinese heritage. She is informed by her upbringing in a fast-growing LMIC with a parent who grew up in informal settlements, her middle-class educational background with attendance at HIC institutions, and firsthand experiences navigating the complex and relational nature of privilege (such as pursuing a career in a HIC with an LMIC passport). Over the past three (3) years, she has participated in WASH research and programming both remotely and in person, some of which have been HIC-led and others LMIC-led.

The fifth author (LN) identifies as a young Black woman who is an Afro-Caribbean third-generation descendant. She is a graduate of higher education with a background in Public Health, as well as working in the WASH sector, with experience conducting research in Philadelphia, PA, and Mafeteng, Lesotho pertaining to water access, safety, menstrual hygiene, and nutrition.

The senior author (JBT) is a caucasian American man with a Ph.D. in Behavioral Science and is an experienced WASH researcher.

At the beginning of the research study, J'Anna, Salamata, Leila, and Kaelah were all undergraduate students at Drexel University. J'Anna and Leila have since graduated. Justine held (and still holds) the position of WASH Fellow at World Vision and James held (and still holds) the position of WASH Research Lead.

Reflexivity Questions

This project was not a direct partnership between a HIC and LMIC, but rather a study involving LMIC researchers as participants. With this in mind, a reflexivity statement was drafted using some questions found in "Consensus statement on measures to promote equitable authorship in the publication of research from international partnerships" by B. Morton et. al.[1]

How have the positions of the authors influenced the work?

Although a majority of the authors are of minority backgrounds and have intersectional identities, we are associated with HIC institutions. Through education and professional endeavors, we have assimilated into the culture of HIC institutions which has influenced how we navigate the world and therefore the study design and approach of the research. Assumptions that the LMIC researchers interviewed had first-hand experiences with discrimination or had witnessed discrimination were made based on the idea that we ourselves have experienced or witnessed discrimination in a HIC. Additionally, the comfortability between the LMIC interviewees and HIC interviewers may have impacted the type of discriminatory experiences and content of these experiences that they were willing to share. Our definitions and considerations of what is discriminatory or neo-colonialist may differ culturally and in practice from that of the LMIC researchers that we interviewed, influencing our understanding of the data

How does the leadership of this paper reflect the concepts discussed?

Despite the presence of an experienced White man WASH researcher (JBT), all of the women authors (J-ML, SB, KG, JL, LN) led the stages of the research process and consulted the experienced researcher for guidance. The women researchers were recognized first for their roles in the research regardless of their career level or seniority within the WASH sector.

How were local researchers involved in the study design?

Based on their desired level of involvement, local researchers were involved in consultation at the conception phase of this study, as well as providing feedback on the interview guide. While two authors including the first author are citizens of LMICs or LMIC-originating, there is an overrepresentation of HIC-based researchers due to funding limitations and a fear of repercussions among some of the LMIC-based researchers and practitioners that were contacted.

How are the research staff who conducted data collection acknowledged?

All staff who conducted data collection were included as authors.

How have early career researchers across the partnership been included within the authorship team?

Early career researchers (J-ML, SB, KG, JL, LN) from both LMICs and HICs, were included in the authorship team. J-ML led the authorship of the paper, SB and LN developed the IRB proposal, KG and JL led the transcription and coding of the interviews, KG and J-ML led the initial literature review, and all authors participated in the interviews and presentation of the research.

How has gender balance been addressed within the authorship?

The authors include five women (J-ML, SB, KG, JL, LN) and one man (JBT). This can be attributed to the fact that this research was a partnership between World Vision and the Drexel University Dornsife Global Development Scholars Program [DGDS]. The DGDS program typically has more women applicants which have resulted in a gender imbalance favoring women researchers in this study as four authors were from this program.

What safeguarding procedures were used to protect local study participants?

To protect the identities of participants, the data were cleaned to remove all identifiers such as names and institutions. In disseminating the characteristics of participants, regions were used instead of countries to provide additional protection and that data was provided as an aggregated percentage. Participants are identified individually only by career status and gender.

Contradictions

Like much research that is produced considering questions of equity, discrimination, and justice, there are contradictions within this paper. For example, while we speak to epistemic violence in our analysis, we are also reinforcing the current episteme by producing this research as peer-reviewed 'proof' of discrimination within the WASH sector—although without this paper we know that LMIC researchers experience discrimination based on dialogue, lived experiences, and other ways of knowing. This project was carried out with the intention to raise awareness and evoke a sense of urgency to act in members of the WASH community as we have an understanding that under the current WASH paradigm, researched knowledge is taken more seriously.

Reference

[1] Morton B, Vercueil A, Masekela R, Heinz E, Reimer L, Saleh S, Kalinga C, Seekles M, Biccard B, Chakaya J, Abimbola S, Obasi A, Oriyo N. Consensus statement on measures to promote equitable authorship in the publication of research from international partnerships. *Anaesthesia*. 2022 Mar;77(3):264-276. doi: 10.1111/anae.15597. Epub 2021 Oct 14. PMID: 34647323; PMCID: PMC9293237.

[Name of WASH researcher],

I'm writing to see if you'd be willing to participate in a project on Decolonizing WASH Research. All I need at this time is a response to 3 brief questions below about if/how you'd like to participate, with estimated time commitments (highlighted below). Note that honorariums will be provided for participation to avoid taking up your already stretched time for little direct benefit!

The plan for the project is to:

1. Interview WASH researchers in LMICs to understand the challenges they face due to colonialism, racism, sexism, etc.
2. Interview key individuals at WASH research funders to understand their perceptions of the challenges LMIC researchers face, then to understand organizational initiatives underway and barriers they've faced
3. Present findings to both groups together to allow for a set of principles or a joint declaration or something else TBD based on what the group determines would be most effective
4. Proceed with future work to analyze with more detailed qualitative studies and/or more representative quantitative studies to continue to build the evidence base to understand the situation, determine which steps will be most effective in addressing these challenges, and advocate for taking those steps.

In general, the idea is not to shame any specific donors, but rather to gather those who are starting to push for Decolonizing WASH research to understand the situation better and to organize to advocate for change. Most aspects will be intellectually led by LMIC researchers, with HIC researchers/donors/others playing a role where helpful to provide resources (not taxing the already limited time of LMIC researchers) and to provide anonymity where needed by LMIC researchers.

I've attached a brief describing the initiative, as well as the draft questionnaire so you have some idea of the current plan.

The following are some key ways you can be involved (suggestions/feedback welcomed):

1. **Participate in an interview and/or refer others to participate (Estimated time requirement: 1 hour)**

We are currently planning to interview about 20 people to start- ideally, a male and female early career researcher (*defined as: researchers who have not received a PhD more than five years ago*) and a Senior PI (*defined as: researchers who have received a PhD at least 10 years ago, managing at least three other research staff members, including students, and are leading at least one research grant*). If you would be willing to introduce me to others involved in WASH research (from social scientists to microbiologists to engineers and everything else you can imagine), especially meeting the three categories of sex/seniority above outside the one you fit into, that would be very helpful. We're not looking for any kind of systematic sampling- at this

point, just trying to get a range of viewpoints as a starting point for future work. We will also be interviewing donors in parallel.

We have a team of RAs, all women of color, who will be conducting interviews from Wednesday, Feb 24th to Friday, March 5th. I have attached the interview guide, which is a semi-structured way of exploring racism, colonialism, and discrimination in WASH research—but the main point is to understand experiences and perceptions from LMIC researchers, early career and senior and male and female.

If you are willing to participate in this aspect, please reply with at least 3 1-hour slots that you are available from Feb 24th-26th or March 1st-5th, ideally during your workday and not too early US Eastern time (where the RAs are based), but for those with time zones in Asia or other more extreme time differences, we will be as flexible as possible to accommodate your schedule.

2. **Participate in a panel discussion at the Colorado WASH Symposium (Estimated time requirement: 3 hours)**

We have a 45-minute slot to present at the Colorado WASH Symposium March 11th or 12th (TBD). We are looking for any interested to share their experiences, live or pre-recorded and/or answer questions from the audience. This represents the first chance to take some of the ideas emerging from this research public.

3. **Participate in consensus-building meetings and/or publications (either substantially involved down to just being copied on draft materials for any feedback you desire to give) (Time requirement: 3-10 hours)**

While it's unclear exactly what form this will take, mostly because we want even the format of these discussions to be driven by LMIC researchers, there will certainly be some opportunity to be involved further to the degree you're interested.

So, could you let me know if you're interested in:

1. **Participating in interviews and/or referring others (please provide some times you are available from Feb 24th to Mar 5th and/or names and emails of others):**
2. **Participating in a panel discussion (time will be limited, so no pressure, but I'd love to know if you're interested):**
3. **Participating in further activities of the project (and some idea of the degree to which you'd like to be interested):**

Thanks,

[Name of research team member]