


RESEARCH

Open Access



Exploring HIV/AIDS investigator perceptions of equity within research partnerships between low-and middle-income and high-income countries: a pilot survey

Chelsea E. Modlin^{1,2*} , Edward Nelson Kankaka^{1,3}, Larry W. Chang^{1,4}, Nelson K. Sewankambo^{3,5} and Joseph Ali^{2,4*}

Abstract

Background Recommendations for research partnerships between low- and middle-income countries (LMICs) and high-income countries (HICs) stress the importance of equity within the collaboration. However, there is limited knowledge of the practical challenges and successes involved in establishing equitable research practices. This study describes the results of a pilot survey assessing key issues on LMIC/HIC partnership equity within HIV/AIDS research collaborations and compares perspectives of these issues between LMIC- and HIC-based investigators.

Methods Survey participants were selected using clustered, random sampling and snowball sampling. Responses were compared between LMIC and HIC respondents using standard descriptive statistics. Qualitative respondent feedback was analyzed using a combination of exploratory and confirmatory thematic analysis.

Results The majority of categories within four themes (research interests and resources; leadership, trust, and communication; cultural and ethical competence; representation and benefits) demonstrated relative consensus between LMIC and HIC respondents except for 'lack of trust within the partnership' which was rated as a more pronounced challenge by LMIC respondents. However, subcategories within some of the themes had significant differences between respondent groups including: equitable setting of the research agenda, compromise within a partnership, the role of regulatory bodies in monitoring partnerships for equity, and post-study access to research technology.

Conclusions These efforts serve as a proof-of-concept survey characterizing contemporary issues around international research partnership equity. The frequency and severity of specific equity issues can be assessed, highlighting similarities versus differences in experiences between LMIC and HIC partners as potential targets for further discussion and evaluation.

Keywords Research equity evaluation, International research partnerships, Global health, HIV/AIDS

*Correspondence:

Chelsea E. Modlin
cmodlin2@jhmi.edu
Joseph Ali
jali@jhu.edu

Full list of author information is available at the end of the article



© The Author(s) 2023. **Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>. The Creative Commons Public Domain Dedication waiver (<http://creativecommons.org/publicdomain/zero/1.0/>) applies to the data made available in this article, unless otherwise stated in a credit line to the data.

Background

Collaborative partnerships between researchers in low- and middle-income countries (LMICs)¹ and those in high-income countries (HICs) are a common model for global health research conducted in LMICs [1, 2]. International research can take many forms, including projects isolated to one study or a brief period of time. While attention to equity in these shorter-term arrangements is still necessary, the term ‘partnership’ is referred here to mean longitudinal collaborative efforts between international research teams that share mutual interests or scientific objectives. These partnerships often function as pragmatic solutions to address prominent health research needs in LMICs, which face underlying structural and economic challenges that can otherwise slow health research progress. By combining expertise and resources between LMIC and HIC partners, these partnerships could potentially produce valid, locally-relevant research that contributes to scientific knowledge production, translates to important health outcomes, and strengthens efforts to build and sustain local research infrastructure.

However, international research partnerships between LMICs and HICs are not without significant problems given the contexts of power imbalances and resource inequities in global health. These include, but are not limited to, differences in research experience, scientific leadership, research topic interests, institutional support, financial transparency, material resources [3], representation in research outputs [4, 5], and post-study access to data and technology [6, 7]. Asymmetries between global health research partners are further complicated by the direct and indirect impact of residual colonial influences that, in many instances, permeate contemporary academic global health discourses and infrastructure [8, 9]. These complicated factors surrounding international research partnerships present risks to equitable partnership practice and outcomes, and make clear that further efforts are needed to identify and address partnership inequities. This includes developing an accurate account of successes as well as barriers that have inhibited both LMIC and HIC collaborators from advancing equity in their joint pursuits.

Equitable efforts and outcomes within research partnerships are prioritized as one of the United Nations’

Sustainable Development Goals [2] and are considered essential for the conduct of ethical partnership-based research in LMICs [10, 11] with a normative foundation based on theories of social and global justice [12]. While there are efforts to promote equitable practice within international research collaborations, notably the Research Fairness Initiative (RFI) developed by the Council on Health Research for Development [13], systematic efforts such as building relevant equity metrics and assessing partnership-specific interventions have been sparse. Within the academic literature, guidelines and recommendations are approaching consensus [14–16] on the principles and key determinates of what constitutes research partnership equity. However, formal assessments of pragmatic equity challenges have largely been restricted to commentaries, opinions, qualitative investigations [17], and discussions around bibliographic trends [4, 18–20]. More comprehensive understanding of how guidelines translate into practice and defining the role of partnership evaluation tools are needed to fully capture the scope of these issues and move the field forward.

Combined with the growing globalization of medical research, HIV/AIDS has prompted an extraordinary acceleration and evolution of paradigms within global public health and clinical research [21]. With its prominence as a major contributor to the global health landscape, research programs focusing on HIV/AIDS frequently suffer from the same complex structural imbalances that have been reported in global health research more generally [22]. In this report, we summarize efforts to develop and pilot a survey about research partnership equity among investigators who conduct HIV/AIDS research in LMICs. The design allows for a direct contrast of perspectives between LMIC- and HIC-based researchers and the identification of topics that share similar versus diverging opinions. Because of the diversity of interests, objectives, and processes that vary between partnerships, this survey also offers pragmatic prioritization of topics among the many equity-related considerations so that those most likely to benefit the specific needs of an individual partnership are highlighted. The main objective of the pilot was to obtain preliminary results to refine future content so that subsequent survey iterations are better able to describe and compare stakeholder-identified practices that exemplify or prevent the promotion and practice of equity within international research partnerships between LMICs and HICs. Using HIV/AIDS research as a case study, this survey is part of a larger research program that ultimately aims to develop and implement pragmatic equity-specific evaluation tools and metrics for global health research partnerships.

¹ The term ‘LMIC’ is used in reference to countries that fall under World Bank criteria for low- and -middle income countries as defined by gross national income per capita. This terminology is often used in the academic literature but is an imperfect descriptor that fails to capture important distinctions and variability between countries that make them independent world entities. By using this term, we find it prudent to be clear that the experiences of LMICs with HIV research and research partnerships are not monolithic.

Methods

Survey

The survey was developed through a targeted narrative review of the literature (for examples please see references [14, 23–25]) and recommendations for research partnership equity (for examples please see references [13, 26–28]). This review was conducted by author CEM using PubMed/MEDLINE, Scopus, and Google Scholar databases using keyword searches for ‘equity’ OR ‘fairness’ AND ‘international research partnerships’ OR ‘global research partnerships’ OR ‘transnational research partnerships’ OR ‘North–South partnerships.’ Bibliographies of reviewed papers were cross-referenced with the literature search findings and relevant articles were retrieved if not included in the original search. Equity-related categories were preliminarily extracted from research partnership equity frameworks to create a text-by-theme matrix where subsequent articles from the literature were reviewed for categories within the matrix and also underwent evaluation for novel categories. The matrix categories were iteratively revised and grouped in a constant comparative fashion. Categories and thematic groups were discussed throughout the review with authors ENK, LWC, and JA to minimize bias. From this analysis and the final thematic matrix four themes emerged: (1) Research interests, agenda, and resources (3 categories, 14 subcategories), (2) Leadership, trust and communication (5 categories, 16 subcategories), (3) Cultural competence and good research practice (3 categories, 17 subcategories), and (4) Research representation and benefits (5 categories, 23 subcategories). Questions were initially revised based on feedback from six key informants with expertise in international HIV/AIDS research ($n=3$), global health ethics ($n=2$), and qualitative and quantitative survey design ($n=1$) to generate the content and structure of the pilot survey.

The pilot survey was designed to first ask respondents to roughly estimate (“not at all”, “a little bit”, “a lot”, or “a great deal”) how much categories within each theme contributed to equity barriers or facilitators they had experienced or witnessed. To improve the efficiency and usability of the survey given a large number of themes/categories of interest, skip patterns were created that allowed for more specific questioning to only be applied for categories respondents selected as substantial barriers to equity promotion and practice. For example, when asked about how much ‘disproportionate financial and material resources between partners’ affected partnership equity, if a respondent selected ‘a great deal’ or ‘a lot’, they would be directed to a series of additional 5-point Likert-type questions (ranging from ‘strongly disagree’ to ‘strongly agree’) about specific concepts within the category of material and financial resources. If a respondent

answered ‘a little bit’ or ‘not at all’, they would be directed to the next theme. Space for open-ended feedback on survey items was provided within each page as well as summative feedback requested at the end of the survey. Data were collected using Qualtrics XM survey management software.

Participants

Pilot survey participants were selected using clustered, random sampling and snowball sampling of investigators with experience conducting HIV/AIDS-related research in LMIC settings. The investigator cohort based in the United States was identified by random sampling of faculty from two large academic institutions, Johns Hopkins University in Baltimore, Maryland, and Emory University in Atlanta, Georgia. HIV/AIDS investigators based in LMICs were identified using random sampling from the Johns Hopkins Center for HIV/AIDS Research (CFAR) email listserv. Because there was no specific singular outcome of interest and limited ability to estimate the total population size, the target enrollment of 22 respondents was calculated based on pilot study sample size estimation [28] assuming that if a problem exists with a 10% probability for a study participant, the problem will be identified with 90% confidence. Recruitment and survey completion took place between May 1, 2022, and August 15, 2022. After stratifying by LMIC versus HIC affiliations to ensure equal representation from both settings, in random order, each investigator was sent an email with an individualized link and request to participate until the minimum number of respondents was surpassed. Information about the study was provided on the first page of the survey and respondents were required to consent to participate prior to being directed to the survey content. Respondents who completed at least one question on the survey were provided with a \$20 USD electronic gift card. One survey reminder was sent 7–10 days after the initial invite. This study protocol was determined as exempt from review by the Johns Hopkins Medicine Institutional Review Board.

Analysis

Microsoft Excel was used for de-identified data compilation and basic descriptive statistics. Each response was converted to a quantitative value (not at all=1, a little bit=2, etc. for categories; strongly disagree=1, disagree=2, etc. for subcategories) to generate standard statistical values. Unequal variances t-test was used to compare means between LMIC and HIC respondents.

Responses to open-ended feedback questions were analyzed qualitatively using NVivo 1.0 (QRS International, released 2020). A combination of exploratory and confirmatory thematic analysis was used, the latter of

which used the pre-structured themes and categories as codes. Exploratory data analysis was used to identify new themes and generate categories and codes for constructive feedback. Thematic coding was done independently by two coders and discrepancies were resolved by consensus. The dataset supporting the conclusions of this article is included within the article and its additional files (Additional file 1).

Results

Participation and demographics

A flow sheet describing recruitment and participation can be seen in Additional file 2. There were completion rates of 18% ($n=14$) and 33% ($n=13$) for LMIC and HIC investigators, respectively. The median time it took participants to complete the survey was 16 min. As depicted in Additional file 3, there was relative diversity within both groups in terms of age, gender, career stage, and area of HIV/AIDS research. Most respondents from HICs identified as Principal Investigators and Co-Investigators, whereas investigators from LMICs were more varied in their professional roles.

Survey content

The majority of the four major themes and their respective categories (Fig. 1) demonstrated relative consensus between LMIC and HIC respondents except for a category within “leadership, trust and communication.” More specifically, ‘lack of trust within the partnership’ was rated as a more pronounced barrier to partnership equity by LMIC respondents than by HIC respondents. Of all categories, ‘disproportionate financial and material resources between partners’ was the highest-scoring equity barrier while ‘lack of collaborative leadership’ and ‘lack of transparency between partners’ were reported as less significant barriers.

Categories and subcategories within each theme are shown in Tables 1, 2, 3 and 4. Note that the category headings listed in Tables 1, 2, 3 and 4 are the same categories displayed in Fig. 1 and p -values reflect the differences depicted in Fig. 1. There were varying degrees of differences between the means of each group with some reaching statistical significance (p -value < 0.05) between the means of LMIC versus HIC respondents.

Respondents frequently used the open-ended questions embedded within each theme and category to elaborate on their answers to a particular category or sub-category or to make a more nuanced point. There were only two suggestions of content to potentially include in future iterations of the survey: (1) navigating political corruption external to the partnership and (2) personal accountability and integrity of investigators.

Survey revision

Exploratory thematic analysis of respondent feedback about the survey generated the following codes: specificity, clarification and definitions, and exploring relationships between themes and categories. Many respondents indicated that further elaboration on the specificity of the survey questions is needed, questioning if the prompts should be answered based on their own experiences versus general perceptions of these issues within the field as a whole. This is particularly relevant given the intention to develop this survey into a partnership-specific evaluation tool which speaks to the need for clarifying that responses should reflect personal experiences. Some respondents requested definitions of terms that were used. This was most often for a specific subcategory, for example, one respondent requested a definition for “research agenda,” and another for what was meant by “mutual responsibility.” One respondent requested clarification of what was meant by “financial resources” and suggested separating this into “institutional resources” and “grant funding.” Two respondents also questioned broader definitions for what was meant by the term “equity” and enquired if this is synonymous with equality. Several respondents suggested an additional survey component where they could rank the categories within a theme against one another in terms of importance or frequency.

Discussion

This pilot survey is a proof-of-concept attempt at describing and comparing perspectives on international research partnership equity among HIV/AIDS investigators from LMICs and HICs. Our findings demonstrate that a broad range of thematically-organized categories and subcategories can be used to analyze stakeholder opinions. Nevertheless, there are some limitations and lessons learned in the creation and applicability of this survey that will help inform future iterations.

The need for systematic evaluation of equity-related goals and outcomes within international research partnerships is evident. Guidelines for global health research partnerships in LMICs emphasize the need for equity between LMIC and HIC research partners [10, 15, 29]. Yet there is limited existing empirical research to substantiate criteria or identify meaningful outcome metrics for defining, evaluating, and monitoring research partnership equity. The RFI provides a subscription-based reporting platform for high-level systems like academic institutions and governments to reflect on their practices around partnership equity. This is then summarized in an open-ended, 45-item report. While comprehensive, the RFI report is focused on analyzing current program

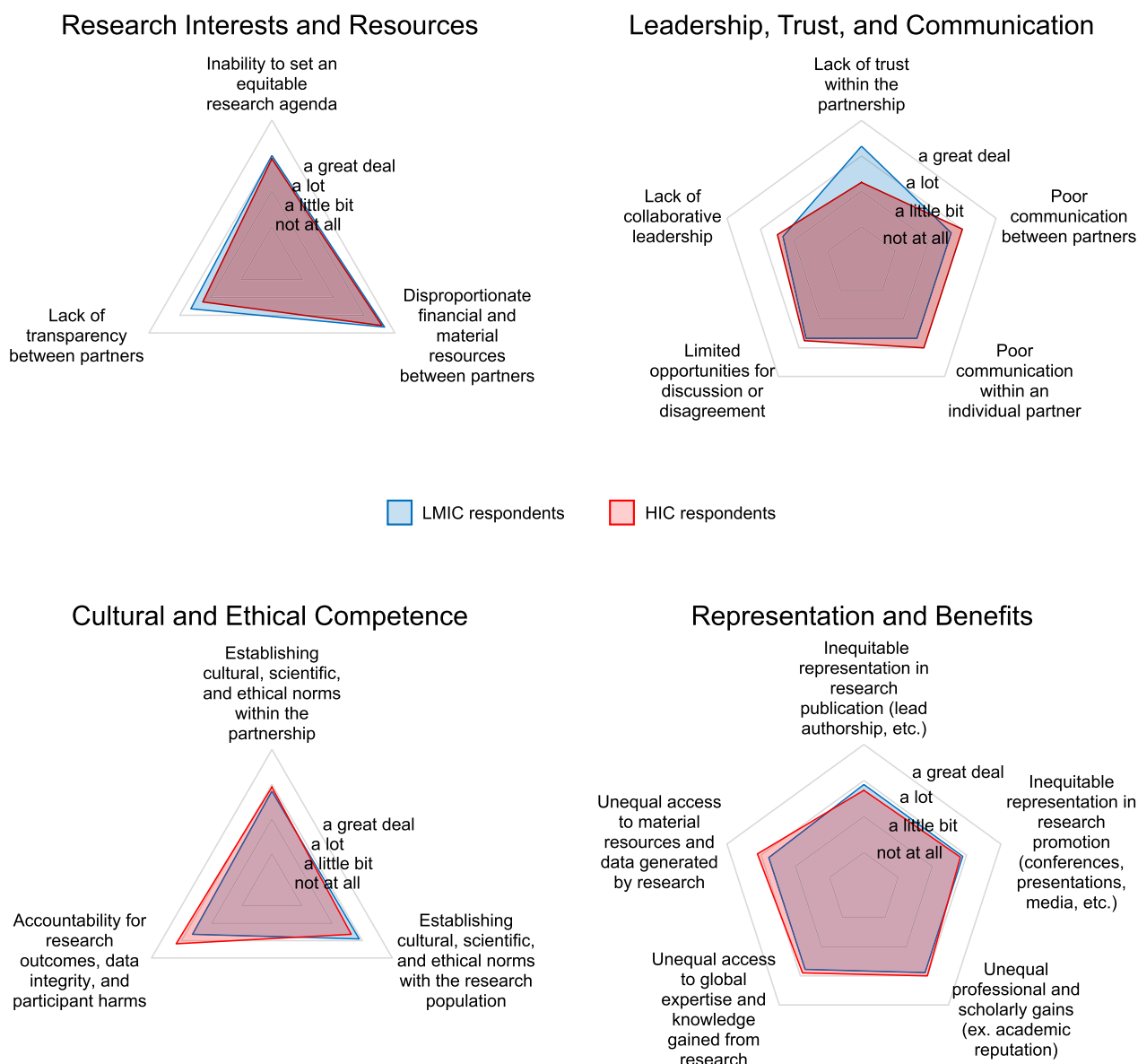


Fig. 1 Spider plot of comparative means between LMIC (blue) and HIC (red) survey respondents. Categories within each theme are measured as the degree to which each category contributes to a lack of equitable practice within international research partnerships

policies and establishing a commitment to equitable practice. In comparison, our survey, while still in its early stages, is more focused on a quantitative design that demonstrates surface-level comparisons between stakeholder-driven priorities and is designed to be used at the individual partnership level to highlight partnership-specific equity interests and practices. We hypothesize that responses demonstrating concordance between research partners may reflect larger systemic factors that influence equity that may not be in the direct control of a specific partnership. However, responses demonstrating discordance between partners highlight a potential target area

if a partnership is interested in promoting more equitable practices. For example, a positive response to ‘lack of access to financial resources for the LMIC partner’ may reference the fact that global health funding is frequently funneled through HIC institutions or partners which may lay outside the immediate field of influence for a specific partnership. However, this response could also reference how and where funding is allocated within the partnership which is potentially more feasible for evaluation, discussion, and change to promote more equitable financial distribution. This distinction requires a closer look at the details and nuances that would be best derived from



Table 1. Comparative means within subcategories of 'Research Interests and Resources'. Bar graph of the means between LMIC (blue) and HIC (red) survey respondents

Research Interests and Resources	Mean Respondent Scores					n	p-value	Respondent Comments
	HIC respondents	LMIC respondents	strongly disagree	disagree	neither agree/disagree	agree	strongly agree	
Inability to set an equitable research agenda						24	0.837	<p>"Research agenda conceptualized primarily by LMIC most times does not get prioritized by our collaborators making one to feel as if the background science is inferior." [LMIC respondent]</p> <p>"LMICs should develop independent research agendas, put them in the public domain, and HIC develop their funding agendas based on the LMIC priorities." [LMIC respondent]</p>
Research agendas are established in collaboration between HIC and LMIC partners						15	0.303	
Research agendas reflect LMIC interests, priorities or objectives						15	0.007	
Research agendas reflect HIC interests, priorities or objectives						15	1.000	
Research agendas are too heavily influenced by factors outside the collaborative team (funders, etc.)						15	0.343	
Disproportionate financial and material resources between partners						24	0.781	<p>"...Our international partners have committed significant material resources to build our capacity. I feel there is need to do more in terms of human capacity development." [LMIC respondent]</p> <p>"A challenge for fairness is access to resources. Most granting agencies are in HICs and favor applications for HIC investigators. One exception is specific calls...PEPFAR funding, etc. that are helpful funding, but can lead to LMIC researchers following money rather than individual research goals or local research priorities." [HIC respondent]</p>
Material resources are equally accessible to both HIC and LMIC partners						21	0.963	
Financial resources are equally accessible to both HIC and LMIC partners						21	0.738	
Material resource allocation disproportionately supports the interests of HIC partners						21	0.365	
Financial resource allocation disproportionately supports the interests of HIC partners						21	0.056	
There is investment of material resources towards LMIC research capacity and innovation						21	0.238	
There is investment of financial resources towards LMIC research capacity and innovation						20	0.372	
Lack of transparency between partners						24	0.314	<p>"The lack of transparency makes it difficult to appreciate the HIC position of equitable distribution of resources or opportunities." [LMIC respondent]</p> <p>"Proposals should be put in the public domain and debated/voted to increase transparency and prioritization." [LMIC respondent]</p>
Potential research impact is clearly outlined before research is initiated						10	0.225	
Intentions and motivations of the HIC partner are clear before research is initiated						10	0.348	
Intentions and motivations of the LMIC partner are clear before research is initiated						10	0.219	
A formal institutional agreement or memorandum of understanding between partners is essential						10	0.102	

in-depth qualitative follow-up and also trialing the survey within a specific partnership, both of which are planned next steps. Our survey does share some thematic overlap in content with the Equity Tool for Valuing Global Health Partnerships (EQT) [30]. However, the EQT places more emphasis on the role of an individual within a research partnership. Its goal is not to serve as a framework for partnership evaluation, but rather a tool to generate meaningful conversations around equity-related topics.

To date, partnership equity guidelines have not had a clear impact on systematically improving equity within research partnerships [13] although investigations into how to measure these outcomes are ongoing. Further evaluation into pragmatic metrics for equitable partnerships is needed. While still requiring revision and validation within international research partnerships, our survey offers a preliminary assessment tool to capture various issues a partnership may be experiencing and












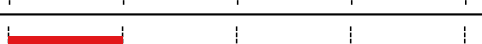




Table 2. Comparative means within subcategories of 'Leadership, Trust and Communication'. Bar graph of the means between LMIC (blue) and HIC (red) survey respondents

Leadership, Trust, and Communication	Mean Respondent Scores					n	p-value	Respondent Comments
	 HIC respondents	 LMIC respondents	strongly disagree	disagree	neither agree/disagree	agree	strongly agree	
Lack of trust within the partnership								"I'm sure that these are [trust] problems somewhere, but not everywhere and minimally in the projects I'm most involved with." [HIC respondent]
Poor communication between partners								
Regular communication and meetings between partners are required and built into the research plan								"We [have found] there is a tendency for [LMIC] research staff being reticent to raise concerns or perceived problems. This then feeds into unrecognized issues and top-down decision-making." [HIC respondent]
Openness and willingness to compromise are essential for research partnership sustainability								
Dedicated time to LMIC-led discussions, concerns, and considerations for building LMIC research capacity are factored into communications								
Poor communication within an individual partner								
Regular communication within each research partner is required and built into the research plan								
Limited opportunities for discussion or disagreement								
Specific forums are available for anyone in the research partnership to raise concerns or disagreements								
Concerns and disagreements are handled only by program leadership								"The plan on how to handle disputes is there prior to start-up but not followed post funding." [LMIC respondent]
Concerns and disagreements are handled predominantly by the HIC partner								
A plan for how to investigate research-related concerns is created and available before research is initiated								
Lack of collaborative leadership								
The most effective partnership leaders are those with the most research experience, regardless of HIC or LMIC affiliation								
HIC leaders are committed to building and maintaining relationships within the partnership								
LMIC leaders are committed to building and maintaining relationships within the partnership								"The research experience does not make one a good leader. The fundamentals of what makes a good leader do not necessarily make one a good researcher. Some HIC are totally committed to capacity building of LMIC as well as their own team." [LMIC respondent]
Responsibilities are equally distributed between co-leaders, at least one from each partner								
LMIC leadership positions are underutilized in partnerships								
HIC leaders are committed to building LMIC research capacity								
Qualifications for partnership leaders are the same regardless of HIC or LMIC affiliation								
Partnerships currently offer equal opportunities in building leadership skills for both HIC and LMIC partners								

areas where further discussion is needed, such as significant discrepancies between LMIC and HIC research collaborators. It also offers the option of providing a

mechanism of comparing pre- and post-responses for any intervention targeting the promotion of research partnership equity, such as the RFI report, or as a mechanism

Table 3. Comparative means within subcategories of ‘Cultural and Ethical Competence’. Bar graph of the means between LMIC (blue) and HIC (red) survey respondents

Cultural and Ethical Competence	Mean Respondent Scores					n	p-value	Respondent Comments
	<div><div></div> HIC respondents</div> <div><div></div> LMIC respondents</div>	strongly disagree	disagree	neither agree/disagree	agree			
Establishing cultural, scientific, and ethical norms within the partnership						23	0.818	"International researchers should be more alive to the culture and norms of their collaborators and open to seeing/utilizing their expertise instead of the approach where they come across as though all knowledge lies with researchers in [HIC]s." [LMIC respondent]
Research in LMICs are held to the same scientific standards as research in HICs						12	0.182	
Research in LMICs are held to the same ethical research standards as research in HICs						12	0.337	
Challenges faced by LMIC partners in meeting research timelines/goals are underacknowledged						12	0.332	
Establishing cultural, scientific, and ethical norms with the research population						23	0.578	"There is need to promote community engagement by independent community/activist groups to avoid coercion." [LMIC respondent]
HIC partners often do not appreciate the cultural context in which research in LMICs is conducted						10	0.587	
LMIC partners and investigators provide valuable insight into local cultural norms and practices						10	0.243	
LMIC partners and investigators provide valuable insight into local ethical norms and practices						10	0.206	
Cultural/ethical contexts are sought outside of partnership leadership including input from frontline community workers						10	0.403	
Cultural/ethical contexts are sought outside of partnership leadership including input from community leadership						10	1.000	
Cultural/ethical contexts are sought outside of partnership leadership including input from potential research participants						10	0.546	
Cultural/ethical contexts are sought outside of partnership leadership including input from policy-level stakeholders						10	0.610	
Accountability for research outcomes, data integrity, and participant harms						23	0.220	
Equity between partners is evaluated/monitored by IRB or other institutional oversight						16	0.013	
Equity between partners is evaluated/monitored by an independent third party						16	0.043	
Equity between partners is evaluated/monitored by the research funder						16	0.091	
Partners are mutually responsible for data collection and organization						15	0.370	
Partners are mutually responsible for data monitoring, analysis, and quality control						16	0.195	
Partners are mutually responsible for monitoring research for adverse events and unintentional harm to research participants						16	0.337	
Partners are mutually responsible for compensating the unintentional negative consequences of research						16	0.540	

of iterative evaluation of partnerships at specific intervals of time.

Respondents found the survey comprehensive with sparse feedback that the topics and terminology within the survey were unknown or unfamiliar, such as equity vs. equality or definitions for terms like “the research agenda.” This issue can be rectified by the addition of embedded definitions or examples of concepts and

themes that are less well-understood. The inclusive scope of this survey content comes at the cost of the length of time it takes a respondent to complete with one respondent suggesting a more streamlined survey interface. Optimal survey formatting and phrasing of the categories and subcategories will be revisited in its revision to try and help address this limitation. This survey is, by no means, adequate to fully capture and describe pluralistic

Table 4. Comparative means within subcategories of 'Representation and Benefits.' Bar graph of the means between LMIC (blue) and HIC (red) survey respondents

Representation and Benefits		Mean Respondent Scores					n	p-value	Respondent Comments
<div><div></div>HIC respondents</div> <div><div></div>LMIC respondents</div>	strongly disagree	disagree	neither agree/disagree	agree	strongly agree				
Inequitable representation in research publication (lead authorship, etc.)							21	0.905	"Authorship of some publications derived from partnership exclude LMIC partners." [LMIC respondent] "I find it rare that authorship is ever discussed and agreed upon at the beginning of partnership or project. It is more of an afterthought or dependent on the project outcome." [HIC respondent]
Authorship is determined solely based on contribution to data analysis and manuscript preparation	<div><div></div><div></div></div>					13	0.660		
Further appreciation into what contributes 'meaningful input' for authorship criteria is needed	<div><div></div><div></div></div>					13	0.396		
Any research generated by the partnership includes LMIC authors	<div><div></div><div></div></div>					13	0.061		
LMIC partners are prioritized in lead authorship positions (i.e. first and/or last author)	<div><div></div><div></div></div>					13	0.265		
Requirements for authorship are clearly outlined in collaboration between partners	<div><div></div><div></div></div>					13	0.660		
Inequitable representation in research promotion (conferences, presentations, media, etc.)							21	0.957	
Research promotion (presenting results, conferences) is based on seniority and/or role in data analysis and preparation	<div><div></div><div></div></div>					14	0.598		
LMIC partners are prioritized in promotional research activities (presentations, conferences, etc.)	<div><div></div><div></div></div>					14	0.080		
Support for LMIC partners to attend conferences and present results is included in funding allocation	<div><div></div><div></div></div>					14	0.293		
Unequal professional and scholarly gains (ex. academic reputation)							21	0.834	
HIC partners gain more professional and scholarly capital than LMIC partners as the result of research production	<div><div></div><div></div></div>					14	0.829		
Unequal access to global expertise and knowledge gained from research							21	0.660	
Results are often not adequately disseminated and/or explained to the community and individuals who participated	<div><div></div><div></div></div>					13	0.767		
Research often does not translate to meaningful change within the lives and health of research participants and communities	<div><div></div><div></div></div>					13	0.293		
Results are often not adequately incorporated into local health policy	<div><div></div><div></div></div>					13	0.732		
International HIV expertise remains predominantly accessible to HIC partners but not LMIC partners	<div><div></div><div></div></div>					13	0.367		
Partnerships currently offer equal opportunity for building late-career research skills in HIC and LMIC partners	<div><div></div><div></div></div>					13	0.897		
Partnerships currently offer equal opportunity for building mid-career research skills in HIC and LMIC partners	<div><div></div><div></div></div>					13	0.636		
Partnerships currently offer equal opportunity for building early-career research skills in HIC and LMIC partners	<div><div></div><div></div></div>					13	0.060		
Unequal access to material resources and data generated by research							21	0.525	
Material resources within the research partnership are not available for subsequent research and clinical use in LMIC environments	<div><div></div><div></div></div>					13	0.781		
Intellectual property rights of materials are owned by the LMIC partner once research is complete	<div><div></div><div></div></div>					13	0.122		
Intellectual property rights of materials are shared between partners once research is complete	<div><div></div><div></div></div>					13	0.095		
Data repositories created by the research partnership are owned by the LMIC partner once research is complete	<div><div></div><div></div></div>					13	0.060		
Data repositories created by the research partnership are shared between partners once research is complete	<div><div></div><div></div></div>					13	0.022		
Technology used/created by the research partnership are owned by the LMIC partner once research is complete	<div><div></div><div></div></div>					13	0.009		
Technology used/created by the research partnership are shared between partners once research is complete	<div><div></div><div></div></div>					13	0.861		

equity-related issues within a research partnership. These issues can range from interpersonal to the microenvironment to the surrounding macrosystems or geopolitical environment of the partnership, some of which are more readily addressable or quantifiable than others, but all are important to acknowledge. Findings should be followed up with in-depth qualitative evaluation such as stakeholder interviews and discussions to generate a more nuanced and partnership-specific understanding of the issues.

As a pilot study, there are several limitations to consider. The survey was developed based on a literature review conducted by one person without a second independent coder which introduces a risk of bias in the selection of themes and categories within the original survey. Future iterations based on the rapidly growing literature on research partnership equity will feature simultaneous review and consensus by at least two independent coders. Limitations also include a small sample size, reflective of two HIC-based institutions, and the sample was targeted to be representative of a prospective survey cohort within active international HIV/AIDS research partnerships. The response rates were low compared to other published surveys distributed to academic medical professionals [31] although half of LMIC respondents did not open the survey email, suggesting some requests may have been automatically routed to junk mail folder or not seen. The next revised administration of this survey among a larger population will include an evaluation for non-response bias. Skip patterns were used to minimize time spent answering questions less relevant to unique respondents, but there is a tradeoff that subcategories within these sections that the respondent may consider significant were overlooked. This was not reflected in responses to the questions asking about topics not covered but remains a possibility. There was a prominence of principal investigators among these respondents, likely related to the recruitment strategy resulting in a sampling bias. At the same time, senior investigators are most likely to have experience reflecting on issues of research partnership equity. Some degree of over-representation may assist with substantiating specific claims, especially if applying this survey within a larger sample size, but verification in other groups of research staff is still needed. With the globalization of HIV/AIDS research and the mobility of investigators, the grouping of respondents as LMIC or HIC is arguably somewhat arbitrary. Future iterations of the survey may ask respondents to self-identify which of these categories they fall into, with an 'other' category to explain if this binary description does not accurately represent their background.

Following revisions based on pilot respondent feedback, next steps include validating within an international

research partnership and combining survey results with follow-up participant interviews. We hope this line of research will contribute to efforts to characterize contemporary issues around partnership equity, highlight differences and similarities of experience between LMIC and HIC partners as a priority for discussions, and begin to identify concrete, stakeholder-derived metrics and guidance for international research partnerships to strive towards more equitable outcomes.

Conclusions

Equity between LMIC and HIC research partners within international research partnerships is an essential component of ethical research in LMICs. While efforts to date are starting to acknowledge and converge on the diverse array of themes that fall under the umbrella of research partnership equity, formal mechanisms for identifying practices that facilitate or inhibit equity are limited. We describe a preliminary pilot assessment of a survey designed to identify the frequency and severity of equity-related considerations. This survey also highlights similarities versus differences in experiences between LMIC and HIC partners as potential priority targets for further partnership-level evaluation and intervention.

Abbreviations

AIDS	Acquired Immunodeficiency Syndrome
CFAR	Center for AIDS Research
EQT	Equity tool for valuing global health partnerships
HIC	High-income country
HIV	Human immunodeficiency virus
LMIC	Low- and middle-income country
RFI	Research fairness initiative

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12961-023-00977-9>.

Additional file 1. Raw data.

Additional file 2. Flowsheet of respondent recruitment and participation. LMIC low- and middle-income country, HIC high-income country.

Additional file 3. Survey participant demographics. Completion was not required and not all participants completed the demographics section of the survey, resulting in different response numbers between the demographic information collected and overall survey responses.

Acknowledgements

The authors would like to thank Danica Rockney for her assistance as a second qualitative data coder. They would also like to acknowledge Tom Quinn, Bob Bollinger, Yuka Manabe, and Russell Kempker for their feedback on various iterations of the survey content and design.

Author contributions

CEM contributed to the conceptualization and implementation of this study, conducted the data analysis, and wrote the preliminary draft of the manuscript; ENK contributed to data analysis, data interpretation, and made substantive contributions to the manuscript; LWC contributed to the conceptualization, supervision of direct research activities, and contributed to revisions of

the manuscript; NKS contributed substantive revisions to the manuscript; JA contributed to the conceptualization, data interpretation, supervision of direct research activities, and contributed to revisions of the manuscript. All authors read and approved the final manuscript.

Funding

This research was funded by the Alanna Stone Memorial 'Firestarter' Award for Global Health Research. CEM was supported as a post-doctoral fellow of the Oxford-Johns Hopkins Global Infectious Disease Ethics Collaborative funded by the Wellcome Trust [Grant Numbers 221719 and 216355]. The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Availability of data and materials

All data generated or analyzed during this study are included in this published article and its supplementary information files.

Declarations

Ethics approval and consent to participate

This study protocol was determined as exempt from review by the Johns Hopkins Medicine Institutional Review Board [00319492]. Information about the study was provided on the first page of the survey and respondents were required to consent to participate prior to being directed to the survey content.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

Author details

¹Division of Infectious Diseases, Johns Hopkins University School of Medicine, Baltimore, MD, USA. ²Johns Hopkins Berman Institute for Bioethics, Baltimore, MD, USA. ³Rakai Health Sciences Program, Rakai, Uganda. ⁴Department of International Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA. ⁵Department of Medicine, Makerere University College of Health Sciences, Kampala, Uganda.

Received: 13 December 2022 Accepted: 27 March 2023

Published online: 01 May 2023

References

- Costello A, Zumla A. Moving to research partnerships in developing countries. *BMJ*. 2000;321(7264):827–9.
- United Nations (UN). Sustainable Development Goals Report. 2019. <https://unstats.un.org/sdgs/report/2019/>. Accessed 8 Dec 2022.
- Boumli Y, Burns BF, Siedner M, Mburu Y, Bukusi E, Haberer JE. Advancing equitable global health research partnerships in Africa. *BMJ Glob Health*. 2018;3(4):e000868.
- Hedt-Gauthier BL, Jeufack HM, Neufeld NH, Alem A, Sauer S, Odhiambo J, et al. Stuck in the middle: a systematic review of authorship in collaborative health research in Africa, 2014–2016. *BMJ Glob Health*. 2019;4(5):e001853.
- Mbaye R, Gebeyehu R, Hossmann S, Mbarga N, Bih-Neh E, Eteki L, Thelma OA, Oyerinde A, Kiti G, Mburu Y, Haberer J. Who is telling the story? A systematic review of authorship for infectious disease research conducted in Africa, 1980–2016. *BMJ Glob Health*. 2019;4(5):e001855.
- Alter GC, Vardigan M. Addressing global data sharing challenges. *J Empir Res Hum Res Ethics*. 2015;10(3):317–23.
- Kaewkungwal J, Adams P, Sattabongkot J, Lie RK, Wendler D. Issues and challenges associated with data-sharing in LMICs: perspectives of researchers in Thailand. *Am J Trop Med Hyg*. 2020;103(1):528–36.
- Bhakuni H, Abimbola S. Epistemic injustice in academic global health. *Lancet Glob Health*. 2021;9(10):e1465–70.
- Pant I, Khosla S, Lama JT, Shanker V, AlKhalidi M, El-Basuoni A, et al. Decolonising global health evaluation: synthesis from a scoping review. *PLOS Glob Public Health*. 2022;2(11):e0000306.
- Emanuel EJ, Wendler D, Killen J, Grady C. What makes clinical research in developing countries ethical? The benchmarks of ethical research. *J Infect Dis*. 2004;189(5):930–7.
- Wendler D, Emanuel EJ, Lie RK. The standard of care debate: can research in developing countries be both ethical and responsive to those countries' health needs? *Am J Public Health*. 2004;94(6):923–8.
- Pratt B, Loff B. A framework to link international clinical research to the promotion of justice in global health. *Bioethics*. 2014;28(8):387–96.
- Lavery JV, Ijsselmuiden C. The research fairness initiative: filling a critical gap in global research ethics. *Gates Open Res*. 2018;2:58.
- Voller S, Schellenberg J, Chi P, Thorogood N. What makes working together work? A scoping review of the guidance on North-South research partnerships. *Health Policy Plan*. 2022;37(4):523–34.
- Monette EM, McHugh D, Smith MJ, Canas E, Jabo N, Henley P, et al. Informing "good" global health research partnerships: a scoping review of guiding principles. *Glob Health Action*. 2021;14(1):1892308.
- Garry Aslanyan ACE-A, Maggy Heintz, Eva Kagirl-Kalanzi, John Kirkland, Yaso Kunaratnam, Sheila Mburu, Tolu Mohammed, Amen-Patrick Nwosu, Laura Scott and Daniela Toale. Four Approaches to Supporting Equitable Research Partnerships: UKCDR and ESSENCE Good Practice Document. 2022.
- Faure MC, Munung NS, Ntusi NA, Pratt B, de Vries J. Mapping experiences and perspectives of equity in international health collaborations: a scoping review. *Int J Equity Health*. 2021;20(1):1–13.
- Morton B, Vercueil A, Masekela R, Heinz E, Reimer L, Saleh S, et al. Consensus statement on measures to promote equitable authorship in the publication of research from international partnerships. *Anaesthesia*. 2022;77(3):264–76.
- Ghani M, Hurrell R, Verceles AC, McCurdy MT, Papali A. Geographic, subject, and authorship trends among Imic-based scientific publications in high-impact global health and general medicine journals: a 30-month bibliometric analysis. *J Epidemiol Glob Health*. 2021;11(1):92–7.
- Gomez CJ, Herman AC, Parigi P. Leading countries in global science increasingly receive more citations than other countries doing similar research. *Nat Hum Behav*. 2022;6(7):919–29.
- Brandt AM. How AIDS invented global health. *N Engl J Med*. 2013;368(23):2149–52.
- Crane JT. Scrambling for Africa: AIDS, expertise, and the rise of the American global health science. Ithaca: Cornell University Press; 2013.
- Faure MC, Munung NS, Ntusi NAB, Pratt B, de Vries J. Mapping experiences and perspectives of equity in international health collaborations: a scoping review. *Int J Equity Health*. 2021;20(1):28.
- Parker M, Kingori P. Good and bad research collaborations: researchers' views on science and ethics in global health research. *PLoS ONE*. 2016;11(10):e0163579.
- Maselli D, Lys JA, Schmid J. Swiss Commission for research partnerships with developing countries (KFPE). Improving impacts of research partnerships. German: Swiss Academy of Sciences; 2006.
- Afsana K, Habte D, Hatfield J, Murphy J, Neufeld V. Canadian coalition for global health research: partnership assessment toolkit. 2009. <https://cagha-acsm.org>. Accessed 8 Dec 2022.
- Plamondon KM, Bisung E. The CCGHR principles for global health research: centering equity in research, knowledge translation, and practice. *Soc Sci Med*. 2019;239: 112530.
- Viechtbauer W, Smits L, Kotz D, Bude L, Spigt M, Serroyen J, et al. A simple formula for the calculation of sample size in pilot studies. *J Clin Epidemiol*. 2015;68(11):1375–9.
- Swiss Academy of Sciences (SCNAT). A guide for transboundary research partnerships: 11 principles & 7 questions. 2018. https://kfpe.scnat.ch/en/11_principles_7_questions. Accessed 8 Dec 2022.
- Larson CP, Plamondon KM, Dubent L, Bicaba F, Bicaba A, Minh TH, et al. The equity tool for valuing global health partnerships. *Glob Health Sci Pract*. 2022;10(2):e2100316.
- Meyer VM, Benjamens S, El Moumni M, Lange JF, Pol RA. Global overview of response rates in patient and health care professional surveys in surgery: a systematic review. *Ann Surg*. 2022;275(1):e75.

Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.