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Evaluating the effectiveness of global health partnerships for disease elimination: a systematic review

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M.Sc., Anna University, 2002

Thesis Committee Chair: Iris E. Smith, PhD, MPH

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Abstract

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By Girija Sankar

There is limited evidence on the critical success factors for global health partnerships. Despite the limited evidence on the effectiveness of such partnerships, donors have increased their support of such partnerships in the last 20 years. There is hence a need to understand the different types of partnerships in global health and identify factors contributing to the efficiency and effectiveness of partnerships. The objective of this research is to conduct a systematic review of literature on coalition-building in global public health to identify the criteria under which global health partnerships are considered essential for the success of global disease elimination efforts and review the methods used to evaluate the efficiency and effectiveness of global health partnerships. Studies were included from searches on databases such as CAB Global Health and Pubmed using search terms and criteria established *a priori*. Analyses were performed on studies that met the inclusion standards, and study findings were synthesized using a scoring mechanism that scored the studies on evaluation metrics and conceptual frameworks.

Findings from 22 studies met the criteria for inclusion. Of these, three studies included metrics to assess both global health partnership processes and impact. Seventeen studies included a conceptual framework to analyze the efficiency or effectiveness of global health partnerships. Of the 35 global health partnerships that were reviewed in the selected studies, 13 partnerships supported drug and vaccine development, and 12 promoted access to pharmaceutical products to advance disease elimination. One philanthropic donor either directly or indirectly supported fifty percent of the studies included in the review. Transparency, communication, governance, inclusion, and representation were the process measures that most studies used to review the operational performance of global health partnerships. None of the studies established a causal linkage between partnership performance and disease outcomes.

This systematic review found that a multi-disciplinary approach to evaluating global health partnerships addresses the dynamic contexts within which such partnerships operate. This review also found that rather than being able to demonstrate how partnerships are essential to the success of disease elimination efforts, the studies demonstrated the value-add of partnerships in accelerating disease elimination.

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List of Abbreviations

BCG	Bacille Calmette-Guérin Vaccine
BMGF	The Bill & Melinda Gates Foundation
CSO	Civil Society Organization
CVI	Children's Vaccine Initiative (precursor to the Gavi Alliance)
DFID	Department for International Development (UK)
DNDi	Drugs for Neglected Tropical Diseases Initiative
DOTS	Directly Observed Treatment Strategy-Short Course (for tuberculosis)
ENTREQ	Enhancing Transparency in Reporting the Synthesis of Qualitative Research
GHAPP	Global Health Advocacy & Policy Project (a research initiative funded by the Bill and Melinda Gates Foundation)
GRADE	Grading of Recommendations, Assessment, Development and Evaluation
GSK	GlaxoSmithKline (global healthcare company which donates albendazole, a deworming drug, to endemic countries to fight lymphatic filariasis and soil-transmitted helminth infections
HIV/AIDS	Human Immuno Virus/Acquired Immuno Deficiency Syndrome
HSS	Health Systems Strengthening (the process of improving a country's ability to provide health services through changes to policy and public health practice)
ICC	Inter-agency coordination committee (of the Gavi Alliance)
IPPPH	Initiative on Public-Private Partnerships for Health
ITI	International Trachoma Initiative
LMIC(s)	Low-to-middle income country(ies)
MDP	Mectizan Donation Program (a public-private partnership between Merck and the Task Force for Global Health whose mission is to provide Mectizan (ivermectin) to communities suffering from onchocerciasis for as long as the medicine is needed)
NCD(s)	Non-communicable disease(s)
NGO	Non-Governmental Organization (usually, non-profit or not-for-profit organization providing health and social welfare services)
NTDs	Neglected Tropical Diseases
PEPFAR	President's Emergency Plan For AIDS Relief
PICOT	Population, Intervention, Comparison/Control, Outcome and Time
PPP	Public-private partnership
TB	Tuberculosis
UNDP	United Nations Development Program
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization (a multilateral organization, and a specialized agency of the United Nations, whose mission is to achieve better health for all).

Glossary of Terms

Gates Foundation	The Bill & Melinda Gates Foundation
The Gavi Alliance	The Gavi Alliance is an international organization, registered as a charity in Switzerland and the United States, bringing together public and private sector partners to improve access to vaccines for children living in low-to-middle-income countries.
Global Health	A 2009 Lancet journal commentary views global health as a multidisciplinary discipline that a) focuses on issues that "directly or indirectly affect health, but that can transcend national boundaries," b) pursues solutions that require global cooperation, c) promotes population health and clinical care, and d) promotes health equity[1]
Global North	The phrase 'Global North' broadly refers to Europe and North America, regions that are generally characterized by high incomes and greater access to opportunities for advancement. In the context of global public health, the Global North also denotes donor governments, multilateral organizations headquartered in Europe or North America, and private philanthropies.
Global South	The phrase 'Global South' broadly refers to regions outside of Europe and North America that are mostly low-income or politically and socially marginalized. The phrase has increasingly replaced other phrases such as "Third World," "underdeveloped," or "underprivileged" when referring to the socio-political contexts in countries or regions.
Governance	Governance broadly refers to rules and norms that provide a framework of reference for the individuals and organizations coalescing around a common challenge, issue, or problem. In the context of global health partnerships, governance is a set of formal and informal rules that structure collaborative engagements between individuals and organizations towards a common public health goal.
The International Trachoma Control Imitative	The International Trachoma Control Initiative (ITI) was founded by the Edna McConnell Clark Foundation and Pfizer Inc. to eliminate trachoma as a public health problem. It is a program of the Task Force for Global Health.
The Mectizan Donation Program	The Mectizan Donation Program (MDP) is a program founded by Merck to oversee the donation of Mectizan to control and prevent onchocerciasis. The MDP Secretariat is hosted at the Task Force for Global Health.
Neglected Tropical Diseases	Neglected Tropical Diseases or NTDs are a group of communicable diseases that affect more than one billion people living in conditions of poverty with poor or no access to sanitation. These diseases are typically easily treated and prevented through free or subsidized drugs, low-cost surgeries, and water, sanitation, and hygiene service provision.
Product access PPPs	Product access public-private partnerships in global health seek to improve access to medicines, mostly in the Global South. The Mectizan Donation Program is an example of a public-private partnership that provides access to Mectizan, a drug used for onchocerciasis treatment and control.
Product development PPPs	Product access public-private partnerships in global health seek to develop new products such as new vaccines and new drugs to treat and prevent diseases that predominantly affect communities in the Global South. The Drugs for Neglected Tropical Diseases Initiative is an example of a product development partnership.
The Stop TB Partnership	The Stop TB Partnership is a global partnership of over 1700 partners working together to eliminate tuberculosis by improving access to diagnosis, treatment, and cure. The United Nations Office for Project Services (UNOPS) hosts the secretariat for the partnership.

[1] Koplan JP, Bond TC, Merson MH, Reddy KS, Rodriguez MH, Sewankambo NK, et al. Towards a common definition of global health. The Lancet. 2009;373(9679):1993-5

Chapter 1. Introduction

Introduction and Rationale

Global health partnerships have been at the forefront of addressing complex health challenges such as HIV/AIDS, tuberculosis, malaria, and maternal and infant mortality (1). Over the last 30 years, international Non-Governmental Organizations (NGOs), bilateral donors, and intergovernmental organizations such as the World Health Organization have fostered global health partnerships comprising of individuals and organizations who coalesce around common concerns to eliminate infectious diseases and deaths from preventable causes and promote wellbeing (2, 3). These partnerships often bring together diverse stakeholders such as national governments and their health ministries, bilateral and multilateral donor agencies, international NGOs, and academic institutions who each bring their unique expertise to solve complex problems (4). Together, partners collectively identify resources, mobilize support, and address resource gaps while pursuing the common goal of disease elimination.

Much of the scholarship on global health partnerships have been descriptive, identifying the different types of partnerships in the global health landscape (2, 3, 5, 6). There is limited evidence on the circumstances in which global health partnerships are effective in advancing disease elimination goals (1, 7, 8). However, despite limited documented evidence on the effectiveness of these partnerships, donors have continued to support their establishment (9, 10). Additionally, there is little to no consensus on what constitutes a partnership, the relative contexts under which partnerships thrive, and the effectiveness of partnerships in advancing disease elimination.

A concerted effort is necessary to identify the motivations and underlying factors for coalition-building in the context of global health and disease elimination programs. An appreciation of the minimum criteria required for partnerships to survive and thrive will allow global health donors, practitioners, and policymakers to make informed decisions on whether or not a formal partnership structure is necessary to solve the global health problem at hand. Such an effort will also fill knowledge gaps and provide global health practitioners with the necessary skillsets and tools to participate in and facilitate effective partnerships.

Problem and Purpose statement

There is a need to understand the different types of organizational networks that thrive in global health and identify key criteria for evaluating the effectiveness of global health partnerships in advancing disease elimination in endemic communities in developing country contexts.

The purpose of this research is to conduct a comprehensive systematic review of peer-reviewed literature on coalition-building in the context of global public health:

- to identify the criteria under which global health partnerships are considered essential for the success of global disease elimination efforts, and
- to identify the criteria to evaluate the effectiveness and efficiency of global health networks for disease elimination.

Significance statement

The field of global public health has been characterized by multi-sectoral partnerships since the end of World War Two and the emergence of a new world order and inter-state governance mechanisms such as the United Nations (11). Beginning in the 1960s with the

establishment and firm grounding of bilateral donor agencies such as the USAID, partnerships between donors, recipient governments, ministries of health, international NGO implementing partners, and academic institutions have been fundamental to policymaking, program implementation, and scale-up (12). It has been noted that the emergence, development, and sustenance of disease control efforts at the global level is undergirded by a) perception of disease threat or perception of the severity of the disease, b) potential to contain the disease as a public health problem, and c) a transnational partnership of actors/stakeholders who believe in the cause of disease elimination (7, 13). The scale of such partnerships has grown exponentially over the last three decades, and with it, a growing interest in understanding how such partnerships thrive and survive. This has led to new scholarship on the emergency and effectiveness of global health partnerships (2, 3, 5, 9, 14).

In general, global health partnerships have raised awareness around disease elimination goals, advocated for endemic populations, and increased access to resources for national governments, the WHO, and NGO partners (6, 12, 15). The proliferation of global health partnerships and their increasing abilities to attract, sustain1 and manage drug donations and monetary assistance for disease elimination demands a closer and more critical exploration of the effectiveness of such partnerships in delivering on their disease elimination goals (9). A systematic literature review of the relative effectiveness and impact of global health partnerships provides a starting point to more in-depth inquiry in this field. This systematic literature review attempts to synthesize existing knowledge and scholarship on the relative successes of global health partnerships so that comparable and standard metrics for evaluating complex, multi-actor global health partnerships can be

developed and tested. Ultimately, this research will provide insights on how partnerships perform and contribute to recommendations on best practices on coalition-building to advance disease elimination.

Definition of Terms

Jeremy Youde's definition of global health partnerships provides a broad foundation for reviewing the literature and frames global health partnerships as (a) addressing one or more global health problems and exhibiting some degree of formal structure, with partnerships placed along a spectrum of high to low levels of institutionalization, (b) bringing together broad groups of stakeholders from public and private sectors, and (c) attempting to promote consensus-based decision-making (16).

Global health partnerships have also been classified based on the type of service or expertise provided – product-based, technical assistance, advocacy, or financing (17). This schema was originally developed by the UK's Department for International Development (5). Youde further classifies global health partnerships by the nature of the relationship between members by borrowing from the business management literature on horizontal and vertical integration. In this sense, partnerships that bring together donors, national governments, international and domestic NGOs in the pursuit of a common goal are considered vertical linkages (16). Partnerships of similar types of actors – i.e., partnerships consisting exclusively of donors or ministers of health or NGOs – are horizontal linkages (16). Buse and Walt add further nuance to our understanding of coalition-building by treating the various "institutional arrangements "as falling along a continuum, with partnerships at one end, networks at the other end, and alliances in between," (18).

Global health partnerships have been variously called public-private partnerships or PPPs (2), global health partnerships (18), transnational networks (19), or global health networks (7). For this thesis, the phrase – “global health partnership(s)” - will be used as an umbrella term to refer to this broad set of partnerships.

Chapter 2. Literature Review

This chapter provides an overview of the literature on coalition-building in the context of global public health. The literature synthesized in this chapter describes the current state of knowledge on the evaluation of the effectiveness of global health partnerships in solving large scale global health problems.

Several challenging global health issues have been tackled at the global, national, and regional levels through formal or informal partnerships (15). The very nature of public health problem-solving at the global level requires that stakeholders from diverse sectors and disciplines organize goals, resources, and activities in a collaborative way to standardize disease elimination activities, minimize duplication of resources, and share experiences. Global health partnerships today may number well over 100 (12). As these partnerships have proliferated across disease elimination programs, so has an interest in evaluating how these partnerships add value to disease elimination goals.

Nearly 20 years ago, the World Health Organization (WHO) recognized the need for a common language around public-private partnerships (PPPs) and convened a workshop on health systems development (20). Participants concluded that strategic partnerships between the public and private sector and civil society organizations were increasingly critical to effective health service delivery, and a research protocol for evaluating public-private partnerships emerged out of this workshop. The protocol arguably provided one of the first frameworks for studying PPPs and included criteria such as:

- the definitional aspect of what constitutes a private and public sector entity
- the nature of the relationship between the partners in a PPP
- the intended outcome of the PPP, and
- the availability of longitudinal data to track service delivery (20).

Early reviews of global health partnerships broadly classified partnerships into two groups – partnerships that invested in developing and testing new drugs and vaccines and those that sought to improve access to medicines (12). Widdus further classified such partnerships by the nature of the hosting arrangements – for example, the Mectizan Donation Program has been hosted by an NGO; whereas, the International AIDS Vaccine Initiative is a standalone entity (12).

A systematic literature review of product-based partnerships in neglected tropical diseases (NTDs) control identified a "lack of empirical assessments of PPPs" (21). Only eight of the seventy-four papers that were included in this systematic review utilized research methods to assess the PPPs. The study also found that such partnerships suffered from a lack of transparency, accountability, and governance structures (21). The issue of governance of global health partnerships is also tackled by Liese et al. who compared the governance structures of partnerships focused on NTDs, concluding that the level of governance seen in global partnerships for HIV/AIDS and tuberculosis (TB) is not apparent in partnerships for NTDs (4).

A systematic review of PPPs undertaken by Torchia et al. analyzed forty-six papers published in peer-reviewed journals between 1990 and 2011 and found that a majority of the papers focused on the performance of PPPs in the United Kingdom or

the United States, highlighting a need for more extensive research on the effectiveness of PPPs for global health in the Global South (22).

More recently, scholars have begun to apply a critical lens to the nature, functioning, and structure of global health partnerships. In a series of evaluative research projects on eight global health partnerships, Jeremy Shiffman and colleagues found that partnerships have to be able to navigate challenges around problem identification, agenda-setting or framing, and governance (1, 7, 8). In their review of global health partnerships in nursing, Upvall and Leffers (2018) offered a revised conceptual model for global health partnerships that included the perspectives of nurses from middle- and low-income countries, to counter what they saw as a practice in global health partnerships to focus almost entirely on the perspectives and expertise of global health professionals in high-income countries (23).

A gendered analysis of global health partnerships found that a majority of global health partnerships analyzed (including the International Vaccine Institute, Drugs for Neglected Diseases Initiative, and Scaling up Nutrition) did not have a gender strategy and lacked a gendered approach to health and equity (24). A similar study raised concerns about the ability (or lack thereof) of global health partnerships to advance global health equity, arguing that public-private partnerships may provide private sector partners greater access to the WHO and thereby influence its decision-making (25).

Adopting a rights-based approach to analyzing global health initiatives, Hallgath and Tarantola found that global health partnerships such as the PEPFAR or the Gavi Alliance were, in general, respectful of human rights as expressed in their policy

documents(26). However, the application of a rights-based approach to their global health practices was less evident in transparency in decision-making and representation of the Global South in decision making (26).

Buse and Tanaka reviewed findings from eight independent evaluations of global health partnerships and found that such partnerships, while useful in advancing disease elimination goals, suffered from a lack of standard metrics or 'core indicators' that could be used to compare across partnerships (15).

Recent scholarship has also reviewed the effectiveness of global health research partnerships, noting that research partnerships have tended to be more equitable than global health partnerships for service delivery since the research contributions of the partners tend to be comparable (27). Studies that have evaluated research partnerships found that a shared vision, mutual respect, and equity were essential attributes for effective research partnerships between institutions in developed and developing country contexts (28, 29).

This systematic literature review builds on the work of these findings and extends the analytical frame to include global health partnerships that are transnational and unite diverse groups of stakeholders under a common goal of disease elimination or control.

The following section provides a historical overview of the development of global health partnerships over the last 70 years.

Post-World War 2 and international development

The years following World War Two were characterized by global disease control

efforts that targeted certain diseases for elimination. Starting as early as 1955, the World Health Assembly passed a resolution on malaria eradication (13). In 1974, the Expanded Program on Immunization included strategies for polio control and eradication in endemic countries (13, 30).

The 1960s –1980s

While industrialized nations were able to successfully reduce TB incidence and prevalence through preventive chemotherapy and BCG vaccines, it was not until the 1960s when the WHO adopted a policy for the global control of TB that endemic communities in developing country contexts received the attention they deserved (13, 31). It is noteworthy that the TB program was the first disease-specific control program instituted by the WHO (32).

1980s-2000s

In 1993, the World Health Assembly called on the WHO to seek and mobilize support from partners, including non-state actors such as NGOs, to advance health impact (14). Additionally, the 1990s ushered in the era of globalization and increased social and cultural linkages between countries as a result of the liberalization of several hitherto closed economies. With globalization came a greater recognition of the interconnectedness of health systems, health security, and transnational disease transmission, and a consequent explosion of global health partnerships (3).

2000s-Today

The early 2000s ushered in a new era for transnational cooperation and global health. HIV/AIDS threatened the health and health systems of many countries irrespective of wealth or economic status. The threat of diseases like HIV/AIDS, combined with

increasing reluctance by donor states for bilateral assistance, fueled the rise of public-private partnerships in global health (17). As Buse and Walt note, this was around the same time that pharmaceutical companies sought to promote their corporate social responsibility efforts through product-based public-private partnerships (2). The early 2000s also marked the entry of a private philanthropic foundation in the global health donor landscape. The Bill and Melinda Gates Foundation was a game-changer in global health with the ability to allocate vast sums of funding across multiple sectors in global health and development (17). Notably, the Gates Foundation funded a global initiative called the Initiative on Public-Private Partnerships for Health (IPPPH) that charted the development and growth of major PPPs in health (20, 33, 34). An analysis conducted by IPPPH noted a preponderance of partnerships for HIV/AIDS, malaria, and TB – in other words, PPPs were more active in disease control and elimination, and less so in health systems strengthening (12, 20).

The first decade of the new millennium witnessed the birth of a giant in global health partnerships - the Global Fund to fight AIDS, Tuberculosis, and Malaria came together in 2000-2001 at the meeting of the Group of Eight nations (16). Scholars see the establishment of the Global Fund as a recognition for the need for a new mechanism to fund diseases that were overwhelming national health systems and budgets (16, 35). The Global Fund's birthing came at a time when the World Health Organization was considered ill-equipped to address broad-based and systemic challenges brought on by pandemics like HIV/AIDS.

Beginning in the new millennium, The Millennium Development Goals also afforded another opportunity for global health coalition-building with three of the eight goals

directly related to health (17).

Beginning in the mid-80s and intensifying in the 2000s, global health partnerships for neglected tropical disease control have focused on the partnerships between pharmaceutical companies and the public sector (donor and endemic country governments) in advancing disease control (36-38). The term "Neglected Tropical Diseases" was developed to draw donor and country attention to the disease, many of which were not life-threatening, but severely debilitating (39). Together, the interest groups seeking to eliminate or control these diseases could begin to gain attention in a field that was already crowded by similar interest groups for other high-burden diseases such as HIV/AIDS, tuberculosis, and malaria (40, 41).

The progress in advancing infectious disease control efforts worldwide has been made possible through pharmaceutical donations made by Merck, Pfizer, Johnson & Johnson, GSK, and other pharmaceutical manufacturers. However, as the systematic review of literature conducted by Aerts et al. notes, much of the scholarship on these partnerships have been descriptive (21).

The global health community increasingly began to recognize the need for multi-sectoral partnerships that transcended private-public partnerships. Disease groups began to build supporting structures around these public-private partnerships and expanded the scope of such partnerships to coordination and advocacy. In the infectious disease community, this model was replicated in the global trachoma program, and global programs to eliminate or control lymphatic filariasis, soil-transmitted helminth infections, and leprosy (42-47).

Early reviews of product development global health partnerships saw such

partnerships as essential for translational research and for promoting research and drug discovery for fighting diseases that predominantly affected communities in the Global South (48). A systematic literature review by De Pinho Campos et al. corroborated these findings and found that shared interests, stakeholder engagement, and synergy of expertise across partners were some of the commonly identified themes in the literature on product development partnerships (49).

Conclusion

The global health and development landscape has witnessed significant growth in the number of multi-sectoral partnerships over the last 30 years. Given the goals of the global health partnerships to advance disease elimination and promote improved health outcomes in endemic communities, a systematic literature review of the relative effectiveness and impact of such partnerships is needed. In order to fill this gap in knowledge, it is necessary to focus on peer-reviewed literature on global health partnerships involving multiple stakeholders pursuing disease elimination in endemic community contexts. Ultimately, this research will provide insights on how partnerships perform and contribute to recommendations on best practices on coalition building.

For this research, the phrase “global health partnership(s)” will be used to capture the plethora of partnership mechanisms explored in the literature. The proposed review identifies peer-reviewed publications, book chapters, conference proceedings, and organizational publications through a broad-based search on databases like PubMed and Web of Science. The search includes literature published between the 1960s and

2019, and the studies identified for the review are categorized using an appraisal measure for the evaluation methods used in the selected studies.

Chapter 3. Methodology

Search Strategy

A systematic search was performed to identify relevant studies in the following databases from the 1960s until 2020 – CAB Global Health, PubMed, Scopus, and Web of Science. While PubMed served as the primary search engine, due to the multidisciplinary nature of this research, databases such as CAB Global Health were also used to identify relevant literature that may not always be found in biomedical databases.

Presented below is an overview of the complete search strategy.

Result: 22 publications

Database: CAB Global Health, PubMed, Scopus, and Web of Science

Query: (“global health”) AND (coalitions OR networks OR “public-private partnerships” OR partnerships OR alliance) AND (NTDs OR HIV OR AIDS OR malaria OR tuberculosis OR maternal child health) AND (evaluation OR effectiveness)

Study Selection & Inclusion Criteria

A set of inclusion criteria were applied to select potential studies. Of the studies eligible based on inclusion criteria, their references were examined to retrieve relevant studies that may have been omitted in the initial search criteria.

The Population, Intervention, Comparison/Control, Outcome, and Time (PICOT) structure informed the development of the literature search strategy (see Figure 1). Studies were considered eligible for inclusion if they fulfilled all of the criteria listed below. The time frame for the literature search was set for 1966 to December 2019. The outer bound for the time frame was set to 1966 as that was the earliest year when

PubMed began tracking publications. Beginning the search in the 1960s was also based on the assumption that global health partnerships began to form in a post-World War Two scenario with the establishment of a new world order and the United Nations (50).

The Enhancing Transparency in Reporting the synthesis of Qualitative Research (ENTREQ) statement provided the broad guidelines for developing a strategy for the systematic review (51).

Inclusion Criteria

The following inclusion criteria were used to include a publication in the systematic review.

The paper/article:

- Was indexed in CAB Global Health, PubMed, Scopus or Web of Science
- Included a review, analysis or evaluation component related to the global health partnership under review, for which partnership-specific data were obtained from interviews or focus groups, case study analyses, member surveys, and data on disease prevalence and reduction obtained through disease-specific epidemiological assessments (where applicable)
- Reported on issues at the national or global level related to
    - The nature, governance, organization, or activities of the global health partnership
    - The effectiveness or efficiency of the partnership
    - Activities are undertaken in low-to-middle income countries
    - Described at least one global health partnership

- Was available as a full text in English
- Was published between January 1966 and December 2019

Exclusion Criteria

The following exclusion criteria were used to exclude a publication from the systematic review.

The publication was excluded if:

- It was an opinion piece or commentary authored by donors or funding agencies actively supporting organizations participating in a partnership or directly supporting the partnership
- It did not include an evaluation or review component
- The subject matter focused on partnerships for global health professional training, education or research capacity building

Study Screening and Appraisal

The 188 publications from the initial search were screened against the inclusion criteria, resulting in six studies. A review of the references of the six publications produced another 16 publications meeting the study inclusion criteria. The contents of the studies were screened for the topic area, year of publication, global health partnership of interest, and the evaluation component by searching the studies for any references to “evaluation” or “effectiveness.”

Since the goal of this analysis was not to analyze study quality but to ascertain how global health partnerships are being studied, a simple descriptive framework was developed to classify and categorize the studies. Studies were analyzed for the type of study, the research team, the type of partnership described in the paper, type of data

collection, and evidence of any evaluation of the partnership of interest. Studies were also categorized by the nature of the disease or public health challenge being addressed by the partnership(s) under review.

Based on the assumption that a significant proportion of the studies identified in the literature review were likely to be qualitative, standard guidelines such as the GRADE (Grading of Recommendations, Assessment, Development, and Evaluations) framework for clinical studies were of limited use for this review. Instead, a conceptually broad framework was developed to extract findings from the studies. Following the ENTREQ statement on the synthesis of qualitative research, a framework synthesis approach was used to develop a conceptual model for analyzing the findings. The conceptual model draws from the fundamentals of public health program design, where programs and interventions are typically evaluated for process (program monitoring) and impact (program evaluation) (52). A similar framework was developed for extracting findings from the studies. In the context of this review, process and impact measures would capture the extent to which the papers included in the review analyzed the operational and strategic performance of global health partnerships (9). Since the purpose of this review is to understand how global health partnerships have been evaluated, studies were also scored on whether or not they applied a conceptual or theoretical framework to conduct the evaluation or analysis. In order to be inclusive of different types of studies in this emerging field, the appraisal of studies based on any or all discussions of process or outcome measures of partnerships was kept as simple as possible (see Table 1). This approach may begin to shed light on the current state of research and literature in global health partnership-building while also identifying opportunities for future research.

Figure 1. PICOT structure for literature search

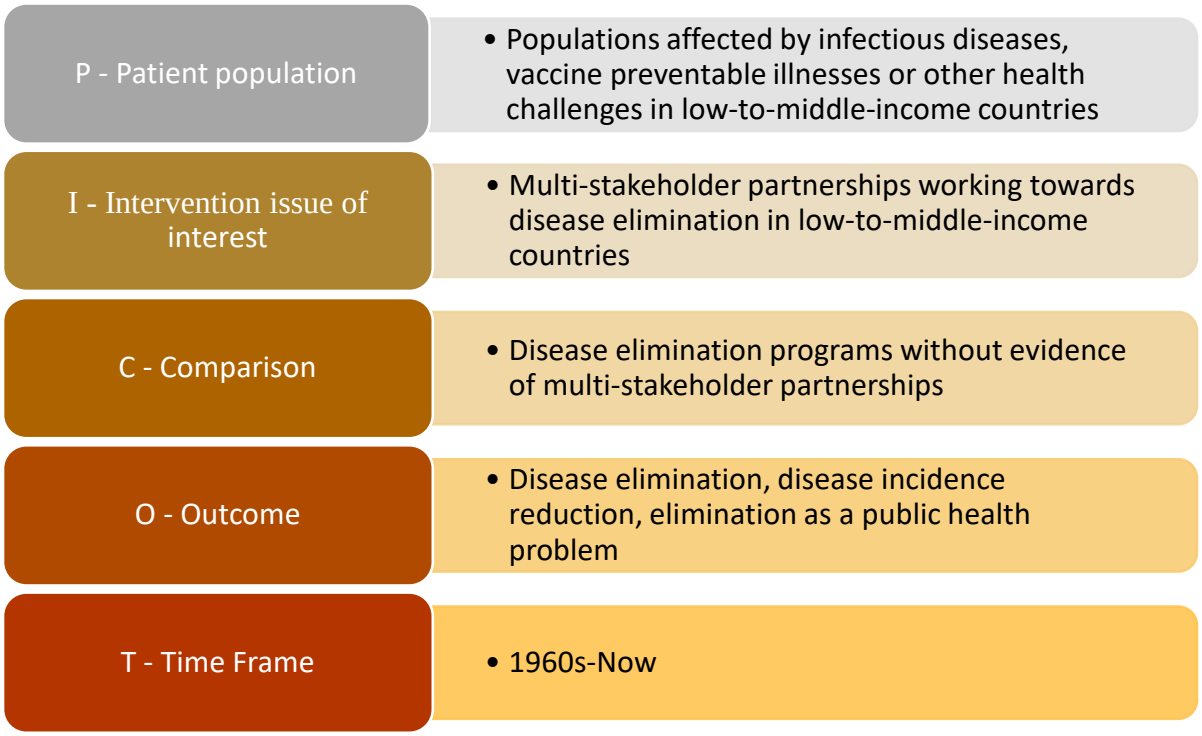

Table 1. Study appraisal measure

Measure	Yes/No
Process measures – partnership operations, governance, structure, membership, activities	1/0
Impact measures – impact on disease reduction (disease elimination, reduction of disease burden)	1/0
Conceptual Framework undergirding the evaluation or review?	1/0
Total possible score	3

Chapter 4. Results

Publications meeting criteria

An initial search yielded 91 results on Web of Science, 36 on Scopus, 27 on PubMed, and 34 on CAB Global Health, leading to a total of 188 results. Of the 188, 40 were duplicates, and an additional 138 were irrelevant to the purposes of this review. The full texts of the remaining ten results were reviewed, and four publications were excluded as they did not meet the inclusion criteria. A thorough search of titles, abstracts, and full text resulted in six publications, whose references were reviewed to identify additional studies that fit the inclusion criteria for the systematic review. At the end of the review process, a total of 22 publications met the criteria for analysis and appraisal (31, 36, 46, 47, 53-70). In one instance, though the study met most of the inclusion criteria, it was not included in the review as the publication was authored by employees of the global health partnership (71). Studies that focused mostly on reviews of previous evaluations of global health partnerships, and that did not include new information (gathered through interviews, data analysis, or document reviews) were excluded from the systematic review. Figure 2 provides a flow chart of the study selection.

Description of Eligible Studies

Of the 22 publications, 16 (72%) were published in peer-reviewed journals (31, 36, 46, 47, 58, 60-70); three (13%) appeared as book chapters (53-55); and the remaining three (18%) (56, 57, 59) were documents published and available online as independent evaluations. Of the 16 journal articles, two reviewed several global health partnerships (46, 47), and the remaining either reviewed global health partnerships focused on a specific health challenge or on groups of diseases for which

disease management strategies included vaccines and immunization (e.g., the GAVI Alliance).

Study evaluation designs included case study methodology and process-tracing, and data collection methods included document reviews, literature search, archival research, key-informant interviews, surveys, and participant observation.

Four (18%) of the studies selected were comparative analyses, comparing two or more global health partnerships (46, 47, 67, 70).

Study Time Frame

Six (27%) of the publications were published in 2016, three (13%) in 2002, and the rest were published between 2003 and 2015. It must be noted that a few of the global health partnerships analyzed in some of the earlier studies have since undergone significant changes to their structure, governance, and membership (47, 53). Figure 3 provides a breakdown of publication years.

Disease or Health Condition

Nine of the 22 studies included in the review evaluated, reviewed, or analyzed partnerships for infectious disease elimination or control (31, 36, 46, 47, 53, 54, 56, 57, 59) – of the nine studies, four reviewed partnerships for neglected tropical diseases (36, 46, 53, 54). Six studies reviewed or analyzed maternal or newborn health challenges (58, 62, 64, 65, 69, 70), and four studies dealt with non-communicable disease control (63, 66-68). The remaining three studies reviewed partnerships for vaccine-preventable illnesses (55, 60, 61). Figure 4 provides a visual representation of these findings.

Global Health Partnerships Featured in the Studies

Thirty-five global health partnerships were reviewed in the selected studies. These partnerships ranged from public-private partnerships such as the Mectizan Donation Program, the GAVI Alliance, and the International Trachoma Initiative (36, 53-55, 60) to multi-actor transnational advocacy networks that advance global maternal and child health, and alcohol and tobacco control (64, 66, 68, 69).

Of the 35 global health partnerships, 13 (37%) supported the development of drugs and vaccines for disease control and prevention (46, 47, 57); 12 (34%) promoted access to donated or subsidized pharmaceutical products such as chemotherapeutic drugs and vaccines (36, 46, 47, 53-55, 60, 61); and 10 (29%) facilitated coordination between partners and led advocacy efforts (31, 46, 47, 56, 58, 59, 62-70). (See Figure 5).

Some of the more mature partnerships like the Gavi Alliance and the Stop TB Partnership have been evaluated more often than others. For example, the Stop TB partnership for tuberculosis control was reviewed by six of the 22 studies (31, 46, 47, 56, 59, 65), and the Gavi Alliance was reviewed by five studies (46, 47, 55, 60, 61).

Study Sponsors

Of the 22 studies, 11 (50%) were funded either directly or indirectly by the Bill and Melinda Gates Foundation (31, 47, 57, 62, 64-70). Of the 11 studies, one was supported by the Initiative on Public-Private Partnerships for Health. This now-defunct initiative was sponsored by the Gates Foundation to explore the development of drugs and vaccines through public-private partnerships for neglected diseases (34). Another study was supported by the Saving Newborn Lives program that was funded

by the Gates Foundation and implemented by Save the Children USA, an international Non-Governmental Organization (NGO) (62). An independent review of the Medicines for Malaria Venture was supported by a consortium of donors including the Gates Foundation, the UK Department for International Development, the Welcome Trust, the World Bank, the Swiss Agency for Development and Cooperation, and the Netherlands Ministry of Foreign Affairs (57).

Three (14%) of the studies appeared as chapters in a book funded by the Edna McConnell Clark Foundation, Merck & Co, Pfizer Inc., and GSK (53-55). It is worth noting that the three studies that appeared in the book reviewed global health partnerships that were, in part, financially sponsored or supported by the sponsors of the book. Two studies that were independent evaluations, conducted five years apart, were funded by the partnership or organization that were the subject of the evaluation (56, 59).

Figure 6 provides a visual breakdown of study sponsors.

Level of Analysis

A majority of the studies (20/22) focused on the functions and governance of global health partnerships at the transnational or global level. Two studies reviewed country and partner experiences with GAVI's governance at the national level (60, 61).

Table 2 provides an overview of the search results by publication title, author(s), year, disease or health focus, and data collection method(s).

Evidence Assessment and Appraisal

The selected studies were assessed for the inclusion of process and impact measures, and

the application of a conceptual framework that provided the necessary foundation to build the analysis. Studies received a score of one point each for the inclusion of process measures, impact measures, and the conceptual framework, with the potential of receiving a total score of zero, one, two, or three.

The appraisal measures drew on the fundamentals of public health program design and evaluation, where public health interventions are assessed against outputs, outcomes, and impact (52, 72). Process measures include measures or metrics related to partnership operations, governance, structure, membership, and activities. Impact measures include measures or metrics related to disease elimination or reduction of disease burden, i.e., is the disease elimination partnership successful in reducing disease incidence or elimination.

Table 3 provides an overview of the results from the evidence assessment.

Synthesis of Findings

Overall, a majority of the studies found that global health partnerships were successful in garnering attention from policymakers and donors as a result of increased advocacy, communication, and pooling of partner resources (31, 36, 46, 54-56, 68-70).

However, several studies noted the lack of participation, representation, and influence of Global South agencies, including governments, civil society organizations, and research institutions in global health partnerships (46, 47, 56, 60, 61).

Communication was identified to be a critical success factor in global health partnerships. A review of the 'cross-sectoral' collaboration between Pfizer Inc. and the Edna McConnell Clark Foundation that resulted in the International Trachoma Initiative found that open communication between partners was key to its early success (53). A review of

the Mectizan Donation Program (MDP) found that partners rated MDP low on its ability to share information across the partnership (36). A related study analyzed MDP's role in delivering ivermectin for onchocerciasis to endemic countries and increasing access to medicine in successive years as process measures of success (54). Additionally, the study treated the reduction of disease burden as an impact measure attributable to the partnership's efforts.

William Muraskin's review of the Children's Vaccine Initiative (CVI, the precursor to the GAVI Alliance) highlighted several process measures that demonstrated the limited success of CVI, and its eventual evolution to the GAVI (55). The review indicated that CVI was limited from its very beginning by challenges related to vision and mission setting, lack of clarity on partner roles, issues with accountability, and weak management.

A review of the GAVI Alliance's efforts to promote health systems strengthening (HSS) efforts to boost immunization rates in recipient countries found that the Alliance rushed through decision-making without extensive consultations with partners, and failed to develop a shared vision for its new effort (60). The lack of trust and transparency in the Alliance's management of the HSS portfolio was also identified as a shortcoming in the review.

Grundy's review of GAVI's inter-agency coordination committee (ICC) in five Southeast Asian countries revealed that GAVI's country-level governance mechanism, while efficient in information exchange, did not have a clear definition of structure, role, responsibility or clarity of purpose (61).

A majority of the studies drew on theoretical and conceptual constructs to structure their review, analysis, or evaluation questions (31, 36, 47, 53, 54, 58, 60-70). Eight of the 22

studies included in this review were funded by the Global Health Advocacy and Policy Project (GHAPP), a three-year research initiative funded by the Gates Foundation (1). The eight studies built on Jeremy Shiffman and colleagues' conceptual framework to promote a multi-disciplinary approach to global health partnership evaluation (1, 31, 64-70). The framework considered three levels of analysis: (a) network features – the features of the global health network or partnership including leadership, governance, issue framing and network membership, (b) policy features – the global policy context in which the global health partnership or network operates, and (c), issue features – the particulars of the disease or health challenge including populations affected, the severity of morbidity or mortality rates, and ease of control, prevention or eradication.

Quissell and Walt's review of the global health partnership to stop tuberculosis (TB), one of eight studies in the GHAPP included in this review, considered three additional factors under network features for older, and more established partnerships such as the Stop TB partnership: institutionalization, scalability, and adaptability (31). The study found that the global TB partnership's structure, which included a paid secretariat at the WHO, and its close relationship with the WHO's TB department rendered the partnership stable enough to be able to scale up the Directly Observed Treatment Short Course (DOTS) strategy around the world. Conversely, the partnership's continued membership expansion also heightened the need to adapt strategies to suit a more diverse member audience. In other words, early institutionalization of the TB partnership promoted scalability but also made it more challenging to adapt.

Kent Buse's comparative analysis of infectious disease partnerships drew from Oran Young's seminal work on global and institutional governance (47). While historically,

governance has been a focus of analysis in political science on matters related to government, Oran Young's work on governance in the context of global organizations provided the conceptual outline for Kent Buse's work (73). Within this framework, global health partnership governance was broken down into its constituent parts: (a) legitimacy – how is legitimacy obtained and claimed, (b) representation or participation – the extent to which those who are affected by the work of the global health partnership participate in the decision-making, (c) accountability – the extent to which those who are responsible for decision-making and activities in a global health partnership can be held responsible for the decisions, (d) transparency – the extent to which the processes, activities, roles, and responsibilities of the actors and the decision-making are shared and available to those who are affected by these actions, and (e) efficiency, effectiveness, and sustainability - the extent to which the partnership is viable.

Barrett and colleagues' book chapter on the International Trachoma Initiative (ITI) – a partnership between a philanthropic foundation and a pharmaceutical company – drew on James Austin's research on strategic alliances between nonprofit and for-profit organizations (74). In this model, cross-sectoral collaborations were ranked on seven attributes (level of engagement, importance to the mission, magnitude of resources, the scope of activities, interaction level, managerial complexity, and strategic value), with each attribute expanding on a continuum of low to high, small to big, or narrow to broad. Applying this framework to the study of the ITI, the authors found that the cross-sectoral alliance that led to the founding of the ITI morphed from a purely philanthropic endeavor to one that was "integrative," or in other words, integral to the purpose and goals of each partner (53).

Muraskin's review of the CVI was less a theory-driven review than a sweeping historical narrative of the birth, development, and evolution of the CVI, weaving in quotes from key-informant interviews and reporting on conversations, meetings, and events that served as turning points in the history of the CVI (55).

Laura Frost and colleagues' review of the MDP drew on the sociological theory of boundary objects and social worlds to explore the partnership between Merck and the Task Force for Child Survival and Development (now, the Task Force for Global Health) in delivering ivermectin to endemic communities (55). In this view, Merck and the Task Force occupy distinct 'social worlds' (one, a producer of ivermectin (later named Mectizan), and the other, a nonprofit organization) brought together by 'boundary objects' such as the Mectizan Expert Committee and Dr. Bill Foege, then the Executive Director of the Task Force for Child Survival and Development. As boundary objects, Dr. Foege and the Committee served to bring together two disparate social worlds, providing common ground for a pharmaceutical company and a public health nonprofit to advance disease elimination.

The Peters & Phillips review of the MDP built on two conceptual frameworks - Mel Gill's conceptual model on good governance (creating a vision, securing resources, defining clear roles and responsibilities, establishing benchmarks for performance, accounting to stakeholders), and Mitchell and Shortell's seven dimensions of governance and management for health partnerships (36, 75, 76).

Reviewing the efforts of the GAVI Alliance in promoting health systems strengthening (HSS) initiatives in low-to-middle income countries, Naimoli drew on the World Bank's checklist for evaluating partnerships and Druce and Harmer's results matrix for

partnership effectiveness to examine the Alliance's efforts in HSS (60, 77, 78).

Other studies drew on principles of governance or management espoused by the multilateral agencies such as the WHO and the World Bank to guide the evaluation or analysis. For example, Grundy's review of the GAVI was organized around WHO's principles of governance, including policy guidance, intelligence and oversight, partnership and coalition-building, system design, and accountability (61, 79).

In conclusion, 13 studies scored two out of three in evidence assessment (36, 47, 53, 59-62, 65-70). Most studies included a process measure; however, only three studies included process measures, impact measures, and conceptual frameworks (31, 54, 64). One study, on tobacco control, included only a conceptual framework but no process or impact measures (63). The synthesis of results from the systematic literature review indicates that the extent to which global health partnerships contributed to disease elimination is difficult to ascertain. This and other key insights are discussed in the following chapter.

Figure 2. Flow chart of study selection

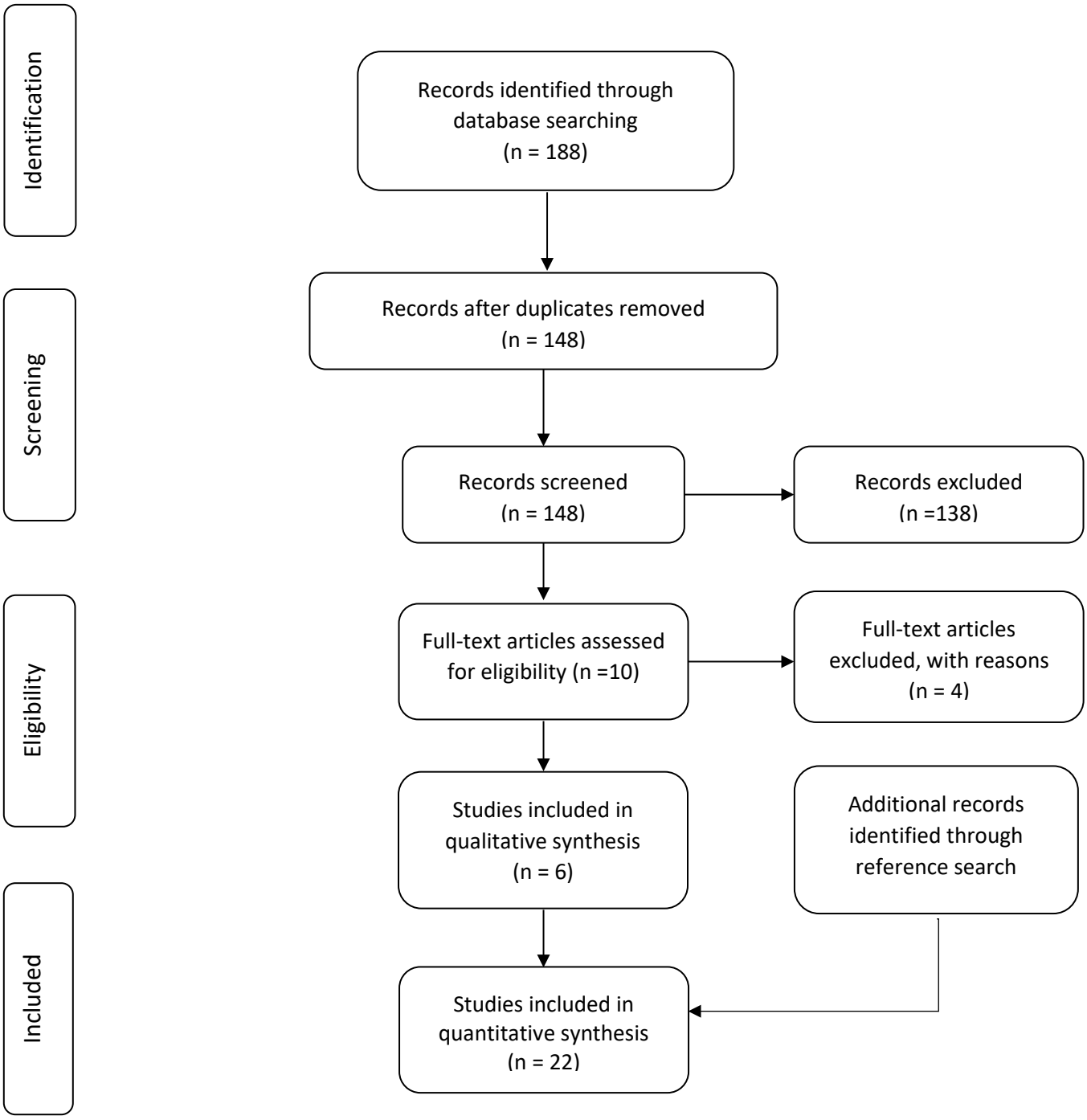

Figure 3. Year of publication

N=22

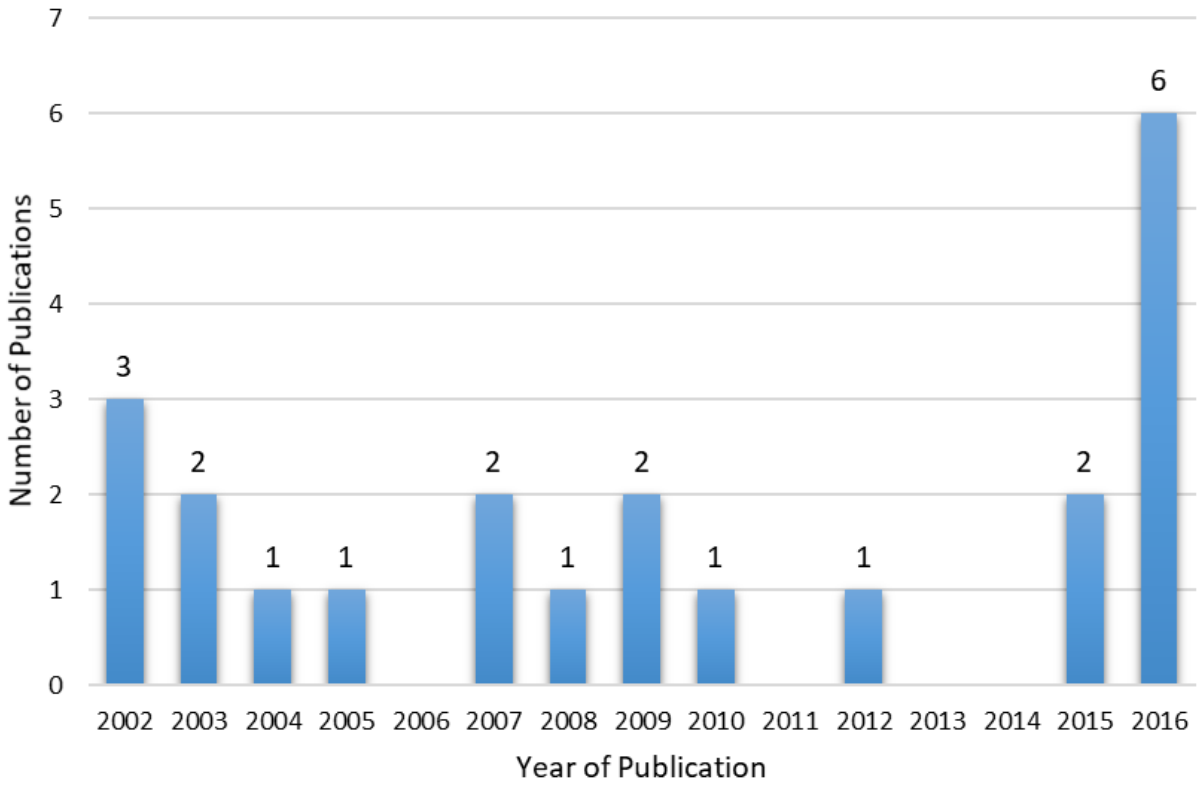

Figure 4. Disease or health condition focus

N=22

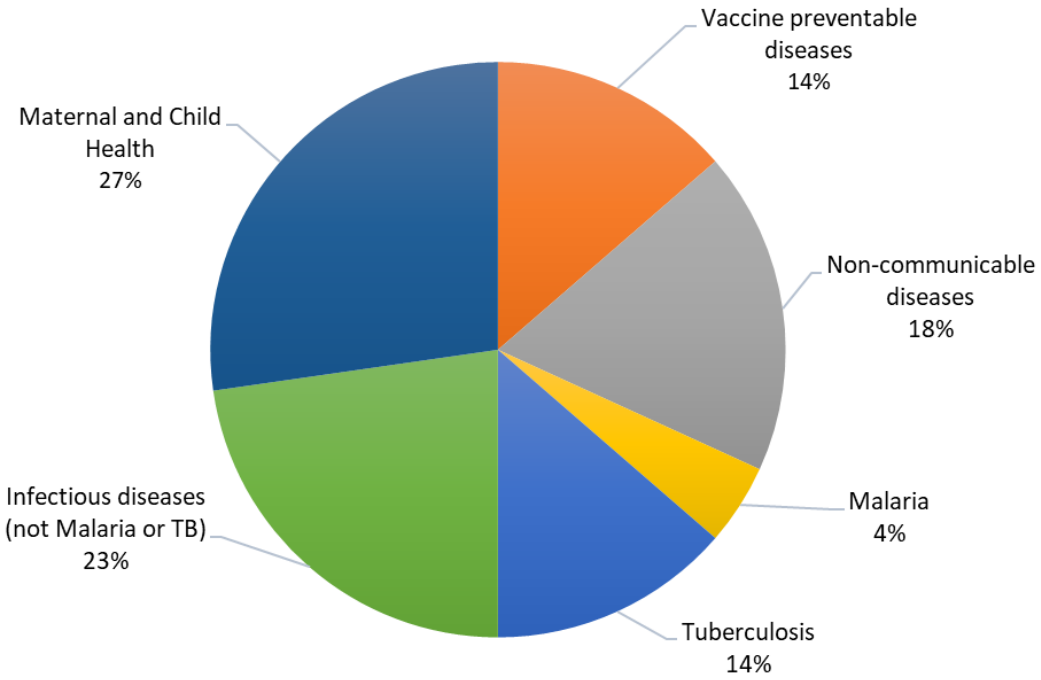

Figure 5. Global health partnerships reviewed in the studies

Number of partnerships = 35

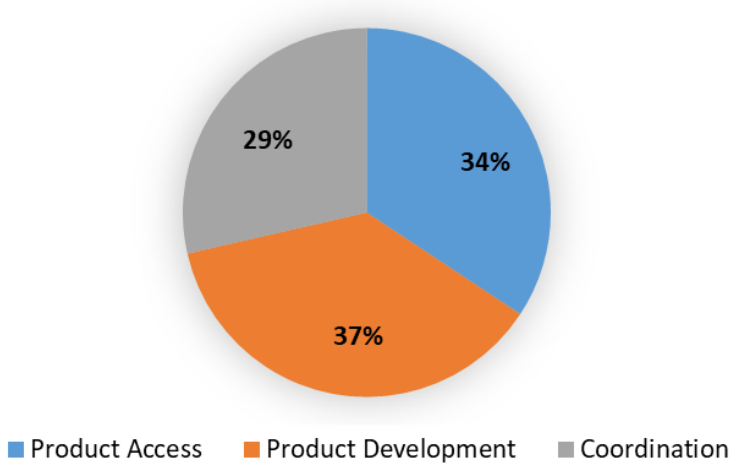

Figure 6. Study sponsors

N=22

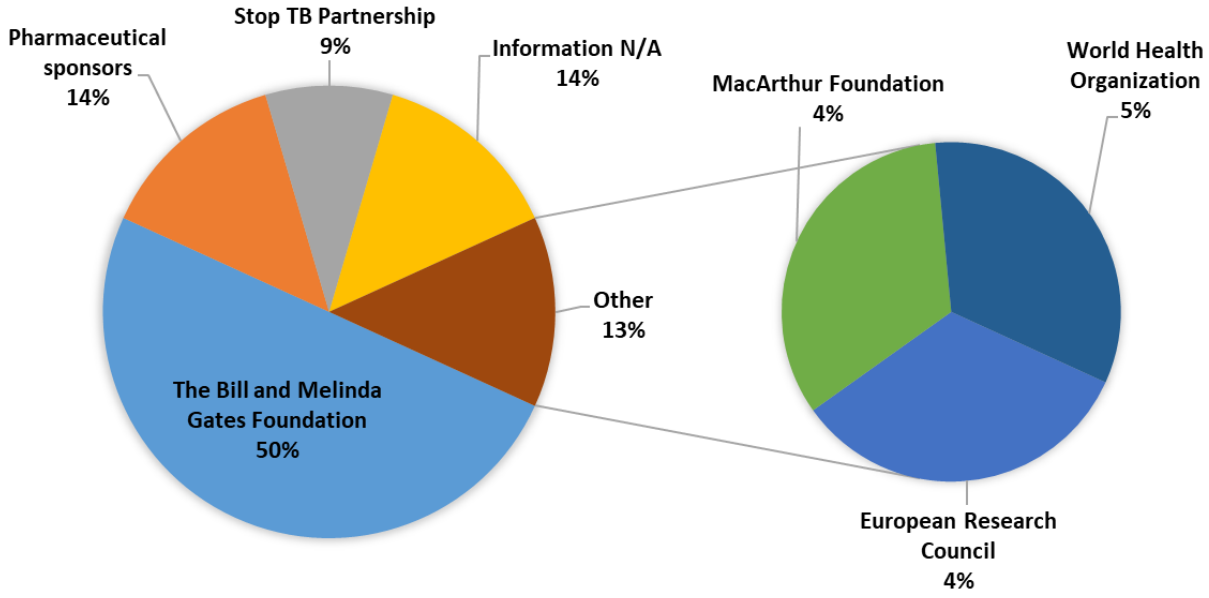

Table 2. Overview of selected studies

Author(s)	Publication Title	Year of Publication	Type of Publication	Disease/Health Condition	Study Funding Source	Data Collection Method
Diana Barrett, James Austin, Sheila McCarthy	Cross-sector collaboration: lessons from the International Trachoma Initiative	2002	Book Chapter in Public-Private Partnerships for Public Health	Trachoma	Edna McConnell Clark Foundation; GSK, Merck, & Pfizer Inc.	Document reviews, literature search [inferred]
Laura Frost, Michael R. Reich, Tomoko Fujisaki	A partnership for ivermectin: social worlds and boundary objects	2002	Book Chapter in Public-Private Partnerships for Public Health	Onchocerciasis	Edna McConnell Clark Foundation; GSK, Merck, & Pfizer Inc.	Document reviews; interviews
William Muraskin	The last years of the CVI and the birth of the GAVI	2002	Book Chapter in Public-Private Partnerships for Public Health	Vaccine-preventable illnesses	Edna McConnell Clark Foundation; GSK, Merck, & Pfizer Inc.	Document reviews; interviews
Kent Buse	Governing Public-Private Infectious Disease Partnerships	2003	Journal [Brown Journal of World Affairs]	Infectious diseases	Initiative on Public-Private Partnerships in Health (funded by the Gates Foundation)	Cross-sectional comparative study
Karen Caines, Richard Biritwum Neil Cameron	Independent Evaluation of the Global StopTB Partnership	2003	Independent evaluation	Tuberculosis	Stop TB Partnership	Document reviews; interviews
David H. Peters, Traci Phillips	Mectizan Donation Program: evaluation of a public-private partnership	2004	Journal [Tropical Medicine & International Health]	Onchocerciasis	N/A	Document reviews; survey; semi-structured interviews
Alan Fairlamb, Keith Bragman, Hassan Mshinda, Adetokunbo Lucas	Independent Review of Medicines for Malaria Venture	2005	Independent review for the DFID Health Resource Center	Malaria	DFID, Wellcome Trust, World Bank, Swiss International Development Agency & the Gates Foundation	Document reviews; interviews; site visits

Author(s)	Publication Title	Year of Publication	Type of Publication	Disease/Health Condition	Study Funding Source	Data Collection Method
Kent Buse, Andrew M. Harmer	Seven habits of highly effective global public-private health partnerships: practice and potential.	2007	Journal [Social Science & Medicine]	Diseases of poverty	N/A	Interviews; secondary data analysis; literature review
Jeremy Shiffman, Stephanie Smith	Generation of political priority for global health initiatives: a framework and case study of maternal mortality	2007	Journal [The Lancet]	Maternal health	Center for Global Development & the MacArthur Foundation	Interviews; archival research; literature review; document reviews; data analysis
McKinsey & Co,	Independent Evaluation of the Stop TB Partnership	2008	Independent evaluation	Tuberculosis	Stop TB Partnership	Data analysis; literature & document reviews; survey; interviews; site visits
Joseph F. Naimoli	Global health partnerships in practice: taking stock of the GAVI Alliance's new investment in health systems strengthening	2009	Journal [The International journal of health planning and management]	Vaccine-preventable illnesses	N/A	Document reviews; participant observation
John Grundy	Country-level governance of global health initiatives: an evaluation of immunization coordination mechanisms in five countries of Asia	2009	Journal [Health Policy & Planning]	Vaccine-preventable illnesses	The WHO	Literature review; document reviews; interviews
Jeremy Shiffman	Issue attention in global health: the case of newborn survival	2010	Journal [The Lancet]	Child health	Saving Newborn Lives at Save the Children, funded by the Gates Foundation	Case study methodology; interviews; document reviews;
David Reubi	Making a human right to tobacco control: Expert and advocacy networks, framing and the right to health	2012	Journal [Global Public Health]	Tobacco control	European Research Council	Literature review; document reviews; interviews
David Berlan	Pneumonia's second wind? A case study of the global health network for childhood pneumonia	2015	Journal [Health Policy & Planning]	Child health	The Gates Foundation	Document reviews; literature review; interview; participant observation

Author(s)	Publication Title	Year of Publication	Type of Publication	Disease/Health Condition	Study Funding Source	Data Collection Method
Uwe Gneiting	From global agenda-setting to domestic implementation: successes and challenges of the global health network on tobacco control	2016	Journal [Health Policy & Planning]	Tobacco control	The Gates Foundation	Document reviews; interviews
Uwe Gneiting, Hans Peter Schmitz,	Comparing global alcohol and tobacco control efforts: network formation and evolution in international health governance	2016	Journal [Health Policy & Planning]	Tobacco and alcohol control	The Gates Foundation	Document reviews; archival research; interviews
Kathryn Quissell, Gill Walt	The challenge of sustaining effectiveness over time: the case of the global network to stop tuberculosis	2016	Journal [Health Policy & Planning]	Tuberculosis	The Gates Foundation	Document reviews; interviews
Hans Peter Schmitz	The global health network on alcohol control: successes and limits of evidence-based advocacy	2016	Journal [Health Policy & Planning]	Alcohol control	The Gates Foundation	Document reviews; archival research; interviews; participant observation
Jeremy Shiffman	Network advocacy and the emergence of global attention to newborn survival	2016	Journal [Health Policy & Planning]	Maternal health	The Gates Foundation	Document reviews; literature review; interview; participant observation
Stephanie L Smith, Mariela A Rodriguez	Agenda setting for maternal survival: the power of global health networks and norms	2016	Journal [Health Policy & Planning]	Maternal health	The Gates Foundation	Document reviews; interviews
Stephanie L. Smith, Jeremy Shiffman	Setting the global health agenda: The influence of advocates and ideas on political priority for maternal and newborn survival	2016	Journal [Social Science & Medicine]	Maternal & child health	The Gates Foundation	Literature review; document reviews; interviews; participant observation

Table 3. Study appraisal and assessment

Selected Study (disease or health focus in bold)	(A) Process Measure* *1=Yes; 0=No*	(B) Impact Measure† *1=Yes; 0=No*	(C) Conceptual Framework *1=Yes; 0=No*	Score *(A+B+C)*
Barrett et al. (2002)	1	0	1	2
Frost et al. (2002)	**1**	**1**	**1**	**3**
Muraskin (2002)	1	0	0	1
Buse (2003)	1	0	1	2
Caines et al. (2003)	1	0	0	1
Peters & Phillips (2004)	1	0	1	2
Fairlamb et al. (2005)	1	0	0	1
Buse & Harmer (2007)	1	0	0	1
Shiffman & Smith (2007)	1	0	1	2
McKinsey & Co. (2008)	1	0	0	1
Naimoli (2009)	1	0	1	2
Grundy (2010)	1	0	1	2
Shiffman (2010)	1	0	1	2
Reubi (2012)	0	0	1	1
Berlan (2016)	1	0	1	2
Gneiting (2016)	1	0	1	2
Gneiting & Schmitz (2016)	1	0	1	2
Quissell & Walt (2016)	**1**	**1**	**1**	**3**
Schmitz (2016)	1	0	1	2
Shiffman (2016)	**1**	**1**	**1**	**3**
Smith & Rodriguez (2016)	1	0	1	2
Smith &Shiffman (2016)	1	0	1	2

Note: *Process Measures include measures or metrics related to partnership operations, governance, structure, membership, and activities; †Impact Measures include measures or metrics related to disease elimination or reduction of disease burden. Studies that scored a total of 3 are bolded.

Chapter 5. Discussion

Tremendous progress has been made over the past 20-30 years in improving the health outcomes of communities in the Global South - the global maternal mortality ratio has dropped from 342 per 100,000 live births in 2000 to 211 per 100,000 live births in 2017 (80). Fewer children under five died from infectious diseases and other preventable causes in 2018 (38.6 per 1000 live births) than in 1960 (93.2 per 1000 live births) (80). Advances in drug development have made it possible to manage once deadly diseases such as HIV/AIDS. Infectious diseases such as lymphatic filariasis, trachoma, and onchocerciasis affect fewer people today as a result of improved diagnostics, effective therapeutics, scale-up of program delivery, and the widespread practice of water, sanitation, and hygiene practices.

The proliferation of multi-stakeholder partnerships or coalitions between national governments, multilateral organizations, and academic and nonprofit organizations has been offered as one possible mechanism for such progress in global health outcomes. This systematic review sought to investigate the current state of knowledge on how such partnerships have achieved collective goals. Specifically, this systematic review reviewed studies that brought a conceptual, theory-driven rigor to the study of global health partnerships. The twenty-two studies identified in the review suggest that the study of global health partnerships benefits from a multidisciplinary approach that draws on theories from the social sciences, management, and public health.

The review also indicated that the field of inquiry is still in its infancy and requires a more significant investment in critical and theory-driven work to advance our understanding of how partnerships succeed.

The late 1990s and the early years of the new millennium saw a proliferation of global health partnerships, with a majority of the partnerships, focused on disease-specific goals (12). Not surprisingly, the studies reviewed in this analysis were published between 2000 and 2016,

indicating that evaluations of global health partnerships are in their emergent phase.

The following sections synthesize findings from the systematic review organized by process measures, impact measures, conceptual framework, partnership funding, and partnership categories.

Process measures

Briefly, process measures refer to metrics or indicators that measure global health partnerships' efficiency and performance relating to administration, governance, management, or resource management. Studies in this review were assigned a score based on the presence or absence of process measures.

Results from this systematic review indicate that a majority of the studies identified partnership governance (board, secretariat, and membership), inclusion, and representation as process measures. For example, reviews of the Stop TB Partnership found that the partnership's governance structure (coordinating board, secretariat, and partners' forum) was clear, transparent, and high functioning. Several studies identified the need for greater inclusion of Global South voices in partnerships either as participants, representatives, or as influencers on partnership boards and governing bodies. Since a majority of the partnerships reviewed in this research aimed to serve endemic communities in the Global South or low-to-middle income countries, diversity and inclusion will likely continue to serve as metrics for partnership evaluation.

The ability of global health partnerships to barter information and serve as a communications platform was another key process indicator in assessing partnership performance.

Studies whose conceptual frameworks drew on social movement and collective action principles considered issue characteristics, disease characteristics, and the political context as process

measures. For example, the case studies on maternal survival identified the emergence of women's rights movement as a key catalyst for advancing maternal health and survival (69, 70). Similarly, the case study on newborn survival noted the influence of a seminal paper in the Lancet by Drs. Abhay and Rani Bang in catalyzing newborn survival as a global health issue (64).

The review also revealed that global health partnerships are dynamic entities that are constantly shaping and being shaped by their constituents and members. For example, the Children's Vaccine Initiative (CVI), an early precursor to the Gavi alliance was a multi-stakeholder partnership that was hosted by the WHO (55). Ten years after the founding of CVI, the Gavi alliance was born out of a need to free the CVI from the WHO hosting arrangements. Today, Gavi presents as a public-private partnership that is registered as a public charity in Switzerland and the United States. Evaluations of such partnerships then have to consider changes to partnership structure, legality, and purpose over time.

Impact measures

Most of the studies assessed in this review did not include a metric or a discussion on global health partnership effect on disease outcomes. In the case study on global health partnerships that advanced newborn survival, Jeremy Shiffman noted that it is difficult to attribute the increase in priority for newborn health to the work of the global health partnerships that advanced policymaking to address neonatal and child mortality. However, he also noted, *"[w]hat we can do is make a cautious inference based on the evidence considered…that this network accelerated change but not to the extent that its members hoped for when they began their work—or at least not yet."* (64). Partnerships operate in such dynamic contexts that disease reduction or elimination cannot be solely attributed to partnership efforts.

Notably, a systematic review of public-private partnerships to control and prevent NTDs found fewer than ten empirical studies that used either quantitative or qualitative methods to assess the partnerships (21). In addition to the limitations in assessing the impact of partnerships on disease and health outcomes, global health partnerships suffer from the lack of a counterfactual in that disease and health outcomes cannot be studied in the absence of such partnerships.

Table 4 provides a sampling of definitions and descriptors of key terms such as governance from some of the studies selected for this review.

Conceptual frameworks

Research and scholarship in global health governance have mostly been either normative or descriptive, where study findings emerged from a mixed-methods approach that included qualitative methods, document review, and data analysis.

This systematic review highlighted the multidisciplinary approach in evaluating and assessing global health partnerships. The selected studies drew on sociological, political science, and management literature in analyzing how partnerships provided services and advanced disease elimination. A multidisciplinary approach to evaluating global health partnerships acknowledges the dynamics of collaborative engagement in ways that a purely disciplinary approach may not. For example, applying the social movement lens to global health partnerships allows for a nuanced understanding of partnerships that emerged in the maternal and child health communities in the US and around the world starting in the 1980s. The women's rights movement provided the groundwork for raising maternal survival and health as a women's rights issue. Framing maternal survival as a women's rights issue triggered multilateral organizations to invest in studying the issue and mounting a global response (69). The studies funded by the Global Health Advocacy and Policy Project (GHAPP) applied social movement and collective

action theories in case studies of global alcohol and tobacco control, maternal and newborn survival, and tuberculosis.

A management sciences approach to assessing global health partnerships viewed the strategic alliance between Pfizer and the Edna McConnell Clark Foundation for trachoma control as an alliance that built on comparative advantages and minimized risk by externalizing decision making to an independent authority (53).

Global health partnerships identified in this systematic review seek to improve health outcomes by bringing institutions and individuals together through mechanisms that range from loose and informal networks to highly structured partnership arrangements. Thus, any study of the complex interplay of organizations, individuals, norms, values, and the particularities of the disease or health intervention that is being promoted requires an evaluation approach that acknowledges the complexities when individuals and organizations interact within and outside institutions.

The new and emerging literature on evaluation methodologies for clinical and public health networks that draw on organizational studies and social network analysis theories hold some promise in their applicability to the study of global health partnerships (81).

Partnership funding

The outsized influence of some global health donors was evident in the funding source for the studies identified in the review. Fifty percent of the studies were either directly or indirectly supported by the Bill and Melinda Gates Foundation (31, 57, 58, 62, 64-70). The Foundation, by its estimate, has funded most global health initiatives through partnerships such as the Global Fund, the GAVI Alliance, or the Partnership for Maternal, Newborn, and Child Health (9).

This raises the issue of the viability of global health partnerships in the absence of significant support from private philanthropy. Over the last twenty years, the Gates Foundation has catalyzed drug discoveries, vaccine development, and research in areas historically neglected by other donors. It has also provided stopgap funding for multilateral organizations such as the WHO. While bilateral funding shadows philanthropic giving to global health issues, bilateral donors such as USAID or DFID are subject to governmental oversight. They are also answerable to their citizens, while private philanthropies do not bear the burden of external oversight. The review identified that global health partnerships that are relatively more successful achieve that success through greater transparency and trust between partners. The extent of the private philanthropic influence in global health partnerships and its relative effect on partnership governance and outcomes is identified as a subject for future research.

Partnership categories

Research initiated by the Initiative on Public-Private Partnerships for Health in the 2000s found that most partnerships fell into two main groups – product access and product development partnerships (12). This initial classification has since been applied in several studies on global health partnerships. Thus, for example, public-private partnerships such as the GAVI alliance are treated as product access partnerships as they work to promote access to vaccines. Partnerships such as the Drugs for Neglected Tropical Diseases Initiative (DNDi) were treated as drug development partnerships as they promote research and development of new drugs for NTDs. Some of the partnerships assessed by the selected studies did not have a legal status and were hosted by the WHO or NGOs. In contrast, others, such as the GAVI Alliance, served as stand-alone and independent legal entities. Some partnerships had paid secretariats, while others functioned as loose networks of experts and practitioners.

Although differences in legal status, membership, and governance confound comparability across standard metrics, the classification of partnerships may have limited value in the evaluation of partnership performance. While such classifications may have been useful in the early years of global health partnerships, they are arguably an anachronistic concept when considering the complexity of such partnerships today. The GHAPP studies identified in this systematic review demonstrate that global health partnerships transcend transactional activities. While the Mectizan Donation Program promotes product access (access to mecitzan in use against onchocerciasis), it was also noted for its ability to build relationships between stakeholders and mobilizing resources for countries in the fight against onchocerciasis. These are the value-added services provided by partnerships that neither a product access nor a product development categorization can capture effectively.

Finally, based on the review of the selected studies, it is difficult to assess if and how salient such classifications are for the evaluation of such partnerships.

Recommendations

Inclusion and transparency

In 1984, a group of influential leaders from the WHO, UNICEF, UNDP, the World Bank, and the Rockefeller Foundation came together to set up a task force whose goal was to solve the global crisis of neonatal and infant mortality. The Task Force for Global Health (then the Task Force for Child Survival) was born out of the union of these great minds nearly forty years ago, in 1984, when global health actors were predominantly from the global north. The global health landscape of 2020 is remarkably different. While funding continues to be driven by global north governments and philanthropies, there is a greater need for representation of Global South governments, civil society organizations, academic experts, and practitioners in global health

partnerships and coalitions.

Global health partnerships today exist in a hyper-connected world brought ever closer together by the democratization of information exchange through social media. The lines between local and global are blurred by the rapid dissemination of news, views, and information across the globe. This development holds promise for greater transparency and inclusion in global health partnerships of Global South voices and civil society engagement. Examples of the success of civil society participation abound in the global HIV/AIDS movement, where gay rights and social justice advocates in the global north fought for the rights of persons living with HIV/AIDS (82). Similarly, greater participation of civil society organizations and NGOs from the Global South in global health policy, advocacy, and scale-up can address some of the challenges in transparency, inclusion, and diversity in global health partnerships. The process measures to track such participation could be as simple as the number of Global South partners active in partnerships, to complex metrics on successes in advancing policymaking in countries where such civil society partners have been active.

Towards a common set of norms

One of the challenges in comparing across global health partnerships lies in the multiplicity of actors, relationships between actors, their geographic spread, and the longevity of partnerships. Donors, global north NGOs, and multilateral organizations could develop a common core of normative guidance that encourages global health partnership adherence through voluntary participation. Just as NGOs sign on to global standards such as the core humanitarian standards alliance or global standard for civil society organization (CSO) accountability, global health partnerships might comply with global standards on global health coalition-building. Though the norms may be non-binding, by signing-on to these norms, global health actors signal to other partners their intent to play by the "rules."

Building consensus before building partnerships

The GHAPP studies have shown that agenda-setting and formation are necessary prerequisites for effective collaborations. Donors and global health organizations promoting the need for collaborative problem-solving need to be able to promote, foster, or catalyze the coalescing of multiple stakeholders around shared interests rather than impose the structure of partnership or coalition. This again underscores the need for a multidisciplinary approach to evaluating global health partnerships to address the complex interpersonal, organizational, institutional dynamics that influence and are influenced by partnerships.

More evaluations, more donor diversity

Fifty percent of the studies reviewed in this systematic review were directly or indirectly funded by the Bill and Melinda Gates Foundation. The Gates Foundation has accelerated research and development of new drugs and vaccines for many diseases and has served as a foundational donor for partnerships such as the Gavi alliance. In the interest of transparency, accountability, and good governance, global health partnerships could request that donors support periodic and rigorous evaluations of the partnerships using metrics or evaluation frameworks that are somewhat standardized across the partnerships.

Increasing the diversity of donors also reduces the overwhelming influence of a single private philanthropic donor on global health partnerships and outcomes. However, this is unlikely to be pursued by global health actors and requires new or additional private philanthropists to step up and increase their support of global health partnerships.

An operations research mindset?

In a 2020 special issue of the New Directions for Evaluation journal on the evaluation of coalitions and collaborative efforts, researchers called for the use of pragmatic indicators that might be beneficial to both practitioners and researchers in the evaluation of community health

coalitions (83). Building on this concept, global health partnerships could develop partnership metrics that (a) measure progress against performance objectives, and (b) provide the necessary information that advances research on global health partnerships. If operations research can inform improvements to public health service delivery, the development of basic metrics for global health partnership performance can also contribute to improvements in health service delivery and grow the body of knowledge on collaborative problem-solving in global health.

Conclusion

Global health partnerships have transformed public health service delivery and interventions over the last several decades. This review has added to the current body of knowledge on global health partnerships and highlighted the challenges in developing metrics for evaluating global health partnerships that are all-encompassing. As with any systematic review, this study has several limitations. While the systematic review included documents such as conference proceedings, reviews, book chapters, and books, most of the studies reviewed are limited to what was available in the peer-reviewed literature. The search strategy has likely missed vital publications. Additionally, the qualitative analysis and study assessment measures developed are subject to researcher bias.

This study limited the database search to infectious diseases, and maternal and child health conditions. Only two partnerships were identified that focused on non-communicable diseases such as tobacco-related illnesses and alcohol-related conditions. However, a comparative analysis of global health partnerships for infectious diseases and non-communicable diseases may reveal differences in funding, donor interest and research focus that may not be reflective of the actual disease burden in the Global South.

The Global health partnerships of 2020 are markedly different than the partnerships established

30 years ago. Where once the World Health Organization used to be the sole norm setting organization, today, private philanthropies and other international organizations are more active than ever before in developing norms and guidelines for global health. Where once a few influential organizations in the global north could convene to solve health challenges in the Global South, such an approach would be neither expedient not equitable today.

This systematic review has revealed that global health partnerships have to demonstrate adherence to values such as inclusion, diversity, and representation. Hence, partnerships have an opportunity to elevate their performance to higher standards of excellence. By aligning partnership activities and objectives with universal values and principles, partnerships can affirm their commitment to global health equity and universal well-being.

Table 4. Definitions and descriptions of key terms from some studies

Definition (or Description) of Governance		
Buse (2003) (47)	***Grundy (2010)*** (61)	***Quissell & Walt (2016)*** (31)
Governance concerns the manner in which society, or an institution, 'steers' itself. It comprises the formal and informal norms, rules, and decision-making procedures that bring order and structure cooperation. Governance relies on systems of command and control…[s]ystems of rule can exist in the absence of formal legal authority…it is their unique governance-the structuring of cooperation in the absence of either hierarchical legal authority or the discipline of marker relations-char renders public-private partnerships particularly innovative and interesting.	*Health sector governance is concerned with the actions and means by which society organizes itself for the health of the population.*	*Three primary modes of network governance have been identified: (1) shared, where most or all network members interact on a relatively equal basis to make decisions; (2) lead organization, where all major network-level activities and key decisions are coordinated through and by a single participating member and (3) network administrative organization, where a separate entity is set up specifically to govern the network and its activities.*

Definition of Global Health Partnership (or equivalent)	
Buse & Harmer (2007) (46)	***Quissell & Walt (2016)*** (31)
Here we use the term to describe relatively institutionalized initiatives, established to address global health problems, in which public and for-profit private-sector organizations have a voice in collective decision-making. Such partnerships vary across a range of variables including their functional aims, the size of their secretariats and budgets, their governing arrangements, and their performance.	*[A] global network—[is] the system of relations between individuals and organizations working in concert to address a complex problem.*

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