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Closing the Know-Do Gap in Global Health in Sub-Saharan Africa: A Critical Scoping Review of Knowledge Translation Practices in Global Health Research Partnerships.

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Abstract

Introduction: Sub-Saharan Africa is unlikely to achieve the Sustainable Development Goals by 2030. With poor health outcomes and a dependence on external funding, global health research partnerships (GHRPs) with high-income countries are criticized for being inequitable and inadequately representing local researchers.

Objective: This study examined the barriers and facilitators to Knowledge Translation (KT) in GHRPs in Sub-Saharan Africa, critiquing them through the lens of local researchers' experiences and the degree of congruence with partnership principles in contemporary literature.

Methods: A critical scoping review of literature from five databases was conducted to identify barriers and facilitators to KT. Alignment with published GHRP principles was assessed using a rubric.

Conclusion: Evaluating GHRPs and identifying KT barriers and facilitators to KT can guide researchers and policymakers in building equitable and efficient partnerships. This process promotes decolonization and co-creating sustainable bridges between research and global health policy and practice in Sub-Saharan Africa.

Keywords

Critical Scoping Review, Partnership Principles, Knowledge Translation, Global Health Research Partnerships, Sustainable Development Goals, Sub-Saharan Africa.

Summary for Lay Audience

This research explores how partnerships that implement health projects in Sub-Saharan Africa can better share health information and contribute to improving health outcomes, despite facing challenges like limited funds, poor research skills, and weak coordination. Previous studies on the subject suggest that a key factor for improving health outcomes was the missing link (called the Know-Do Gap) between having well-researched evidence (that shows health administrators and health workers what to do) and the national health policies and the actions of health care workers (which often, are not based on well-researched evidence).

The study examined thirteen research publications to identify factors that improve or worsen this know-do gap. The findings show that projects do better when organizations collaborate effectively, communicate clearly, and respect each other. However, they often struggle due to a lack of resources like money, technology, and a failure to fully include local knowledge, culture, as well as the perspectives of the researchers and persons of influence who are not traditionally considered researchers, who make up the partnership.

In summary, for health research projects in Sub-Saharan Africa to be successful, it is crucial that all participants (particularly the local governments and communities participating in the research) collaborate effectively, use technology better, and understand and respect each other's needs and opinions while using their resources wisely. This approach can help overcome challenges in forming research partnerships and lead to better health outcomes for everyone, within and outside the continent.

Co-Authorship Statement

I, Olawale Fadare, acknowledge that this thesis consists of five chapters that emerged as a result of collaborative efforts.

The primary intellectual contributions were made by me, the first author who: conceptualized the research idea, researched the methodology, and designed the research. I also conducted the systematic literature search for the scoping review, developed the scoring rubric for the critical review, extracted the study characteristics and other findings in the systematically selected literature and led the writing of the manuscripts.

The contribution of the co-author, Prof. Anita Kothari (in all five chapters), was primarily through supervision of the research, theoretical and methodological guidance, reflexive dialogue and intellectual and editorial support in crafting the thesis for submission.

The contribution of the co-author, Prof. Elyse Nouvet (in all five chapters) through theoretical and methodological guidance, reflexive dialogue (especially regarding global health concepts, trends, and scholarly positions), and editorial feedback.

The contribution of the co-author, Mary Ndu (in chapter 4), was primarily as a second reviewer for the systematic literature search, testing the extraction tool and the scoring rubric.

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DEDICATION: I dedicate this work to my past self – for being comfortable with discomfort, for the boundaries spanned and stereotypes confronted – doing it scared when you had to. Hold your head high, WE DID IT! Step with me into the future – Na man you be!

This work is a testament to God's mercy and the purpose He places in every human being: the power to create, to apply effort, to give of oneself, to co-produce knowledge and wisdom… and I am profoundly thankful for everyone who has been a part of my purpose finding journey.

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Chapter 1

1 Introduction

Recent data from the World Health Organization (WHO) emphasize the significant health disparities between high-income countries (HICs) and low- and middle-income countries (LMICs) as demonstrated by differences in under-five mortality rates and lifetime maternal mortality risks in the two groups of countries (WHO, 2023a). Health equity means that everyone has the opportunity to be as healthy as possible, and it is the "principle or goal that motivates [global] efforts to eliminate disparities in health between groups of people [countries] who are economically or socially worse-off and their better-off counterparts" (Braveman, 2014, p. 366). Equity-related outcomes in global health are influenced by factors like the wealth and development of a country and the availability of systems to anticipate and respond to the social and structural determinants of health (Crear-Perry et al., 2021; Donneyong et al., 2020; Filip et al., 2022; Forster et al., 2020; Isasi et al., 2021; Whitehead & Dahlgren, 2006; WHO, 2023b; D. R. Williams & Cooper, 2019). Historically, the 10/90 gap described by the Commission on Health Research for Development (1990) was a watershed moment that highlighted the disproportionate investment in health research globally when compared to the burden of disease in LMICs. The advocacy to reverse this fundamental inequity in global health has persisted over the last two decades, challenging global health policy and practice to leverage the global knowledge pool of research and evidence of what works (Conceição et al., 2009; Global Symposium on Health Systems Research, 2012; Health Systems Global, 2010, 2010; Lancet, 2008; WHO, 2005a, 2005c, 2005b). In other words, there has been a continuing demand for a blueprint to better translate knowledge from research into practice in global health (Monette et al., 2021; Pablos-Mendez & Shademani, 2006a; WHO, 2012a).

The WHO, building on work by the Canadian Institutes for Health Research (CIHR), defines Knowledge Translation (KT) as “the synthesis, exchange and application of knowledge by relevant stakeholders to accelerate the benefits of global and local innovation in strengthening health systems and improving people’s health” (Rushmer et

al., 2019, p. 128) and it has emphasized KT as one of its strategic pillars for promoting health research (WHO, 2012b) and closing the know-do gap or the divergence between evidence and practice in global health (Graham et al., 2006; Straus et al., 2009). Similarly, stakeholders invested in the research outcomes recommend strong partnerships to achieve individual and collective research objectives (Bowen et al., 2016; Eboreime, 2019; Government of Canada, 2016; Greenhalgh, 2019; V. Ward et al., 2021).

Strong partnerships were a key consideration when, in September 2015, the United Nations (UN) proposed the 17 Sustainable Development Goals (SDGs) to address the inequities in human development indices and ensure prosperity for poor and vulnerable people (United Nations, 2022). Achieving SDG 17, which is focused on strengthening development-focused collaborations, has been linked to successful "inter-country partnerships aiming to reduce the disparities gap between HICs and their counterparts in LMICs through strategies that include information sharing, technology transfer, and opportunities for research" (Addo-Atuah et al., 2020a, p. 1615). Addo-Atuah's framing of developmental aid, research and KT as critical success factors in achieving the SDGs in LMICs is echoed by the WHO, the UN, developmental experts and other researchers (Hamadeh et al., 2022; Kickbusch, 2013; Lencucha & Neupane, 2022; Sachs et al., 2022; UN DESA, 2018; WHO, 2023a).

Sub-Saharan Africa, comprised of forty-eight countries situated south of the Sahara Desert (see Appendix A, page 143), is an important target for global health research because of its current population, rising population growth rate, and relatively low Human Capital Index (UN DESA Statistics Division, 2022; World Bank IBRD, 2022). Home to about 1.2 billion people (World Bank IBRD, 2022) and estimated to contribute more than half of the global population growth by 2050 (UN DESA, 2022), health systems in Sub-Saharan Africa are weak and face multi-dimensional health constraints preventing the attainment of optimal outcomes for its inhabitants (Oleribe et al., 2019). With 25% of the global disease burden, Sub-Saharan Africa only contributed to 1% of global health expenditure (WHO Afro, 2019a), culminating in relatively higher morbidity and mortality rates for various health conditions reflected in significant economic and health losses

estimated at 705 million Disability Adjusted Life Years (DALYs) in 2015 (WHO Afro, 2019a). Furthermore, the health workforce in the region is inadequate, with only 1.55 health workers per 1000 people, significantly less than the WHO recommendation of 4.45 per 1000 required to achieve the SDG health goals (WHO, 2016a). More than 60% of those countries reported to be in a "Human Resources for Health (HRH) crisis" were in Sub-Saharan Africa (WHO Afro, 2017) and the region only produces 30% of the medicines it consumes (Ahen & Salo-Ahen, 2018). Although Sub-Saharan Africa has been a major beneficiary of global health resource mobilization (Mwisongo & Nabyonga-Orem, 2016), the WHO and many experts predict that these countries will not meet the SDGs by 2030, particularly SDG3, which targets health outcomes. Instead, the region may fail to leverage global health investments and best practices and continue to bear a disproportionate proportion of the burden of global poverty, disease, weak health systems, and low quality of life (Begashaw, 2019; Ritchie et al., 2018; Twinoburyo et al., 2021; WHO Afro, 2019b). Therefore, in addition to disease-specific research, it is crucial to examine global health partnerships and their role in promoting research ideation, generation, and uptake, which impacts health systems and, ultimately, health outcomes.

1.1 Thesis Statement

Despite the long history of international efforts, Sub-Saharan Africa continues to lag in the performance of its health indicators, with unmet targets, and perennially weak health systems. Global health research partnerships (GHRPs) featuring equitable collaboration between HIC partners and stakeholders (which could include government ministries of health and health agencies, academic institutions, healthcare providers, non-governmental organizations, community groups, international organizations like the WHO, private sector companies, private philanthropists, funding agencies, patients groups and faith-based organizations) in Sub-Saharan African countries are increasingly recognized as essential to addressing the health challenges Sub-Saharan African countries face (Boum II et al., 2018; Day et al., 2018; MacDonald et al., 2019; Matenga et al., 2019; Morel et al., 2018; Rehfuess et al., 2016; Voller et al., 2022). GHRPs are no panacea, however. As many have noted (Garcia-Basteiro & Abimbola, 2021; Monette et al., 2021; M. Murray & Mubiligi, 2020; K. M. Plamondon et al., 2021), and linked to the fact that a majority of

GHRPs involve partnerships between actors and organizations with deeply and historically entrenched unequal access to resources, GHRPs can actually produce limited impacts on policy and practice (Bekelynck et al., 2019; Conserve et al., 2022; Dugle et al., 2020; Filip et al., 2022; Garcia-Basteiro & Abimbola, 2021; Monette et al., 2021; M. Murray & Mubiligi, 2020; Odoch et al., 2022; K. M. Plamondon et al., 2021), and may even reinforce power inequities between involved HIC and LIC 'partners' (Gautier & David, 2022; Schriger et al., 2021; Voller et al., 2022).

This thesis aims to advance understanding of how and why GHRPs between HICs and LICs may be more or less effective in shifting health indicators in LICs at the centre of research initiatives. With a focus on GHRPs in sub-Saharan Africa, this study explores one critical dimension of these partnerships: Knowledge Translation (KT).

This focus on KT is deliberate. Despite KT's demonstrated efficacy in synthesizing and disseminating research to selected audiences, facilitating shared learning and ethical application of knowledge (CIHR, 2016), its impact on global health policy and practice has remained inconsistent (Grimshaw et al., 2012; Malla et al., 2018a; Tetroe et al., 2008). This inconsistency prompts a re-examination of how KT is integrated into GHRPs and whether it effectively addresses global health objectives, particularly in contexts where ethical research, equity, and decolonization are increasingly prioritized. This study seeks to understand the barriers and facilitators to KT within GHRPs, with a special focus on amplifying the perspectives of researchers from the Global South. By exploring these dynamics, the thesis aims to contribute to the optimization of KT practices, thereby enhancing the overall impact of global health research and its alignment with ethical and equitable principles in global health scholarship. Consequently,

1.2 Research Question

1. What barriers and facilitators to implementing KT in GHRPs have researchers or research communities in Sub-Saharan Africa reported in their work?
2. What role do equitable partnership principles and practices play in the success of KT initiatives in GHRPs between Sub-Saharan Africa and the Global North?

1.3 Research Objectives

The objectives of this study are to:

1. Enumerate the barriers and facilitators to KT implementation in GHRP in Sub-Saharan Africa, as reported by Sub-Saharan African research communities.
2. Critically examine the implementation of KT in GHRPs in Sub-Saharan Africa using "equitable partnership" principles and practices in contemporary literature as an analytical reference.

1.4 Thesis Overview

In the remainder of this Chapter, justification for the research objectives is presented starting with an introduction to the fundamental concepts associated with research partnerships, global health and development in Sub-Saharan Africa. This is followed by a synopsis of the potential of KT to accelerate progress towards the SDGs because of how it recognizes and seeks to rebalance power between researchers and their networks of collaborators (like decision-makers in government, non-governmental organizations and academia). Subsequently, four ways in which this work contributes to global health research scholarship are outlined. The chapter closes with a description of the lens through which the author analyzed and interpreted this review (the Positionality Statement).

The second chapter of this thesis reviews relevant GHRPs and KT literature, presenting conceptual and historical foundations for global health and describing previous studies and policy documents in the field, with an emphasis on what has shaped the partnership principles in global health. An examination of partnership principles is essential to this thesis as it directly informs the dynamics of KT within GHRPs, underscoring how equitable practices influence the effectiveness and ethical integrity of KT activities and the clarity this analysis brings, offers critical insights into both the barriers and facilitators impacting KT implementation in GHRPs because the principles determine the collaborative frameworks necessary for achieving the SDGs (especially Goals 3 and 17) in Sub-Saharan Africa and align with global health equity goals. Chapter 3 presents a

detailed exploration of the methodology used for this qualitative evidence synthesis, the search strategy, and the critical analysis of the extracted publications using partnership principles from contemporary literature. In Chapter 4, the results of the data analysis from the selected scholarly works related to barriers and facilitators of KT in GHRPs are presented and examined. The fifth and final chapter attempts to contextualize and interpret some of the findings of this study, presents study limitations, and suggests opportunities for future research and systemic recommendations to better integrate KT in GHRPs in Sub-Saharan Africa based on the results of this review.

1.5 Rationale for the study and definition of key concepts

The concept of KT was first disseminated by the Canadian Institutes of Health Research (CIHR) to address the know-do gap in health services delivery (CIHR, 2016; Tetroe 2007 FOCUS tech brief: KT at the CIHR; Strauss, Tetroe & Graham 2009 - defining KT). Its application has extended into the social sciences, communications research, nursing and evidence-based medicine (Barwick et al., 2020; Graham et al., 2006). It is this utility that makes KT central to this critical scoping review. KT has faced criticism for inconsistent interpretation and implementation (Graham et al., 2006; Kothari et al., 2017; Oliver et al., 2019; Williams et al., 2020); however, the CIHR (2016) identified four KT "pillars" namely, knowledge synthesis, dissemination, exchange and ethical utilization, which demonstrates a logical connection between the visioning, objective-setting, implementation, resources management and reporting needed in a research project to close know-do gaps and improve health systems (Donohue et al., 2023; Graham et al., 2006, 2018). Synthesis, for example, describes both a methodology for integrating discoveries or existing knowledge from multiple research studies (CIHR, 2016; Graham et al., 2006) and, it serves as a bridge, connecting isolated islands of research to the mainland of healthcare practice.

This bridge-building role of KT aligns with the concept of coproduction in research, or the "model of collaborative research that explicitly responds to knowledge user needs to produce research findings that are useful, useable, and used" (Kothari et al., 2022, p. 1). Coproduction established itself in the social sciences before KT's mainstream adoption

(Batalden et al., 2015; Oliver et al., 2019; Ostrom, 1996) and has driven discussions about equitable research partnerships and recognizing the value of all stakeholders regardless of title, power, or positionality (Kothari et al., 2022; Ostrom, 1996). Moreover, KT and coproduction are instrumental in establishing and maintaining the integrity and utility of partnerships in global health research.

In the context of GHRPs, KT is key in ensuring that the collaborative efforts are not only equitable but also effective in addressing specific health challenges. KT and coproduction also prompt an examination of the actors in a research project emphasizing the significance of the research expert (knowledge producer) and the knowledge user. By grounding the definition of the stakeholders in a research project in KT, the importance of knowledge user authority as described by Gagliardi et al. (2016) and Jull et al. (2017) is emphasized while expanding the definition of those knowledge users to include all stakeholders, which for the purpose of this thesis includes, “all individuals and groups who might be interested in, or affected by, the research findings, such as funders or managers in the wider healthcare community” (Kothari et al., 2022, p. 3).

In Sub-Saharan Africa, knowledge co-production and translation become particularly significant in the context of achieving the SDGs by 2030. KT initiatives that drive the health- and partnerships-focused SDGs are well-reported (Addo-Atuah et al., 2020b; Fosci & Loffreda, 2019; Heinisch, 2021; Odoch et al., 2022) and with them as case studies, GHRPs in the region have demonstrated the capacity to strengthen health systems and advance multiple SDGs including those related to global health through appropriate funding, policy development, skill transfers, and supporting systems to control infectious diseases like HIV and Tuberculosis, maternal mortality and broader social determinants of health (Addo-Atuah et al., 2020b; Alla et al., 2017; Andriesen et al., 2017; Bailie et al., 2013; Joshi et al., 2021).

The term “global health” encompasses health-related activities implemented across international borders and involves any "study, research, and practice that prioritizes improving health and achieving health equity for all people worldwide. Global health emphasizes transnational health issues, determinants, and solutions; involves many

disciplines within and beyond the health sciences and promotes interdisciplinary collaboration; and is a synthesis of population-based prevention with individual-level care" (Koplan et al., 2009, p. 1995). This definition is pertinent for several reasons. First, it captures the multi-dimensional, strategic and cross-border operations critical to successful Sub-Saharan African GHRPs. Secondly, Koplan's definition became an established reference after calls in the late 1990s to change the definition, scope and governance of global health, culminating in a move away from labels like international health, public health, tropical medicine, and travel medicine (Beaglehole & Bonita, 2010; T. M. Brown et al., 2006; Fried et al., 2010; Koplan et al., 2009). The evolution of the global health concept underlined the cross-border nature of health outcomes and the increasing importance of public health, public good and social justice principles in global health (Fried et al., 2010; Salm et al., 2021). The globalization of health interventions becomes even more significant as we recognize that we live in a technology-enabled "new world" where people, pathogens, and health information (or misinformation) can cross national borders in hours, re-defining health as a component of global security, diplomacy, and trade (J. Holst, 2020; Upvall & Leffers, 2014).

For this thesis, GHRP are defined as a "research project that involves collaboration between investigators or institutions in two or more countries" (Monette et al., 2021, p. 2) where the aim is to create new, and reproducible knowledge. Partnerships between countries in the Global North (high-income countries or HICs) and the Global South (specifically, LMICs in Sub-Saharan Africa) are prioritized for this review because they fall within the author's lived experience (which are recounted in my positionality statement later in this chapter) and because they are the frequent prescription for the most challenging of global health's equivalent of Rittel and Webber's "wicked problems" (K. M. Plamondon & Pemberton, 2019; Walls, 2018) and deserve closer study. Collaborations are valuable in any research work because resources, expertise, lived experiences and paradigms can be pooled to facilitate the creation of new knowledge, however, the GHRPs between HICs and LMICs are complex to implement because of the many stakeholders involved and their varying research skills, interests and prerequisites before joining the research team. For example, stakeholders like investigators and

participating institutions may include thought leaders, subject matter experts, trainees, patient groups, communities, non-profit organizations, corporations, universities, professional associations, and government agencies. In addition, the GHRP must navigate international regulations and ethical requirements, secure and manage funding, attract and retain expertise and manage sociocultural diversity within the research team and implementation environment. Mobilization of resources, administrative management of the research project and data ownership (including its dissemination) are often controlled by the HIC component of the GHRP, while the study setting and operational considerations are in the LMIC. There is now a considerable body of work (composed of scoring systems, checklists, frameworks, guiding principles, case studies and curated lived experiences) within global health that examines power imbalances, mutual benefit, bi-directional learning and cultural considerations in the design, implementation and close-out of research activities that cross national borders (Birn et al., 2017; Braveman, 2006; Hodson et al., 2023; Larson et al., 2022; Monette et al., 2021; Packard, 2016; Upvall & Leffers, 2018).

It is reasonable to infer that after years of significant investments and research into GHRPs, the reports of inequitable and colonizing collaborations between HICs and LMICs in Sub-Saharan Africa should progressively diminish over time, rather than persist in the manner that they have been reported in recent times (Bhakuni & Abimbola, 2021; Abimbola et al., 2021). Many scholars argue that this is not the case, suggesting that critical knowledge from all the years implementing GHRPs is not being carried over to operations in the field (Gaillard, 1994; Packard, 2016; Upvall & Leffers, 2018). This missing knowledge is called the "theory-practice gap, research-practice or knowledge-action gap, …the know-do or implementation gap, [and] occurs when healthcare practitioners … struggle to integrate the knowledge gained through an academic or a research environment with real-world clinical practice" (Donohue et al., 2023, p. 104). The know-do gap in GHRPs has had a negative impact on healthcare systems and policies in Sub-Saharan Africa. Researchers have implicated several contributing factors, including an outright failure to apply research evidence, a slow and haphazard translation of knowledge from researchers, a disconnection between research and policy coupled

with the unavailability of supporting evidence of the gap (Donohue et al., 2023; Edwards et al., 2019a; Kebede et al., 2014). Other investigators point to a paucity of guiding principles developed specifically for GHRPs and insufficient studies to examine and teach us how partners identify and apply evidence in global health research (Monette et al., 2021; Whyle & Olivier, 2016). In contrast, this review demonstrates that there is sufficient experience and evidence in the work of the research community in Sub-Saharan Africa to optimize the effectiveness of partnerships for global health research on the continent. However, the persisting challenges of effectively translating research into practice within GHRPs in Sub-Saharan Africa underscore the critical need for more robust KT strategies, built upon clearer articulation of its barriers and facilitators. By prioritizing KT, valuable insights and evidence from research are more likely to be integrated into healthcare practice and policy in a way that involves the majority of stakeholders. By foregrounding KT, GHRPs are better positioned to meet global health indicators by closing the know-do gap and the sustainability of equitable global health initiatives in Sub-Saharan Africa is enhanced. Therefore, reinforcing KT practices in GHRPs is imperative for translating theoretical knowledge into actionable outcomes that can significantly improve health systems and policies in the region.

1.6 Significance of the Study

The first contribution of this study is to attempt to improve the representation of researchers from Sub-Saharan Africa among the predominantly Northern authors of scholarly work in GHRPs (Bhakuni & Abimbola, 2021; Dimitris et al., 2021; Erondu et al., 2021). Because this is a synthesis of KT research conducted by Sub-Saharan African researchers, this work contributes to amplifying the voices of individuals who have lived experience with the subject. Secondly, by bringing a critical lens to the traditional scoping review methodology, this study offers an interpretation of the study findings that is unique because of the author's own lived experience working in GHRPs in Sub-Saharan Africa. This experience offers a familiarity with the cultural contexts influencing respondents' perceptions and responses in previous research work may apply to the data collected from or by them, and how this detail may be misinterpreted, even with the best of intentions. Thirdly, the outputs of this review may stimulate fresh perspectives and

critical thinking among current, and future researchers, and practitioners in global health politics, policies, and practice (Brown et al., 2012; Farmer, 2004; Ingram, 2020). Finally, this study documents a graduate researcher's experience fusing a critical review and a scoping review to synthesize evidence and apply KT. By taking the role of the principal analytical tool for the review, the author brings his professional experience in global health, graduate training in qualitative research and knowledge translation, and a curiosity about what may germinate from this study: potentially a research process and research products that could be learning resources for other researchers and practitioners in global health.

1.7 Positionality Statement: Situating Myself as a Researcher

I find it imperative to the conduct of this study and the interpretation of its outcomes to situate myself, my values, and my experience as an African-born and trained scholar who implemented large-scale global health projects in Sub-Saharan Africa that were funded by organizations in North America. Having trained as a physician in Nigeria's premier medical school (the University College Ibadan), I have almost two decades of experience designing, implementing and leading global health interventions in Sub-Saharan Africa. Before commencing graduate studies at Western University, I was technical lead at Columbia University's global health affiliate in Nigeria (ICAP Global Health) for two years, implementing a United States Agency for International Development (USAID) funded global health project that supported about 110,000 persons living with HIV across the five states. Before this, I led the Monitoring, Evaluation and Quality Improvement teams of Caritas Nigeria, an indigenous[1], faith-based organization funded by the United States Centers for Disease Control for two years, measuring and reporting on HIV services that piggy-backed on top of religious institutions and their activities in four Nigerian states and contributed to the expansion of infectious diseases and maternal

[1] The use of the term "indigenous" here refers specifically to local Sub-Saharan African organizations implementing GHRPs and not to the more formal context of "Indigenous People" applicable in regions like North America and Australia.

health services to places that often that did not have functional health facilities. In this role, working with Caritas Nigeria's global partner, Caritas Internationalis, I conceptualized a model of our experience using religious organizations as healthcare delivery platforms and we scaled the model to the Democratic Republic of Congo (DRC), training clergy to symptomatically screen young children at risk for HIV and refer them for diagnostic testing. At this time, Nigeria and the DRC were responsible for the greatest number of HIV-infected children who were not on life-saving anti-retroviral treatment. My experience also includes roles in two other international organizations and work as a primary care physician. Unsurprisingly, my professional experience has shaped my research paradigms and the critical lens through which I review scholarly work in global health. It has been my experience that traditional, techno-rational approaches to knowledge translation persist in planning, funding, and coordinating global health. This approach, in my opinion, is top-down, inefficient, superficial, and inequitable. The relationship between the knowledge creator (typically the funder or technical expert in the GHRP) and the knowledge user (usually our indigenous researchers and their research communities) in donor funded GHRPs implemented in LMICs, and specifically in Sub-Saharan Africa is a complex one. This complexity creates multiple points of possible conflict, and distrust resulting in the exclusion of the implementers from the Global South when they are not seen as knowledge creators.

My experience in GHRPs was that research priorities, implementation, performance indicators, and reporting tools were decided before project start-up and typically prescribed by organizations from the Global North. As I reflect, I cannot help but conclude that planning and implementation in the GHRPs of which I was a member, were not guided by the spirit of trust, collaboration and inclusivity – the same type of inclusivity and co-production, which is often recommended as a best practice by institutions and researchers when they work in the Global North. These opportunities take a more visceral representation for me as a global health researcher, and program manager who identifies with Sub-Saharan Africa as his place of origin. I have constantly struggled to understand why, despite decades of research and investments by organizations and individuals who are not even from the Global South, diseases of public health importance

resist all interventions to address the gaps in health access, treatment outcomes, quality of service, and health systems strengthening.

For a balanced consideration of my positionality, I want to recognize my privilege in being able to conduct this research in the intellectual freedom, and with the resources of a top university in the Global North. Reflecting on this context challenges me to accept the possibility that my critical depth and, consequently, the interpretation of my findings may be coloured by residence and scholarship in Canada. This realization (and the emotion it evoked) was unexpected, and it places a burden of authenticity on me to reflexively approach the data I collect and its interpretation with responsibility and humility.

Chapter 2

2 Navigating from Evidence to Action: A Literature Review of the Role of Knowledge Translation in the Evolution, Scope and Impact of Global Health Research Partnerships in Sub-Saharan Africa

GHRPs and KT are substantial scholarly domains that intersect significantly in the advancement of global health, especially in the context of delivering developmental transformation to Sub-Saharan Africa. The discussions in this chapter comprehensively explore the role of KT in enhancing the effectiveness, equity, and sustainability of GHRPs. Presented in two sections, this chapter will first review the pivotal role of KT in bridging the "know-do" gap in global health with an emphasis on the demonstrable results that emanate from using contemporary KT frameworks and processes on the continent. This discussion sets the stage for a deeper examination of the literature on the history, structure, and political dynamics of GHRPs in Sub-Saharan Africa today. In addition, dominant models, rationales, and principles guiding GHRPs in present-day sub-Saharan Africa as well as the documented critiques of GHRPs' aspirations to shift historically entrenched inequities between HIC and LMIC research partners in research on the continent will be discussed. This extensive body of literature is key in establishing the foundational understanding of the partnership principles and practices developed in recent years to strengthen the ethical and equitable practice within GHRPs.

Collectively, these two sections highlight literature that describes the synergy between KT and GHRPs and how this can be harnessed to advance the SDGs and foster global health equity.

2.1 Knowledge Translation and Global Health in Sub-Saharan Africa

2.1.1 Conceptualizing the Know-Do Gap and its Causative Factors

Defined, for this thesis, as the "difference between what is known about a particular health issue or possible intervention, and what is being done for health promotion and

disease prevention" (Davison et al., 2015, p. 2), the concept of the know-do gap is a long-standing and critical element in global health research as it represents the challenges in transferring cutting-edge scientific discoveries into everyday health practices (Graham et al., 2006, 2018; Grimshaw et al., 2004; Morris et al., 2011; Niven et al., 2015; Pakenham-Walsh, 2004; Straus et al., 2009; WHO, 2005a, 2012a). Acknowledging the existence of a know-do gap in global health also rationalizes the WHO call "for more research in developing countries to strengthen health systems and to help achieve the Millennium Development Goals (MDGs) by 2015" (Pablos-Mendez & Shademani, 2006, p. 723) and more recent initiatives related to universal health access, the SDGs and the triple billion targets for health (Breuer et al., 2019; Cameron et al., 2022; Mathew et al., 2022; The Lancet Public Health, 2020; WHO, 2016, 2020, 2021, 2022). This context is important because while the MDGs implemented (between 2000 – 2015) a top-down approach to improve specific, measurable targets primarily in developing countries, the SDGs adopted a broader, inclusive, and integrated approach to global challenges, emphasizing interconnectedness and stakeholder engagement across all countries. Despite the changes in the scope and implementation from one developmental framework to another, the know-do gaps in the development of LMICs have persisted. For ease of discussion, this thesis classifies the causes of the know-do gap in global health into human and non-human (or environmental) factors. Human factors driving the divergence between research and practice include entrenched power imbalances between research partners; divergent research priorities (amongst external funders and internal political leaders) that may not align with local health needs or prioritize certain research interests; limited capacity for research and policymaking; few mentors for upcoming researchers; poor ownership and sustainability planning; researcher-practitioner dissonance; and a lack of community engagement in the research process (Abouzeid et al., 2022; Bain et al., 2023; Bennett & Jessani, 2011; Graham et al., 2006; Hunter, 2019; Robey & Taylor, 2018; Straus et al., 2008; Yegros-Yegros et al., 2020). These barriers are compounded by non-human factors including geographic and industry-specific influences (particularly the influence of big pharmaceutical companies); donor funding policies, local socio-political and cultural conditions; paucity of financial and publication incentives for researchers; data ownership and intellectual property restrictions; and systemic issues such as the

scalability and reproducibility of health interventions (Anane-Sarpong et al., 2020; Erondu et al., 2021; Fransman et al., 2018; Grépin et al., 2017; Miller et al., 2017; Straus et al., 2009; Yegros-Yegros et al., 2020). The theoretical and practical approaches to KT, highlighted in the seminal works by Graham et al. (2006) and Straus et al. (Straus et al., 2009), suggest that this gap is more than just the individual causative factors but arises from issues along the entire lifecycle of research—from design through implementation to evaluation. Addressing know-do gaps in global health, therefore, demands a multifaceted and collaborative approach, which is where KT steps in with its objective that research findings are not only disseminated but are also effectively implemented in ways that are context-sensitive and inclusive (Gagliardi et al., 2016; Kothari et al., 2017; KTDRR, 2007; Liddy et al., 2018; Zych et al., 2019).

2.1.2 Knowledge Translation as the Panacea for Know-Do Gaps in Sub-Saharan Africa

The critical role of KT in bridging the know-do gaps in global health is key to enhancing health outcomes across Sub-Saharan Africa because KT was born out of existing gaps and concerns in the sphere of global health. Building on its definition and conceptual pillars as outlined in Chapter 1 (CIHR, 2016; Graham et al., 2006; Rushmer et al., 2019; Straus et al., 2009; WHO, 2012a), KT simultaneously acts as a bridge, transforming the potential of research into tangible health improvements by fostering better engagement between researchers, practitioners, and communities, and as a prophylactic, preventing known causes of research-policy divergence by anticipating threats (like stakeholder engagement, trust-building, transparency in budgeting and ownership of knowledge products for example) and institutionalizing remedial measures from the initiation phase of the research project (Zych et al., 2020). KT achieves these outcomes by working with networks or communities of researchers who are focused on global health diseases of concern, training new researchers or practicing health professionals and policymakers, engaging stakeholders (especially government officials, patient groups and members of the local communities who are traditionally not seen as researchers), and designing or disseminating knowledge products for these expanded researcher-stakeholder networks to institutionalize improvements in global health processes and results. A widely diverse set

of actors are anticipated and welcomed in KT, such that the aforementioned research networks may consist of traditional researchers, their non-research collaborators as well as persons who may not have organizational and research affiliations but who have an interest in the conduct of the research or the knowledge products it produces (Bowen et al., 2016; Graham et al., 2018; Kothari et al., 2022).

As the diversity of actors increased and managing stakeholder relationships increased in complexity, Integrated Knowledge Translation (IKT) emerged as one of the approaches for strengthening research collaborations globally and in LMICs particularly (Crosschild et al., 2021; K. M. Plamondon et al., 2021; Reimer-Kirkham et al., 2009). Reimer-Kirkham (2009), and, more recently, Crosschild (2021), examined the role of critical reflexivity, which is more rigorous in IKT, in dismantling early Eurocentric approaches to KT, and help research communities to collaborate with greater awareness of power dynamics, cultural differences, and our written or spoken words (Crosschild et al., 2021). Defined as "a model of collaborative research, where researchers work with knowledge users who identify a problem and have the authority to implement the research recommendations" (Kothari et al., 2017 p. 299), Integrated Knowledge Translation (IKT) emphasizes shared power, the authority to execute research findings and the active involvement of all stakeholders in all stages of the research project from planning to translation and implementation of recommendations (Kothari et al., 2017; Bowen & Graham, 2013; Gagliardi et al., 2016). Drawing on reports of the early stages of research partnerships where efforts were invested in trust-building, transparency, reciprocity, capacity building, and open access to data, IKT can add value to ineffective partnerships in health research by offering a template for use in planning, implementing, and evaluating partnerships (Benoit & Unsworth, 2021; Zych et al., 2019). IKT also defines an aspirational set of standards of practice for both researchers and knowledge users, defining competencies that may guide pre-service (academic) and in-service (professional) capacity-building activities (Yeung et al., 2021). IKT also offers an alternative to traditional modes of generating, and disseminating research that is built on a linear, and techno-rational, with power hierarchies obvious in the definitions of who creates knowledge, what type of knowledge is valued, and who uses it (Crosschild et al.,

2021; Ward et al., 2012). Therefore, if well coordinated, IKT could correct the power imbalances that contribute to know-do gaps in global health because it promotes collaborative research ideation and research-specific capacity building, more equitable partnerships through better engagement of the expanded research-stakeholder groups, greater participation in the dissemination and adoption of research findings, and the progressive elimination of the friction and miscommunication due to labels like knowledge creators and knowledge users (Gagliardi et al., 2016; Kothari et al., 2017; Oliver et al., 2019; Yeung et al., 2021). This section foregrounds the discussion in the next section on how contemporary KT concepts, activities and frameworks can increase the likelihood of success of GHRPs in Sub-Saharan Africa.

2.1.3 Applications of Knowledge Translation in Global Health Research Partnerships

With the related standards and aspirations described in the preceding section, KT has the potential to address the causative factors widening global health know-do gaps in Sub-Saharan Africa. Individual researchers and their networks are the primary agents driving the adoption and implementation of KT "pillars" or strategies of knowledge synthesis, dissemination, exchange and ethical utilization described in Chapter 1. By concentrating the synergies between these researchers and the expanded group of stakeholders through whom knowledge is co-produced (Barwick et al., 2020; Kothari et al., 2022), KT ensures the institutionalization of the standards for engagement, the procedures to collaboratively create the strongest forms of evidence and to efficiently package, disseminate and demonstrate them in global health systems (Asamani & Orem, 2020; Edwards et al., 2019a; Graham et al., 2018; Ogony et al., 2021; Pablos-Mendez & Shademani, 2006b; Tetroe et al., 2008).

To illustrate KT's transformative potential in GHRPs, it is instructive to examine the specific benefits that it brings to the health systems of Sub-Saharan Africa. These benefits may be (1) structural in terms of the systematic approaches created for GHRPs; (2) pedagogic and influencing the processes for training and in-service capacity building; or

(3) promote equity and sustainable planning among collaborating institutions or individuals.

Structural Benefits: One of KT's most important benefits to GHRPs is how it systematizes the process of creating knowledge products, evidence-informed policies, and best practices (Academy of Medical Sciences, 2012; Barwick et al., 2020; Boland, Kothari, McCutcheon, Graham, et al., 2020), offering the foundation on which the replicability, evaluation and, ultimately, the operational success of KT frameworks is built (Bayley et al., 2018; O. K. Bhattacharyya et al., 2011; Birken et al., 2017). Building on those foundations, the benefit of better framing of the know-do gap in global health has resulted in more reports of issue resolution using evidence generated from research and more equitable partnerships that are aligned with local health needs, foster inclusive decision-making, and promote equitable sharing of research benefit (Ager & Zarowsky, 2015; Birken et al., 2017; Boland, Kothari, McCutcheon, & Graham, 2020; Donenberg et al., 2019, 2019; Gimbel et al., 2017; Idalski Carcone et al., 2019; Jansson et al., 2010; Kothari et al., 2016; Lipsky et al., 2016; Sturke et al., 2016).

Pedagogic Influence: The systems and operational platforms for introducing KT in global health policy and practice require significant capacity building of KT researchers, practitioners and policymakers for success, and the literature on training programs for researchers attests to this (Cassidy et al., 2021; Ezeanolue et al., 2019; Gallagher et al., 2017; Nakanjako et al., 2021). The integration of KT into GHRPs promotes pedagogical advances by influencing training and in-service capacity building. This educational component is crucial for sustaining health outcomes and ensuring that KT efforts are ingrained in overarching global health systems and the day-to-day practices and procedures in the region, ensuring that KT efforts find expression where they are most impactful (Berman et al., 2015; Cash-Gibson et al., 2015; Nakanjako et al., 2021; The Western Cape HPSR Journal Club Team, 2022). Incorporating KT into graduate and in-service training programs is a strategy with significant leverage: one that ensures that the required methodological rigour and high standards for research are better defined and inculcated among the increasing body of practitioners who are now being seeded into

academic and research organizations (Gallagher et al., 2017; Graham et al., 2018; Tait & Williamson, 2019).

Equity and Inclusion: KT approaches within GHRPs advocate for equitable and sustainable planning, ensuring that all partnership activities are aligned with the cultural nuances and actual needs of the communities involved (Davison et al., 2015; Galaviz et al., 2020; K. M. Plamondon, 2020; K. M. Plamondon & Bisung, 2019a). Incorporating KT approaches into GHRPs has the potential to optimize stakeholder engagement, facilitate smooth partnering processes and build trust so that coproduction in global health is sustainable, equitable, and focused on the actual needs and cultural nuances of the recipient countries (Monette et al., 2021; Nakanjako et al., 2021; Voller et al., 2022; Zych et al., 2020). For example, KT has been reported to promote early and transparent engagement within expanded research communities (Kothari et al., 2022; Zych et al., 2020), while other scholars have suggested that even patient-practitioner collaborations are positively impacted when KT approaches are adopted (Banner et al., 2019; Bowen & Martens, 2005). Additional positive effects on stakeholder management include a co-created vision and research idea, and shared access to research budgets, timelines and study data for all stakeholders, all of which engender greater trust before and during the implementation of the research project (Anane-Sarpong et al., 2020; Monette et al., 2021; Zych et al., 2020). For example, Zaman et al. (2020) and Amisi (2023) report on how partner engagement and participation are enhanced and a sense of fairness and mutual respect is fostered by KT activities while other commentators (Monette et al., 2021; Olivier et al., 2016) report on benefits like humility and acceptance of bi-directional learning by partnering individuals and institutions. Stakeholder relationship management has positive effects on the power hierarchies, the shared ownership of project outcomes, data use, and authorship of publications by Southern collaborators (Anane-Sarpong et al., 2020; Monette et al., 2021; Zaman et al., 2020; Zych et al., 2020). The early alignment of values among collaborators also prompts the exploration of linguistic and cultural differences or assumptions among collaborators in a research project, and socio-cultural differences which if ignored in an international research team could contribute to the under-performance of GHRPs (Ibe et al., 2018; Olufadewa et al., 2020). Furthermore,

KT's emphasis on co-created research products has been credited with an increase in the suitability, applicability and eventual use of research findings, with the effect being that there is a greater likelihood that findings from global health research become translated into action (Bennett & Jessani, 2011; O. Bhattacharyya et al., 2017; Boland, Kothari, McCutcheon, Graham, et al., 2020; K. Plamondon et al., 2022; K. M. Plamondon & Bisung, 2019a; V. Ward et al., 2009).

2.1.4 Integrating Knowledge Translation into Global Health Research Partnerships in Sub-Saharan Africa.

There are several case studies of GHRPs in Sub-Saharan Africa where KT was successfully integrated with measurable impact on Know-Do gaps (Barwick et al., 2020; Hodson et al., 2023). One way KT in GHRPs could positively impact the achievement of SDG 3 and 17 across Sub-Saharan Africa would be by mainstreaming it into health sector performance reviews as sources of evidence, knowledge brokers, stakeholder engagement facilitators, evaluators and auditors (Asamani & Orem, 2020; Orem et al., 2021). For instance, the WHO's Evidence-Informed Policy Network (EVIPNet) has for almost two decades, hosted reviews focused on KT and offered recommendations to national-level policy-makers, researchers and policy implementers globally and in several Sub-Saharan African countries including Uganda, Cameroon, Malawi and Rwanda (Asamani & Orem, 2020; Edwards et al., 2019b; Ongolo-Zogo et al., 2018). The Collaboration for Evidence-Based Healthcare and Public Health in Africa (CEBHA+) likewise demonstrates how it supports the integration of research into policy and practice, specially tailored to the needs and contexts of Sub-Saharan African health systems (Rehfuess et al., 2016). In addition to evidence-based technical feedback on health outcomes, KT platforms such as these facilitate the day-to-day evidence production activities that drive policy and practice in many government and non-governmental research projects in Sub-Saharan Africa (Edwards et al., 2019b; Ogony et al., 2021).

The intersection of GHRPs and KT activities impact the SDG 3 and 17 because of KT strategies through which they drive regional and continental stakeholder mapping activities, identify research collaboration and funding opportunities, facilitate the

formation of multidisciplinary steering committees and hosting conferences and communities of practice equipped with the data and mandate to close healthcare gaps on the continent (Edwards et al., 2019b; Ogony et al., 2021). Some KT platforms appear particularly dedicated to promoting more equitable GHRPs. These include the structure of the Implementation Science Alliances promoted by the US National Institutes of Health (NIH) which are promoting local knowledge coproduction networks in Nigeria and South Africa (Ezeanolue et al., 2016; Sturke et al., 2016). While US-funded and thus potentially limited by the constraints of HIC-led GHRPs discussed later in this chapter, such initiatives have mobilized local funds for research or community work, maintained a roster of technical experts within and across countries, supported mentor-mentee relationships in local research teams and engendered a level of ownership that saw some of these NIH projects outliving their original funding period or spawning new research projects (Aarons et al., 2021a; Ezeanolue et al., 2016, 2020; Sturke et al., 2016). These strategies ensured the much-needed stakeholder relationship management, trust-building and KT-related capacity building that is often missing from non-NIH research projects in Sub-Saharan Africa.

Some of these successes feature research projects where the funding organizations have presented KT as a guiding principle in their research partnerships. These organizations include the Canadian Institutes of Health Research (CIHR); the US National Institutes of Health (NIH), the Presidential Emergency Plan for AIDS Relief (PEPFAR), the United States Agency for International Development (USAID), and the Centers for Disease Control (CDC) in North America (Aarons et al., 2021b; CIHR, 2010; Sturke et al., 2014, 2016). Therefore, it is not uncommon to find KT principles, and practices as requirements in funding proposals (McLennan et al., 2022; Proctor et al., 2012), codified in well-known international ethical regulations (M. Ward et al., 2018) or synthesized into toolkits for guidelines (Larson et al., 2022; K. M. Plamondon & Bisung, 2019b; Zych et al., 2020), and operational practices (Plamondon et al., 2022). One can then surmise that there should be a demand from "both communities" in the GHRP, both the implementation team in LMIC and the funding or governance structures would like to see a more consistent integration of KT in global health research work (Barwick et al., 2020;

Brantnell et al., 2015; Cordero et al., 2008). Consequently, the priority consideration should be to better identify the enablers and barriers to more consistently implement KT in these GHRPs.

2.1.5 Knowledge Translation Implementation in Sub-Saharan Africa: The Importance of Context and Describing Challenges

As conceptual tools designed to facilitate the transfer of research knowledge into policy and practice, KT theories, models, and frameworks are reference guides for planning, executing, and evaluating KT activities (Tabak et al., 2012). Extensive work has been done on this aspect of KT literature (Barwick et al., 2020; Damschroder et al., 2009; Esmail et al., 2020; Graham et al., 2006; Kirk et al., 2016; Lokker et al., 2015; Milat & Ben, 2017; Nilsen, 2015; Strifler et al., 2018; Sudsawad, 2007; Tabak et al., 2012) but for this thesis, we considered KT theories, models, and frameworks only in the context that they offer "guidance for critical reflection on KT's key elements [without which], it can be difficult to understand or explain why a particular endeavour may succeed or fail" (Barwick et al., 2020, p. 17). Consequently, the selection and use of one of the many KT frameworks must be guided by context, particularly in determining its feasibility in LMICs in Sub-Saharan Africa where resources, infrastructure, and health systems vary greatly. Other contextual factors that determine the appropriateness of a KT framework include socio-cultural interactions, functionality of local health systems, engagement with government agencies for health and coordination with response programs for endemic diseases (Edwards et al., 2019). For example, in their examination of the continent's readiness to apply KT for health, Asamani & Nabyonga-Orem submit that the KT systems in Sub-Saharan Africa are less efficient in terms of distribution and functionality when compared to those in HICs with only 45% of the 35 countries assessed having an evidence collation and synthesis mechanism and just over 50% of countries had knowledge translating and communicating platforms, concluding that "the current structures, where these exist can not adequately foster KT" ((2020, p. 5). Limited systems for evidence dissemination in Sub-Saharan Africa lead to siloed, infrequent and institution-specific KT events are the more common translational activities (Asamani & Orem, 2020; Edwards et al., 2019b). Such activities are significantly less likely to

facilitate evidence co-production and when they do, such evidence is unlikely to be translated into policy and practiced with fidelity.

Such differences in the implementation environments are a good segue to the challenges experienced by GHRPs adopting KT approaches for their work on the continent. Scholarly work from the region on this subject is extensive (Abu-Odah et al., 2022; Anane-Sarpong et al., 2020; Asamani & Orem, 2020; Dagenais, 2021; Damba et al., 2022; Edwards et al., 2019b; Ezeanolue et al., 2019; Kirigia et al., 2016; Mwendera et al., 2016; Ogony et al., 2021; Orem et al., 2012, 2014; Sam-Agudu et al., 2017) and largely reflect the Sub-Saharan African scorecard on the major global health challenges themselves. It is pragmatic, for the purpose of this thesis, to broadly categorize these challenges and barriers into three segments: intrinsic institutional barriers, lack of resources, and the quality and accessibility of research. Examples presented relate to either knowledge creation or the implementation of knowledge in policy and practice (Straus et al., 2009).

Intrinsic institutional barriers include the effects of global inconsistencies in KT terminologies and frameworks (Ackerley, 2017; Straus et al., 2009). These are carried over to Sub-Sahara research projects and are amplified because the KT concepts are foreign in origin, differ from local ways of learning and counter paternalistic leadership and communication approaches favoured by authority figures in health institutions in Sub-Saharan Africa (Dagenais, 2021; Kirigia et al., 2016; Ogony et al., 2021). Ogony and colleagues reported that in Sub-Saharan Africa, KT products were of low quality, infrequently produced, and sparsely distributed by the few institutions that created knowledge products (2021). Leadership of key partner institutions could be unresponsive when engaged even at the early stages of collaboration (Kirigia et al., 2016; Ogony et al., 2021) and access to research-related data may be restricted by the research team (Anane-Sarpong E. et al., 2018). On the knowledge application side, imbalances in trust, communication and power between researchers and practitioners or policymakers also exist in Sub-Saharan Africa, especially with non-academic and non-governmental stakeholders who are critical for the adoption and implementation of the knowledge

products and strategies like Civil Society Organizations (CSOs), community leaders and the general public (Asamani & Orem, 2020; Edwards et al., 2019b; Mwendera et al., 2016).

Resource limitations are broad and crosscutting challenges, impeding research activities and limiting the production of knowledge products (Abu-Odah et al., 2022; Edwards et al., 2019b). Resources are needed for meetings, travel, equipment like computers and internet access as well as remuneration for research teams and data collectors or interviewers. When these resources are unavailable, processes are stalled, timelines are unmet, and distrust and suspicion are common among local partners (Edwards et al., 2019b; Orem et al., 2014).

Barriers related to research quality and its accessibility affect both knowledge creation and implementation aspects of the know-do gap. Factors such as inaccessibility of research results, lack of funding, and poor quality of research significantly constrain academic researchers as well as research networks (even when they do not involve academics) (Canonico et al., 2020; Derbew M. et al., 2015; Ezeanolue et al., 2019; Kalbarczyk et al., 2021; Nkimbeng et al., 2021; Sam-Agudu et al., 2017). Similarly, concerns around epistemic justice, imbalances in recognition of Southern researchers in GHRPs and exclusionary publication fees contribute to the quality and representation of global health research in Sub-Saharan Africa (Breugelmans et al., 2018; Collyer, 2018; Mekonnen et al., 2021; Ndounga Diakou et al., 2017; Tagoe et al., 2019; Vervoort et al., 2021). Regarding suboptimal research use in Sub-Saharan African countries, the literature implicates limited access to research evidence, limited capacity to interpret research evidence, and the exclusion of policymakers from setting the research agenda (Canonico et al., 2020; Dagenais, 2021; Ezeanolue et al., 2019; Kirigia et al., 2016; Ogony et al., 2021; Sam-Agudu et al., 2017)

These challenges, therefore, recommend greater flexibility in the way KT theories, models and frameworks are carried over from HICs to fit the specific context and constraints of Sub-Saharan African countries (Edwards et al., 2019). There is also a need

for ongoing evaluation and adaptation of KT approaches to ensure their relevance and effectiveness in different settings.

2.2 Intersecting Insights: From Knowledge Translation to Global Health Research Partnerships

As this review of the literature transitions from the preceding discussion on KT to an exploration of GHRPs in Sub-Saharan Africa, it becomes evident how interconnected these two domains are. KT's role in effectively bridging the know-do gap underpins the success of GHRPs by ensuring that the research findings are not only methodologically formulated and disseminated but that the prerequisite KT work is rooted in shared partnership values and pragmatically applied by policymakers and practitioners within the health systems in Sub-Saharan Africa. This synthesis of knowledge into action is critical in addressing the complex health challenges faced across the region, thereby optimizing the personnel, resources, institutions and strategies for executing health initiatives and policies.

GHRPs represent a dynamic and essential framework within which global health research is operationalized, offering a broad spectrum of collaborative efforts aimed at improving health outcomes. These partnerships, particularly between the Global North and South, have evolved significantly over the years, influenced by shifts in policy, funding, and the overarching goals of inter-national health agendas like the MDGs and the SDGs. Exploring the historical, structural, funding, and ethical dimensions of these partnerships will reveal how they have shaped research initiatives, the dissemination of knowledge, and ultimately, the health landscapes of Sub-Saharan Africa. This examination not only highlights the practical applications of KT within these partnerships but also sets the stage for a critical analysis of their effectiveness and the challenges they face in a diverse and rapidly changing global health environment.

2.2.1 Historical Overview and Evolution of Global Health Research Partnerships in Sub-Saharan Africa

All through its history, international health partnerships have been driven by foreign policy interests as well as health goals. From nascent public health's then administrative role as European imperialism tried to control cholera, malaria, yellow fever and public hygiene as it colonized Sub-Saharan Africa, the Americas, and Asia in the 1800s (Birn et al., 2017; Packard, 2016) to the international regulatory agencies (the International Sanitary Bureau, l'Office International d'Hygiène Publique, the League of Nations Health Organisation) that collaborated with emerging US philanthropies like the Rockefeller Foundation, the Milbank and Commonwealth Funds and Kellogg and Ford Foundations conducting medical missions and "actively sought national partnerships to spread its public health gospel via interaction with political and professional authorities and local populations" (Birn et al., 2017, p. 29). With the formal dismantling of colonial structures in Sub-Saharan Africa around World War II and in the post-war years, the inter-governmental health and humanitarian United Nations Relief and Rehabilitation Administration (UNRRA), which managed the rehabilitation of war refugees and injured, metamorphosed into the WHO in 1948 (Birn et al., 2017; Cueto et al., 2019). By the end of the twentieth century, affluent countries and funding organizations started assuming more visible leadership and coordination roles in multi-country efforts to address specific global health challenges (T. M. Brown et al., 2006; Lidén, 2014). This shift was reflected in the Cold War and post-Cold War-induced political reorganization and changes in strategic direction for the WHO from the dominant, health-response organization that conducted epidemic surveillance, eliminated smallpox in the 1970s and convened the Alma Ata Conference that enacted Primary Health Care as a global health policy in 1978 (Birn et al., 2017; T. M. Brown et al., 2006; Cueto et al., 2019; Packard, 2016) to a global health coordinating and standards-defining agency whose priorities, although more responsive to emerging health concerns, were heavily dependent on contributions from HICs (Clinton & Sridhar, 2017; Iwunna et al., 2023; Lidén, 2013). The post-Cold War years and the wooing of newly independent Sub-Saharan African countries also meant that developmental assistance to LMICs and access to health technology in the latter half

of the 1900s became an economic and foreign policy priority as well as a humanitarian one (Clinton & Sridhar, 2017; Iwunna et al., 2023). With more recent bilateral collaborations becoming better funded they have grown increasingly as impactful on health outcomes in aid-dependent countries as the WHO's multilateral system (Lidén, 2014). Consequently, some countries, new agencies within the UN, non-governmental organizations (non-profit organizations and academic institutions for example), and individual philanthropists began collaborating directly and at a much greater scale with health agencies, universities, faith-based organizations, and community-based organizations in LMICs (Brantnell et al., 2015; Monette et al., 2021; K. M. Plamondon & Bisung, 2019b; Villalobos Dintrans et al., 2019). The policies and frameworks that guided these collaborations contained clearly defined roles, responsibilities, and accountability measures which aimed to enhance the likelihood of replicable implementation strategies, and the consistency of results (Kelly et al., 2015). In addition, there was increased attention directed at country-level performance, as the revamped WHO as well as UN agencies like the United Nations Development Program (UNDP), the Joint United Nations Programme on HIV/AIDS (UNAIDS) and the United Nations Children Fund (UNICEF) built capacity and strengthened systems for outcome evaluation of diseases of GH concern through a system of dashboards for global health outcomes (Agarwal et al., 2019; Boerma et al., 2010; C. J. L. Murray et al., 2004). This emerging framework of global health governance, strategy definition, implementation and performance monitoring set the foundation for the MDGs in 2000 (Lidén, 2014; United Nations, 2000), which transitioned into the developmental objectives of the SDGs in 2015 (Addo-Atuah et al., 2020a; Begashaw, 2019; United Nations, 2022). Global health programs then had performance metrics that were comparable historically, and across different geographies, disease areas, and funding modalities, and they formed the basis of the developmental partnerships seen in global health today.

2.2.2 North-South Partnerships in the Context of Sub-Saharan Africa

Building upon Monette et al.'s definition of GHRPs introduced in Chapter 1, partnerships that drive global health research in Sub-Saharan Africa can take one of four forms. First, the principal investigators (PIs) or institutions may be indigenous to and/or affiliated with

the Global North and conduct their research in the Global North. Second, multi-country collaborations may be led by PIs or institutions from the Global South who implement their research in the Global South (South-South collaborations). Thirdly, PIs or institutions affiliated with the Global North may conduct research in the Global South (North-South collaborations). Lastly, GHRPs may refer to PIs or institutions from the Global South that conduct their research in the Global North. This thesis is focused on the third scenario, explicitly referred to as GHRPs in the rest of this work. This thesis specifically examines North-South collaborations, because historically and as enshrined in global health strategies like universal health access, the SDGs and the triple billion targets for health (Breuer et al., 2019; Cameron et al., 2022; Mathew et al., 2022; The Lancet Public Health, 2020; WHO, 2016b, 2020b, 2021, 2022), they are pivotal in shaping health research dynamics and outcomes in the Global South.

For our purposes, a PI is an individual researcher or institution who is the primary originator of the research idea, secures the funding for the research, drives stakeholder engagement, coordinates the research project (including data custody and dissemination) and ensures that it is conducted in an ethical and fiscally responsible manner. This distinction highlights the PI's influence on leadership and its cultural contexts in GHRPs in Sub-Saharan Africa, establishing foundational perspectives for exploring the impacts of leadership on ethical practices, stakeholder engagement, project coordination, accountability to donors and stated research objectives as well as the overall success of research initiatives, which will be crucial for interpreting the findings in the discussion chapter of this thesis.

2.2.3 Multilateral and Bilateral GHRPs

Researchers and policymakers have proposed several models for GHRPs in Sub-Saharan Africa (Carlson, 2004; Edwards et al., 2015; Nakanjako et al., 2021; Okma et al., 2016; World Bank, 2002; Yarmoshuk et al., 2018). Two prevalent models, multilateral and bilateral partnerships, encapsulate the complexities of GHRP funding, coordination, and governance (Academy of Medical Sciences, 2012; Bruen et al., 2014; Gómez & Atun, 2013; OECD, 2023a). Multilateral support, often orchestrated through entities like the

WHO, the World Bank, the United Nations Development Program or UNDP, the Global Fund for AIDS Tuberculosis and Malaria (GFATM) and the regional development banks, pool resources from various countries, facilitating collective action for health interventions. Yet, as Charani et al. (2022) note, this often preserves top-down, historically colonial dynamics, with high-income countries disproportionately influencing global health agendas. Bilateral models, directly connecting donor entities and recipient nations, have risen in prominence and introduced new dynamics in GHRPs. Donors that operate using this funding model include organizations in the United States; Canada, China, the United Kingdom, France and Germany and several European countries (National Academies of Sciences et al., 2017; IDRC, 2021; CIHR, 2021; Killeen et al., 2018; Donor Tracker, 2019; Gulrajani & Silcock, 2020).

However, while the rise of private philanthropy and bilateral collaborations has expanded available funding and technical inputs to GHRPs, Clinton and Sridhar (2017) emphasize that the influence of these entities has not equalled the long-established coordinating power of multilateral organizations like WHO. Neither has bilateralism necessarily corrected the persistent imbalances in power distribution within GHRPs (Abimbola et al., 2021; Bhakuni & Abimbola, 2021; Clinton & Sridhar, 2017). Rather, it has occasionally reinforced them, emphasizing the need for equitable, inclusive structures in global health research. Thus, while multilateralism strives for collective action, and bilateralism offers more direct engagement, both models are embedded within historical power structures requiring critical reflection to achieve truly equitable GHRPs.

The preceding sections established how calls for increased equity and decolonization in global health contributed to advocacy and eventual development of frameworks and principles to guide the ethical conduct of global health research, balance the perspectives in the predominantly foreign-led research in LMICs, address trust and equity concerns among collaborators, and promote sustainable impact (Benatar & Singer, 2000; Costello & Zumla, 2000).

The historical trajectory of the WHO's involvement in global health has profoundly influenced the current structures and dynamics of GHRPs (Birn et al., 2017; Packard,

2016) . Despite WHO policies setting the agenda for many global health initiatives over the years, these efforts have also reflected and sometimes reinforced power imbalances between HICs and LMICs with more affluent countries dominating the decision-making processes (Birn et al., 2017; Cueto et al., 2019; Packard, 2016). Multilateral and bilateral partnerships often mirrored these disparities, embedding a top-down approach in health governance. This historical context is necessary to understand the persisting power hierarchies and inequities within GHRPs today so much so that significant scholarly investments in this domain of global health research have focused on equity and decolonization in global health for most of the last quarter of a century (Amisi et al., 2023; Baron et al., 2018; Bill & Melinda Gates Foundation, 2011; Boaz et al., 2018; Costello & Zumla, 2000; Fransman et al., 2018; Hodson et al., 2023; Jentsch & Pilley, 2003; KFPE, 2012; Larkan et al., 2016; Monette et al., 2021; Murphy et al., 2015; Nakanjako et al., 2021; Olivier et al., 2016; K. M. Plamondon & Bisung, 2019b; Pratt, 2021a, 2021b; RAWOO, 2001; Raza, 2005; Steenhoff et al., 2017; TRUST, 2018; Yarmoshuk et al., 2018). However, the domain, with a few exceptions, is dominated by researchers affiliated with institutions from the global North and therefore the literature may not adequately reflect the perceptions of researchers from the global South (Hodson et al., 2023; Zaman et al., 2020).

2.2.4 The Scope and Influence of International Funding of Global Health Research Partnerships

North-South GHRP models described in the preceding sections, whether multi-lateral or bilateral, exert their influence through the resources they make available for coordination and research-related activities. Between 2000 and 2014, $246 billion was invested in global health research and interventions (or an average of $16.4 billion per year) and the top ten donor countries in order of their contributions were the US, Canada, the UK, Norway, Australia, France, Sweden, Ireland, Germany and Belgium (Grépin et al., 2017). A more recent report for the five-year period 2017 to 2021 showed that development assistance for health was about $127 billion; with an average annual contribution of $25.5 billion and the top ten ranking countries for 2021 were the US, Germany, the UK, Japan, France, Canada, Italy, Norway, Australia and Sweden (SEEK Development, 2023).

Funding specifically targeting global health research ranged from $531 (in 2017) to $707 million (2018) or an average of $624.2 million per year (SEEK Development, 2023). Both reports sourced data from the OECD's Creditor Reporting System (CRS) and show a significant increase in developmental assistance for health, plateauing between 2020 and 2022 due to the COVID-19 pandemic (OECD, 2023b). It is reasonable to assume that countries that subsidize global health research projects to this magnitude will, through their national research funding agencies, research institutes and universities, influence research priorities and subsequent constitution and activities of GHRPs (Asante et al., 2020; Ilesanmi & Afolabi, 2022). This system of dependency also indicates where the power lies in a GHRP and the objective of ensuring value-for-money for the funders becomes a reasonable expectation (Iwunna et al., 2023).

2.2.5 Benefits of North-South Global Health Research Partnerships in Sub-Saharan Africa

North-South collaborations have stimulated several beneficial micro- (individual level) and macro- (systems-level) trends in global health research over the last three-quarters of a century. There is considerable literature on how investigators and research organizations in the Global North have supported the design and delivery of healthcare services in Sub-Saharan Africa. This support has typically been in the form of aid for disease-specific research (Bahrainwala et al., 2020; Hubmann, 2021; Mwisongo & Orem, 2016) or to avert an international health crisis like HIV, Ebola, COVID-19, or Mpox (Conserve et al., 2022; Leach, 2015; Saleh, 2021; Tambo & Al-Nazawi, 2022). Other common collaborations have been in the transfer of clinical care protocols and the rapid advances and integration of health information technologies and pharmacological innovations for which the capacity and technology are not available or as robust as similar systems in the global North. Transnational global health collaborations have enabled inter-university exchange programs for students, and faculty, and learning networks for practicing researchers (Abdelmenan et al., 2021; Byrne-Davis et al., 2017; Herrick & Reades, 2016; Saleh, 2021; UNICEF, 2018; Yan et al., 2020), and in several instances supported the infrastructural upgrade of hospitals (including but not limited to diagnostic and therapeutic equipment, power supply and waste management). Similar benefits include

more efficient use of data (as a science in itself) and the advancement of data for decision-making and institutional knowledge mobilization. Knowledge use has spilled over from the clinics into communities with cost-efficient models of community-based care, civic education and patient activism emerging from global health research initiatives like infectious diseases, maternal health, child health and rights-based access to care and human dignity (Gooding, 2017; Melgar et al., 2020; Mwisongo & Orem, 2016; Neves et al., 2018; Nittas et al., 2019). Funding, and implementing organizations from HICs have also provided direct institutional support to government health agencies in LMICs (Ajide et al., 2020; Atkins et al., 2016; Basu et al., 2017; H. Brown, 2015; Harris et al., 2017; Mercer et al., 2018; Shroff et al., 2017; Theunissen & Etale, 2020), and coordinated the development, and operationalization of strategic health plans, and governance frameworks like National Health Plans, and the SDGs (Addo-Atuah et al., 2020c; Cash-Gibson et al., 2015; Lennox et al., 2020; Naidoo & Fisher, 2020; Sam-Agudu et al., 2017). Proponents of the developmental benefits from GHRPs also reference the policy development and knowledge transfer in research and human capital development being evident in the metrics for service delivery, institution, and systemic performance. Evidence of this strategic leadership and management at the level of national and regional policymaking include continental initiatives and strategic plans like the 1978 Alma Ata Declaration (Pinto et al., 2020), the UN Millennium Declaration (United Nations, 2000), the 2001 Abuja Declaration (about a 15% minimum commitment to healthcare in the budgets of Sub-Saharan African countries) and the region's approach to the MDGs and SDGs. In addition, the rise of regional global health research coordinating bodies like the Africa Centers for Disease Control (modelled on the similarly named agency in the United States), the West African Health Organizations and stronger academic research teams are references to an increasing leadership cadre in scientific research on the Continent.

At the micro level, Steenhoff et al. (2017), and Morrison (2016) report benefits like resource mobilization for the researcher, and their research communities (including but not limited to funding, training resources, and systems enhancement) which translate to

optimized health indicators. Kostyak (2017) adds developmental aid, access to the latest technology, and innovative health products as other key benefits of GHRPs.

References to Sub-Saharan Africa as the dark continent faded away as service delivery and research-related data were increasingly available to evaluate global health policy and practice (Data for Development, 2022; Mukherjee, 2017). Global health research has recorded a commensurate increase in research products (factsheets, toolkits, training content, books, and scientific publications) which have been authored or co-authored by researchers from Sub-Saharan Africa (Adetokunboh et al., 2021; Collyer, 2018; Ndounga Diakou et al., 2017). This increased data visibility for the region combined with greater involvement of local researcher-scientists in the generation of this data has led to increased distribution impact of knowledge products, more research collaborations, and increased resource management efficiencies (Dean et al., 2015; Driver S. et al., 2021; Global Health European & Developing Countries Clinical Trials Partnership, 2022). This ultimately positions Sub-Saharan African investigators and institutions to attract more funding for research with internationally funded research projects that have increased in number and budgetary value over the recent years. Data availability, increased capacity and citizen advocacy have seen government agencies and the private sector increasingly involved in for-profit and non-profit initiatives to optimize global health outcomes (Anane-Sarpong et al., 2020; Binagwaho et al., 2021; Data for Development, 2022; Nabyonga-Orem et al., 2019). Simultaneously, public-private partnerships have capitalized on policies and frameworks for health information technology (like the introduction of cellular communication, digital finance, occupational safety regulations, universal health coverage and health insurance) to introduce and scale services like telehealth, diaspora-funded healthcare, medical tourism and workplace health (ADB, 2021; Chitungo et al., 2021; Data for Development, 2022; Dodoo et al., 2021; Kellett & Dhaliwal, 2022; Nabyonga-Orem et al., 2019).

Another positive trend from GHRPs has been the reverse flow of learning and practice through researchers and service providers from the Global North who have benefitted from the knowledge exchange with individuals, institutions, and systems in the Global

South. Learning at the clinic-community interface in Sub-Saharan Africa has also accelerated and researchers have used this innovation to bypass local funding and infrastructural challenges limiting the success of programs for HIV, tuberculosis, childhood immunization, geriatric care, and chronic non-communicable disease management. The globalization facilitated by GHRPs has also facilitated economic migration by global health researchers and service providers who have become exposed to opportunities in high-income countries and desire to explore these places for professional or economic growth.

To summarize its impact, North-South collaborations in global health have focused on a range of activities, including research, epidemic preparedness, clinical education, in-service training, project management, KT, health systems strengthening (including integration of technology), and strategic planning (Carlson, 2004; Clinton & Sridhar, 2017; Gooding, 2017; C. J. L. Murray et al., 2004; Steenhoff et al., 2017). These impacts, while predominantly beneficial, have also had deleterious effects on health services delivery as we will see in the next section.

2.2.6 Criticisms of North-South Partnerships and Global Health Research Partnerships in Sub-Saharan Africa

The less laudable impacts of GHRPs have also been extensively studied and reported. Plamondon, Monette, Khan, Abimbola, and other global health equity researchers frequently point to developmental aid's roots in patriarchy, paternalism, and colonization with the Southern voice often discountenanced (Abimbola, 2018; Khan et al., 2021; Monette et al., 2021; K. M. Plamondon et al., 2021). The increasing body of work on this topic in recent years underscores its importance, and potential for global sustainable development. Firstly, from an ethical and equity perspective, evaluators have raised concerns about the level of involvement of Sub-Saharan Africa researchers in: formulating research questions, and study design (Abimbola, 2018); having access to capacity building (Ezeanolue et al., 2019; Svadzian et al., 2020); having access to funding (Adam et al., 2020; Adegnika et al., 2021; Clinton & Sridhar, 2017); as well as balancing equitable gender (Abimbola, 2019; Carducci et al., 2022), and geographic representation

(Abimbola, 2019; Abimbola & Pai, 2020; Khan et al., 2021; Sachs et al., 2022; Seo et al., 2020) in research products.

Building on the wave of campaigns to decolonize global health, scholars have called for better operational frameworks for research partnerships, and clarity on the roles of partners (John et al., 2016; Kelly et al., 2015) as well as an increased focus on transparency, justice, and communication (Grimshaw et al., 2012). These observations speak directly to the rationale for my study, highlighting the know-do gap that, I argue, undermines the high ideals held by observers, researchers, implementers and beneficiaries of GHRPs. While it is important to acknowledge the systemic impact of GHRPs (as described in earlier sections of this chapter) and accept that, in many instances, both Northern and Southern partners benefit from GHRPs (Gulrajani, 2017; Monette et al., 2021; Wigle et al., 2018), scholars have rightly challenged assumptions that GHRPs between HIC and LMIC teams offer a magic bullet to eliminate Sub-Saharan Africa's developmental challenges and may perpetuate those very inequities, the structural exclusion of their Sub-Saharan African partners or underutilization of equitable partnership guidelines noted (Cordero et al., 2008; Garcia-Basteiro & Abimbola, 2021; Gautier et al., 2018; Hodson et al., 2023; Kelly et al., 2015; Monette et al., 2021; M. Murray & Mubiligi, 2020; K. M. Plamondon et al., 2021). Qualitative evaluations of specific GHR partnerships and programs demonstrate specific areas for concern. For example, Cordero et al. (2008) conducted key informant interviews with 23 funding agencies for GHRPs implementing KT work in LMIC and reported unclear mandates, variable definitions of KT, and infrequent implementation of KT activities. The researchers who developed the Douala Equity Checklist (Hodson et al., 2023) conducted a systematic review of key inequalities in the design, implementation, analysis and dissemination stages of global health research projects. Their findings implicated the HIC-centric nature of global health organizations, the paucity of direct funding for investigators and trainees from LMICs, the emphasis on HIC-selected issues rather than local solutions to local problems, the dominance of the English language in communication, and the exploitation of LMIC teams as constraints to partnerships for global health scholarship (Hodson et al., 2023). An earlier but similarly robust evidence

synthesis by Plamondon and colleagues which looked at the sensitivity of partnering processes in GHR found HIC-centricity in evaluations with little or no attempt to center the experience of LMIC partners as an outcome for equitable partnerships (Plamondon et al., 2021). Weber et al (2022), for example, in a mixed methods study examining researcher experiences in international participatory research on gender-based violence (GBV) reported increased risks of re-traumatization, safety concerns, and feelings of exploitation among survivor-interviewees if interviews were conducted by researchers from HIC countries.

On a positive note, several North-South GHRPs have also been evaluated and reported as exemplars of successful research partnerships, because they modelled many of the principles mentioned above, and researchers from Sub-Saharan Africa held leadership positions in the research projects (Kasprowicz et al., 2020; Mutapi et al., 2023; Sturke et al., 2014). The study teams of Kasprowicz et al. (2020) and Mutapi et. al (2023) both emphasize Sub-Saharan African leadership as a feature of the successful GHRPs they examined. The Sub-Saharan African Network for TB/HIV Research Excellence (SANTHE) project was locally funded through the African Academy of Sciences (AAS) and recommended the empowerment of African-based researchers, capacity building for junior researchers, and dedicated knowledge exchange activities (Kasprowicz et al., 2020). The Tackling Infections to Benefit Africa (TIBA) partnership emphasizes indigenous teams working for Sub-Saharan African goals, inclusivity and equitable partnerships as the reason behind their success (Mutapi. et al., 2023). From these examples, it is reasonable to surmise that the local expertise, experience and evidence can contribute towards equitable, functional and high-impact GHRPs in Sub-Saharan Africa (Kasprowicz et al., 2020). What may be lacking is the cost, commitment and seemingly perennial challenge of consistently translating that knowledge into action (Braithwaite et al., 2020; Graham et al., 2018; Ward et al., 2012).

2.2.7 Partnership Principles and Practices in Global Health Research

From the preceding sections, there was a clear need to define a set of frameworks, principles and practices to guide the ethical and equitable partnering between stakeholders

in GHRPs. This was a response to imbalances in the leadership of research partnerships in LMICs, address trust and equity concerns among collaborators, and promote sustainable impact (Benatar & Singer, 2000; Costello & Zumla, 2000).

Partnership principles and practices for global health research have the potential to improve the intrinsic quality of research being conducted (Murphy et al., 2015) and improve stakeholder engagement (Baron et al., 2018) while identifying power imbalances and ensuring that all partners benefit from the collaboration (Amisi et al., 2023; Monette et al., 2021; Pratt, 2021b; Zaman et al., 2020). Benefits like recognition for scholarship were emphasized in several studies (Jentsch & Pilley, 2003; Monette et al., 2021; Pratt, 2021a). Zaman et al (2020) and Nakanjako (2021) submit the improved communication and continuous review of the partnership as leading to transformative outcomes when guidelines for GHRPs are in place. Partnership principles and practices also promote shared learning for institutions and individual researchers (Olivier et al., 2016; Pratt, 2021a; Zaman et al., 2020), ensuring that knowledge products are a good fit for the implementation setting (Nakanjako et al., 2021; Pratt, 2021a). Other benefits include the utility of partnership principles and practices for sustainability planning in preparation for future global health challenges like the next pandemic (Nakanjako et al., 2021) and as an evaluation or accountability tool for partnership governance (Baron et al., 2018; Nakanjako et al., 2021; Pratt & Hyder, 2016) or decolonization initiatives and commitments (Academy of Medical Sciences, 2012; Zaman et al., 2020).

To condense the content and guidelines from the reviewed literature, this thesis examined in detail the partnership principles synthesized by Plamondon and Bisung (2019b), Monette et al. (2021), Nakanjako et al. (2021), and Hodson et al. (2023) because of their recency (publication within the last five years), the systematic search of past work on the subject, the extent to which diverse global health perspectives are incorporated in their recommendations whether through extensive stakeholder engagement (Hodson et al., 2023; Plamondon & Bisung, 2019b), their review of global health literature (Monette et al., 2021), or the personal experiences of the authors (Nakanjako et al., 2021). The four studies are also noteworthy because of their emphasis on equity in partnerships, the

practicality of their guidance to research communities, and the recommendations for more research (inspiring scholarly efforts like this thesis).

Table 2.1 (titled “Summary of Guiding Partnership Principles and Practices from Selected Literature”) provides a detailed comparison of partnership principles and practices recommended in four pivotal studies focused on enhancing equity and effectiveness within GHRPs (Hodson et al., 2023; Monette et al., 2021; Nakanjako et al., 2021; K. M. Plamondon & Bisung, 2019b). Each of these studies offers a distinct set of guidelines designed to foster more equitable, inclusive, and sustainable collaborations between HICs and LMICs. The principles range from ensuring the relevance and applicability of research outcomes and promoting equity in team composition and funding to fostering mutual benefits and understanding the context of the partnership. These frameworks collectively contribute to a comprehensive understanding of the essential components required for successful and ethical global health research partnerships (and will form the foundation upon which the Partnership Principles and Practices Critical Assessment rubric, which will be examined in the next chapter, is built).

Authors and publication date	**Hodson et al. (2023)**	**Monette et al. (2021)**	**Nakanjako et al. (2021)**	**Plamondon and Bisung (2019)**
Publication title	Striving towards true equity in global health: A checklist for bilateral research partnerships	Informing 'good' global health research partnerships: A scoping review of guiding principles	Building and Sustaining Effective Partnerships for Training the Next Generation of Global Health Leaders	The CCGHR Principles for Global Health Research: Centering equity in research, knowledge translation, and practice
Recommended Partnership Principles	1. Relevance and applicability: locally derived and relevant solutions prioritized 2. Equity in team composition: role pairing between HIC and LMIC at all levels.	1. Mutual Benefits 2. Agenda Setting 3. Equity 4. Accountability 5. Capacity building/strengthening 6. Defined roles 7. Engaged stakeholders 8. Understand the context	1. Equal participation and decision-making in strategy development. 2. Equitable representation (age, gender, professional groups) 3. Regular communications and	1. Authentic partnering 2. Inclusion 3. Shared benefits 4. Commitment to the future 5. Responsiveness to causes of inequities 6. Humility.

Authors and publication date	Hodson et al. (2023)	Monette et al. (2021)	Nakanjako et al. (2021)	Plamondon and Bisung (2019)
	3. Equitable funding: budgets should cover the same activities for both HIC and LMIC countries. 4. Strength-based task sharing: definition and assignment of roles should leverage on individual, team and institutional strengths.	9. Actionable research 10. Communication 11. Data access 12. Humility 13. Inclusivity 14. Mutual learning 15. Social Justice 16. Transparency 17. Trust 18. Uncategorized*	updates for transparency and timely interventions. 4. Annual reassessment of direction, progress, and impact of partnership.	

Table 2.1 Summary of Guiding Partnership Principles and Practices from Selected Literature

*Adaptability; Leadership; National ownership; prevention of adverse impact; promotion of common good; redress hierarchies; Northern partner to relinquish control; Resolution; Respect; Respect diversity of knowledge and skill; Secure outcomes; Stewardship.

From Table 2.1, we see wide variation in the number and aspirations of the partnership principles proposed, a fact acknowledged by two of the four selected papers (Hodson et al., 2023; Monette et al., 2021). Despite this variation, some themes are consistent across the studies including equity and justice (as seen in team composition, funding, decision-making and focus on places with greater need); strong coordination of the partnership and the research implementation (as reported in role and agenda definition, strength-based task sharing, regular communications, and scheduled evaluations); inclusivity and learning (as seen in the emphasis on humility, mutual learning, understanding context and culture); as well as intrinsic partnership values (as represented by authentic partnering, shared decision making, mutual benefits and trust). Both Hodson et al. (2023) and Nakanjako et al. (2021) aimed to amplify the voices of researchers from Sub-Saharan Africa while Monette et al. (2021) offered only a geographical analysis of the authorship of the systematically selected literature. Hodson and colleagues offered an implementation framework for their recommended principles in the form of the Douala Equity Checklist (2023) while the work of Plamondon and Bisung was a foundation for the Equity Tool for assessing global health partnerships (Larson et al., 2022). Similarly, Nakanjako et al. (2021) offered a performance matrix to measure whether or not GHRPs were working in line with their partnership principles and reminded practitioners and policymakers that partnerships are necessary "because one organization or group is not able to accomplish something on its own" (2021, p. 5). While there have been many reports on the impact of GHRPs in Sub-Saharan Africa, the multiplicity of contexts, implementation priorities and stakeholder goals demand a prioritization of future research to ensure that partnership principles are continuously refined to enhance their relevance, applicability and effectiveness. As Monette et al. cautioned, "partners should ensure that the principles they apply in their research were developed by partners in both the Global South and the Global North" (2021, p. 5).

This discussion about partnership principles and practices within GHRPs underscores the importance of understanding how these collaborations operate and are critiqued within Sub-Saharan Africa. By integrating principles such as equity, mutual benefits, and

context-specific responsiveness, this analysis highlights both the potential and the challenges faced in operationalizing effective partnerships. The Partnership Principles Assessment Rubric, derived from these discussions, serves as a vital tool in our research, facilitating a structured evaluation of how partnerships adhere to these ideals. This rubric not only addresses the core research objective of assessing the functionality and equity of GHRPs but also probes deeper into how these partnerships can evolve to overcome historical power imbalances and truly benefit all stakeholders involved. As we transition to the conclusion of this chapter, it is imperative to reflect on the critical role that well-defined and equitably structured partnerships play in advancing the goals of global health, particularly in settings that are historically marginalized.

2.3 Conclusion

The historical evolution of KT and its emphasis on evidence, systematization and collaboration coincides with the last quarter century, an era when global health policy and practice faced new healthcare and health systems crises and an increased emphasis on health equity. Health equity in global health is trumpeted even though much of the multilateral and bilateral partnerships which underpin both global health research and its KT mechanisms are still hierarchical, with a techno-rational gradient between HICs and LMICs, researchers, and knowledge users that favours HICs. KT offers significant potential to positively impact GHRPs and their outputs in Sub-Saharan Africa (Asamani & Orem, 2020; Ogony et al., 2021). The systematized and replicable guidelines in its theories, models, and frameworks (Esmail et al., 2021; Nilsen, 2015) facilitate the synthesis, exchange, and application of knowledge which would better position research findings for effective application in practice (Edwards et al., 2019b).

In Sub-Saharan Africa where health systems often face challenges such as limited resources, institutional barriers and significant deficits in healthcare coverage, KT could play a crucial role in guiding the integration of research into policy and practice, fostering collaboration among stakeholders, and building local capacity for evidence-informed decision-making to optimize health indicators (Edwards et al., 2019b; Tait & Williamson, 2019; Wensing & Grol, 2019).

Chapter 3

3 Methods

This chapter outlines the methodology for a critical scoping review conducted to study the implementation of KT within GHRPs across Sub-Saharan Africa. Guided by two research questions, this review aimed to identify barriers and facilitators reported by researchers in implementing KT and to assess the role that partnership principles and practices had on KT implementation in the specified geographic context. At the onset, the literature for this review came from a diverse range of publications, accommodated different methodologies and included empirical qualitative, quantitative and mixed methods studies. The methodology merged the broad mapping capability of a scoping review with the analytical depth of a critical review to extract, synthesize and present findings that contributed to scholarly effects to improve the effectiveness and equity of global health research partnerships.

3.1 A Critical Scoping Review

This study employed a critical scoping review that combined a scoping review with a critical review to align with the goal of mapping and synthesizing a diverse collection of global health literature while conducting a critical analysis of the articles to compare them with contemporary literature on knowledge translation and global health research partnerships and health equity (Davison et al., 2015). Scoping reviews were first described by Arksey and O'Malley (2005a) and later refined for enhanced systematic rigour by the Joanna Briggs Institute (JBI) (Peters et al., 2020; Peters et al., 2021). Evolving from the more comprehensive systematic reviews, scoping reviews are primarily focused on mapping the existing literature, identifying gaps, and recommending opportunities for future research in a particular topic area (Peters et al., 2020). Their adaptability to diverse datasets and study designs contrasts with Systematic Reviews, where the focus is on synthesizing effectiveness from a narrow range of well-designed studies. This makes scoping reviews ideal for the broad range of scholarly work on GHRPs, KT, and researcher experiences in Sub-Saharan Africa.

Procedurally, the scoping review component of this study builds on Arksey and O'Malley's five-step framework which consists of identifying the research question, identifying relevant studies, study selection, data analysis and extraction, and, finally, collating, summarizing and reporting the results (2005). To enhance methodological rigor and ensure replicability, the Joanna Briggs Institute (JBI)'s Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) was employed as its reporting tool (Aromataris & Munn, 2020; Tricco et al., 2018). The completed PRISMA-ScR checklist for this thesis is in Appendix C (page 145).

Similarly, the critical review used in this thesis was significantly guided by the work of Davison et al. (2015) to assess the GHRPs described by the articles extracted in the search strategies of the preceding scoping review. As modelled by Davison et al., the selected literature from the systematic search was critiqued using a “partnership principles and practices critical assessment” rubric developed from selected principles enumerated in contemporary literature on KT and GHRPs (2015). By adopting this rigorous approach, the author aimed to meet and exceed the Grant and Booth description of a critical review, that one where “writer has extensively researched literature and critically evaluated its quality [and] goes beyond mere description to include the degree of analysis and conceptual innovation” (2009, p. 94).

In contrast to the generalizability or transferability of the findings in a standard scoping review, critical reviews are intentional in their attempt to generate theories or models from the recurring patterns in existing models or from the questions, findings and concepts in a previously unexamined body of literature (Grant & Booth, 2009; Jesson & Lacey, 2006; Ruckert et al., 2016). The reported weaknesses of a critical review, namely its lack of systematicity and the relatively low interpretative demands placed on its results, make it a perfect complement to scoping reviews as the "starting point for further evaluation, not an endpoint in itself" (Grant & Booth, 2009, p. 97) in qualitative evidence synthesis.

3.2 Research Method

As previously described, this study consists of two phases: a systematic search of the literature on KT in GHRPs in Sub-Saharan Africa, and a critical analysis of the literature using a rubric. The "partnership principles and practices critical assessment" rubric is designed by the author to systematically evaluate how well GHRPs adhere to established partnership principles essential for effective KT. Based on a synthesis of well-researched and validated principles and practices in contemporary literature on GHRP dynamics (Hodson et al., 2023; Monette et al., 2021; Nakanjako et al., 2021; Plamondon & Bisung, 2019b), the rubric includes criteria such as equity and justice, strong coordination, and commitment to learning. Each principle is assessed on a scale from zero to two, where zero indicates no evidence of the principle, one suggests partial evidence, and two reflects strong, clear evidence. This rubric not only assesses the presence of these principles but also their operationalization within the partnerships, providing a nuanced understanding of how theoretical frameworks are translated into practical action in real-world settings.

Arksey and O'Malley's scoping review framework (2005a) guided the data collection, analysis and reporting component of this evidence synthesis while the critical review was guided by Davison et al.'s demonstration of the use of a scoring rubric as a KT tool (2015), supported by other scholarly work on evaluative qualitative research employing rubrics (Dickinson & Adams, 2017; Jordan et al., 2021; King et al., 2013; Martens, 2018). An exploratory search and extraction were conducted (with input from librarians) to map initial keywords in the literature on KT in GHRPs in Sub-Saharan Africa (see Appendix D, page 147) and subsequently used to guide the execution of the scoping review procedure which is described below:

3.2.1 Step 1: Identification of the Research Question

The research question was intentionally expansive and non-specific to accommodate publications at the intersection of GHRPs and KT localized to Sub-Saharan Africa. The two research questions that guided my literature search were:

1. What barriers and facilitators to implementing KT in GHRPs have researchers or research communities in Sub-Saharan Africa reported in their work?

2. What role do equitable partnership principles and practices play in the success of KT initiatives in GHRPs between Sub-Saharan Africa and the Global North?

3.2.2 Step 2: Identification of the Relevant Studies

Following consultation with the Health Sciences librarians and an initial exploration of the literature, an initial set of search terms and keywords was developed. This approach was further refined by identifying additional keywords from the keywords list of the initially extracted publications, aiming to apply a reflective method for generating search terms as recommended by Arksey and O'Malley (2005a) and Daudt et al. (2013). Furthermore, the Joanna Briggs Institute's population, concept, context (PCC) search framework was used to pinpoint the key concepts derived from the research question (Aromataris & Munn, 2020).

Table 3.1. titled "Applying the PCC framework to develop key concepts for literature search" systematically outlines the search terms used to navigate the academic and grey literature pertinent to this review, categorized into three domains in line with the PCC framework: Population as "a community of collaborating researchers," Concept focusing on "Knowledge Translation and Global Health Research," and Context narrowed to "Geography – Sub-Saharan Africa," ensuring a targeted yet broad search strategy.

JBI Categorization	**Keyword**	**Comment**
Population(s)	A community of collaborating researchers	This keyword defines the analytical focus of the publications identified from the systematic search and conceptualizes researchers as an expanded group including key stakeholders who co-create knowledge, apply the knowledge and solve problems (as previously illustrated in Chapter 2).

JBI Categorization	Keyword	Comment
Concept(s)	Knowledge Translation (KT)	These are the key "phenomena of interest" for the study.
	Global Health Research	
Context(s)	Geography – Sub-Saharan Africa.	Sub-Saharan Africa contextualizes the analytical frame of the study by supplying geographical, historical, ethical, and socio-cultural lenses through which the main concepts were interrogated during data analysis and synthesis.

Table 3.1 Applying the PCC framework to develop key concepts for literature search

3.2.3 Stage 3: Selection of Studies for Analysis.

Studies included in this study were identified through the JBI-recommended three-step process consisting of a systematic search of the relevant online databases (to build upon the exploratory search); citation chaining to widen the contribution of each article to the bibliographic dataset, and a grey literature search to fill conceptual gaps that may be identified as the theoretical models are developed (Aromataris & Munn, 2020; M. D. J. Peters et al., 2021). For the first step, best practices were followed (Lefebvre et al., 2022) and a librarian was consulted to discern keywords associated with the initial research idea as well as the selection and navigation of bibliographic databases, following which I generated an exploratory search query for two databases, Ovid Medline and CINAHL. This search query produced my final selection of keywords which in turn shaped the text words, and controlled vocabulary used in developing search strategies for my comprehensive literature search. I translated the keywords as appropriate for the databases, conducting a systematic search of five online bibliographic databases, namely:

Medline, EMBASE, CINAHL, Scopus and The Cochrane Library. These databases offer an optimal combination of bibliographic sources for the health and social sciences; (Bramer et al., 2017; Heath et al., 2022). Details of specific steps followed in the database search (including the search strings used for each database) are outlined in Appendix E (Keyword Translation Table, page 150) and Appendix F (Database Search Strategy Tracker, page 155). Standard syntax and Boolean operators were used in the search strings for each database to ensure that relevant literature was not omitted from the pool of publications. All searches conducted were saved offline, and a search alert was set for each database to ensure that new publications within my search parameters were not omitted from the selection pool. A final search of the listed bibliographic databases was last conducted in September 2023 and the results are summarized in Table 3.2.

Bibliographic Database	Search Results (N)
Embase	389
CINAHL	289
Scopus	226
Medline	87
Cochrane	13
Hand searched (citation chaining)	7
TOTAL	1,011

Table 3.2 Search bibliographic databases and results.

In keeping with the second step of the JBI study selection process, the database search was complemented by citation chaining to identify additional articles from the references of my systematic bibliographic search results (Badampudi et al., 2015; Greenhalgh & Peacock, 2005). Specifically, I used both forward and backward citation searches as recommended by Cochrane and other scholars (Briscoe et al., 2020; Greenhalgh & Peacock, 2005; Hirt et al., 2021; Lefebvre et al., 2022) until no further relevant sources are identified. My literature search also examined grey literature related to my research idea, particularly the websites of key multi-lateral, and bilateral global health funding organizations, and GHR implementing organizations (in HICs and LMICs), especially

those referenced in Chapter 2 as major donors for global health research, advocating for North-South partnerships to optimize global health research as well as the organizations they fund in Sub-Saharan Africa. In addition, suggestions about potential papers from my supervisory committee members and my former work colleagues were considered.

Situating this study within the context of the SDGs attempts to draw insights and inspiration from a time when global investments in development prioritized health outcomes, the power of partnerships, and the region of Sub-Saharan Africa as strategic foci (Begashaw, 2019; Bhutta et al., 2020; Cruz, 2023; Twinoburyo et al., 2021). Similarly, linking studies to geographies requires contextualization and for this thesis, the geographic attributes of a researcher or a research community are assigned based on one's affiliated or host institutions, and not the nationality of individuals.

Following the selection of the pool of literary sources, the screening of publications was conducted by myself (OF) and MN[2], who served as a second reviewer. A second reviewer helped minimize the potential bias when a single reviewer conducted the systematic screening of articles and ensured that the screening requirements of at least two screeners for a systematic literature review were met (Stoll et al., 2019). The screening process was simplified by the use of Covidence, the Cochrane-recommended software for systematic literature search (Cochrane, 2017), which allowed MN and OF to execute a three-step screening process consisting of the removal of duplicates from the selected publications; rapid screening of the titles and abstracts to establish relevance to the study objective; and a meticulous full article screening to confirm the significance of the publication for data analysis. The latter two stages were guided by the inclusion and exclusion criteria (details presented in the next section). Both screeners kept reflexivity journals and used the Covidence note-taking tool to track selection decisions, including points of disagreement in screening publications. However, all such discordant decisions were resolved after

[2] See Appendix B (page 144) for a list of the team members for this study.

discussions. See the PRISMA diagram in the next chapter for a graphical presentation of the search results.

Study Selection Criteria

The inclusion and exclusion criteria used in the selection of the final set of articles are enumerated in Table 3.3 (below). Inclusion criteria targeted studies that involved meaningful collaboration between researchers from the Global South and funding bodies from the Global North, embodying a range of methodological approaches and emphasizing contributions to global health knowledge. Conversely, exclusion criteria were applied to omit studies that lacked a direct focus on KT or partnerships, those not peer-reviewed or in English, and research conducted before the implementation of the Sustainable Development Goals in September 2015. This comprehensive approach ensured the inclusion of studies that are most aligned with the research questions and objectives of this scoping review. Where there was more than one reason to exclude an article, the single most relevant reason for exclusion was documented in our notes and on Covidence.

Inclusion Criteria	• Studies that explicitly report on KT activities (training, workshops, dissemination, etc.), KT products (toolkits, best practices, promising practices, guidelines, policies, frameworks) and principles of KT or partnerships and partnering processes (trust, transparency, epistemic justice, synthesis process, etc.) as an outcome. • Sources co-authored by researchers and communities of researchers affiliated with institutions in Sub-Saharan Africa. (UN definition applies). • Studies that examined global health research partnerships conducted in the Global South, with funding from organizations in the Global North or multi-lateral sources (like the WHO, UN, GF-ATM, etc.). • Study methods were characterized by quantitative, qualitative, mixed methods or evidence synthesis. • Studies where data collection and publication were after 2015 (effective date is 25th September 2015 – the launch of the SDGs).

	• Publications in English.
Exclusion Criteria	• Single researcher studies or studies which only examine partnerships within the Global South, or which do not involve funding or coordination from organizations in the Global North. • Studies which are primarily focused on clinical or biomedical research without consideration of partnerships or KT in global health. • Publications which were commentaries, reflections, opinion pieces, dissertations, study protocols, conference abstracts or conference reports and do not have a methodology section or involve any form of primary or secondary data collection. • Publications not written in English. • Publications (and data collection) before September 25th, 2015. • Publications without a demonstrable KT product (framework/tool/guideline/best practice; new research idea developed, or direction defined; measurable quality improvement outcome; individual/institutional/national capacity built, or research network established). • Studies that suggest innovations or trials of a strategy rather than reporting on an actual process.

Table 3.3 Inclusion, and Exclusion Criteria for Screening Articles

3.2.4 Step 4: Extraction and Analysis of the Data

After screening publications from the five bibliographic databases, a data extraction form was used to record data from all selected articles and produced simple frequency distribution tables for each study characteristic(Brown et al., 2013) and for the descriptive data used for the critical assessment of partnership principles (Pham et al., 2014; Tricco et al., 2016). Developed in Microsoft Excel by OF, the data extraction form was designed with an emphasis on its ease of use and effectiveness in recording data from each publication in this study. All data extraction procedures were conducted by OF (the data extraction form is presented in Appendix G, 166) with the extracted study characteristics recorded in Covidence. Prior to its use, the extraction form was piloted by OF and MN on three sample articles which were not included in the analysis and subsequently reviewed

by the study team to ensure accurate recording of the characteristics of the sample of articles. Study characteristics extracted include the study titles, year of publication, study type (whether qualitative, quantitative or mixed methods), and geographic attributes like the country of affiliation for first authors and the entire pool of authors as well as the location of the study implementation sites. Study characteristics extracted also include the type of funding sources (sub-categorized by type and the country of affiliation of the funders), the subject investigated in the studies and the KT theories, models, or frameworks explicitly reported in each of the thirteen articles. Appendix H (page 168) contains a table of definitions for all the study characteristics extracted and this tool increased the consistency, reproducibility and validity of the extraction process.

To systematically extract the barriers and facilitators to KT in GHRPs from the selected literature, Braun & Clarke's six-phased reflexive thematic analysis was employed (Braun et al., 2019; Braun & Clarke, 2013). For the purpose of this study, barriers to KT in GHRPs were defined as factors or conditions that impede the effective implementation, dissemination, and application of research findings within the context of a global health research project; and facilitators are factors or conditions that promote or ease the effective implementation, dissemination, and application of research findings in KT within GHRPs.

A systematic approach was undertaken which began with a thorough familiarization phase, where all 13 selected articles were read in depth to establish the scope of KT-related observations in each article. During this familiarization phase, any mention of factors that hinder or promote KT was carefully noted and manually tagged as either 'barriers' or 'facilitators' based on their nature. Subsequently, all noted references were compiled into a comprehensive list for each article. This compilation included direct quotes and summarized points that clearly articulated each barrier and facilitator. The next step was to categorize these references into broader themes. This categorization grouped similar barriers or facilitators mentioned across different articles under common themes, such as 'leadership challenges', 'funding constraints', 'supportive policies', and 'stakeholder engagement'. These thematic groupings helped in understanding the commonalities and unique aspects of KT challenges and supports across the thirteen

articles. A review of these themes followed during which they were refinement ensuring accuracy and fidelity to the source material. This involved re-reading each article to verify the context and significance of each identified barrier and facilitator, confirming that the themes accurately represented the compiled data. The final step in the methodology was the creation of a summary that listed the barriers and facilitators, complete with the frequency of their occurrence across the articles. This approach ensured that the examination of the themes of KT barriers and facilitators was enabled comprehensive without the use of coding software, relying instead on manual thematic analysis guided by structured categorization and documentation in Microsoft Excel (a spreadsheet software) (Bree & Gallagher, 2016).

Critical Analysis of the Literature: The Partnership Principles and Practices Critical Assessment Rubric and Scorecard

The second phase of this study followed the extraction and analysis stage of the scoping review and involved the use of a rubric to evaluate how well each of the systematically selected articles aligned with the literature on partnership principles in global health research. After administering the data extraction form, OF selected scoring criteria from four purposively identified publications on GHRPs (described in Chapter 2) (Hodson et al., 2023; Monette et al., 2021; Nakanjako et al., 2021; K. M. Plamondon & Bisung, 2019a). Criteria selection was significantly influenced by the qualitative evaluation work of Dickinson and Adams (2017), King et al. (2013), and Jordan et al. (2021) as well as Davison et al.'s (2015) exemplar that specifically used rubrics in KT evaluations (2015). Criteria for selection included characteristics like consistent representation in all four source articles, clear definition of the terms in everyday language, and ease of identifying the criteria in global health research settings in the Global South. Other criteria were the recency of the articles (publication within the last five years), the use of a qualitative evidence synthesis approach in their methods, the extent to which diverse global health perspectives are incorporated in their recommendations whether through extensive stakeholder engagement (Hodson et al., 2023; Plamondon & Bisung, 2019b), the extent of

their literature review (Monette et al., 2021), or the personal experiences of the authors (Nakanjako et al., 2021). Lastly, criteria selection was based on the emphasis the source articles placed on equity and knowledge transfer in partnerships and whether their recommendations were made implementable in the form of a knowledge product or toolkit (Hodson et al., 2023; Plamondon & Bisung, 2019b).

Five partnership principles were selected, namely:

1. Equity and justice (as seen in team composition, funding, decision-making and focus on places with greater need).
2. Strong coordination of the partnership and the research implementation (as reported in role and agenda definition, strength-based task sharing, regular communications, and scheduled evaluations).
3. Commitment to learning and an emphasis on retraining (as seen in the emphasis on closing gaps in research knowledge and skills; willingness to adopt new approaches and technologies; openness to mutual learning and learning how to partner).
4. Incorporation of local content and context (as seen in the emphasis on humility and understanding the impact of context, language and culture during research implementation).
5. Intrinsic partnership values (as represented by authentic partnering, shared decision-making, mutual benefits, respect, leadership, and trust).

The selected criteria were synthesized into a rubric by incorporating a three-point scale for each principle (Dickinson & Adams, 2017; Jordan et al., 2021). The scoring process was not a quantitative analysis but provided a graduated representation of qualitative attributes to help rank and compare observations in the selected articles. For example:

- a score of 0 was assigned when there was no reference to a particular partnership principle in the paper and there would be concurrence among multiple reviewers that no example of principle was observed in the text.
- a score of 1 was assigned when there was a partial or indirect reference to a particular partnership principle in the paper, accommodating reviewer disagreements on observation.

- a score of 2 was assigned when there were explicit and often multiple references to the principle in direct statements or examples and high concurrence among multiple reviewers that the stated principle was observed in the text.

A total score was then calculated for each of the publications from the systematic search. The scoring rubric was tested by OF and MN at a review meeting to fine-tune the terms for easier and more consistent scoring. After the rubric was administered, a tabulated scorecard for all thirteen publications was constructed, and the numerical value generated by the rubric was referred to as the "partnership principle critical assessment score" for each publication. The complete assessment scorecard and a description of the results are presented in Chapter 4.

3.2.5 Step 5: Collating, Summarizing and Synthesizing the Results.

Study attributes like study titles, authorship, geographical affiliations of the authors, year of publication, implementation location, study questions, study design, methodologies and the key findings were summarized using descriptive statistics. OF reviewed all articles for statements that reported positive (facilitators) or negative (barriers) factors impacting the success of KT efforts. OF then used the occurrence or otherwise of these statements as a basis to assign scores on the partnership principles critical assessment rubric. Subsequently, scoring patterns from the partnership principles assessment scorecard were compared with study characteristics, methods, and KT- and GHRP-specific observations with documentation of any correlation and significant findings.

3.3 Ethical Considerations for the Study

Ethical approval was not required for this study because the data used for a critical scoping review and its associated analysis are retrieved from publicly available articles and publications.

Chapter 4

4 Results

This chapter presents the results of this Critical Scoping Review in two sections. The first section describes the outcomes of a systematic literature search, highlighting the scope and characteristics of studies that matched the objectives and inclusion criteria of the study. Conducting a systematic literature search and detailing its outcomes are critical components of scoping reviews (Arksey & O'Malley, 2005b; Tricco et al., 2018b). The method allows one to map current literature on a subject and establish a comprehensive foundation for understanding the breadth and depth of a specific topic. In this case, highlighting the scope and characteristics of studies that match the objectives and inclusion criteria of this review ensured a thorough understanding of the current landscape for implementing KT in GHRPs. This method allows for the identification of key themes, gaps in knowledge, and emerging trends, which are essential for informing future research, policymaking, and practice. Moreover, a systematic approach to the literature review ensured the replicability and transparency of this review's findings and enhanced its credibility and utility in contributing to the body of knowledge in global health research.

The second section presents the analysis of identified barriers and facilitators to KT in GHRPs and, critically assesses the articles through the lens of partnership principles and practices synthesized from contemporary literature on this subject. The positive and negative impact factors were curated and the process of systematically assessing each article against established partnership principles and practices using a scorecard highlighted areas of strength and opportunities for improvement within current research practices and, similar to the preceding section, identified trends, gaps, and areas requiring further reflection to improve the effectiveness and sustainability of GHRP in the long term.

4.1 Part 1: Results of the Systematic Literature Search and Characterization of Studies

4.1.1 Search Results

The search strategy was adapted and implemented in six databases: OVID Medline, EMBASE, Scopus, CINAHL, and Cochrane (See Appendix F, page 155) yielding 1,011 publications which were subsequently imported into the Covidence platform for screening, data extraction, and analysis. A total of 195 duplicates were removed and MN and OF screened the remaining 906 articles by their titles and abstracts. Only 245 articles were retrieved for full-text screening and evaluated for selection eligibility. The final set of 232 papers were excluded because they were commentaries, reflections or conference reports (n=62); reported on studies from outside Sub-Saharan Africa (n=52); contained data collected before the launch of the SDGs in September 2015 (n=33); were unrelated to GHRPs (as defined for this review) (n=30); were not explicitly related to KT (n=23); were focused on the wrong population or unit of analysis (for example work was done by a single researcher or a team of Sub-Saharan African researchers without Northern partners) (n=16); employed the wrong study design (for example, studies with a purely clinical focus and no KT or know-do gap component) (n=16); or were a study protocol without actual data collection and analysis (n=1). This left 13 papers that met the inclusion criteria for data extraction. It is notable that during the search of the grey literature (where it was anticipated that reports from multilateral agencies, funders and large non-governmental organizations would record experiences implementing KT projects in Sub-Saharan Africa) yielded no publications that met the search criteria.

The PRISMA diagram in Figure 4.1 (below) is a visual representation of the procedures followed to locate publications for this review and decide on what articles to include or not to include (Liberati et al., 2009; Tricco et al., 2018b).

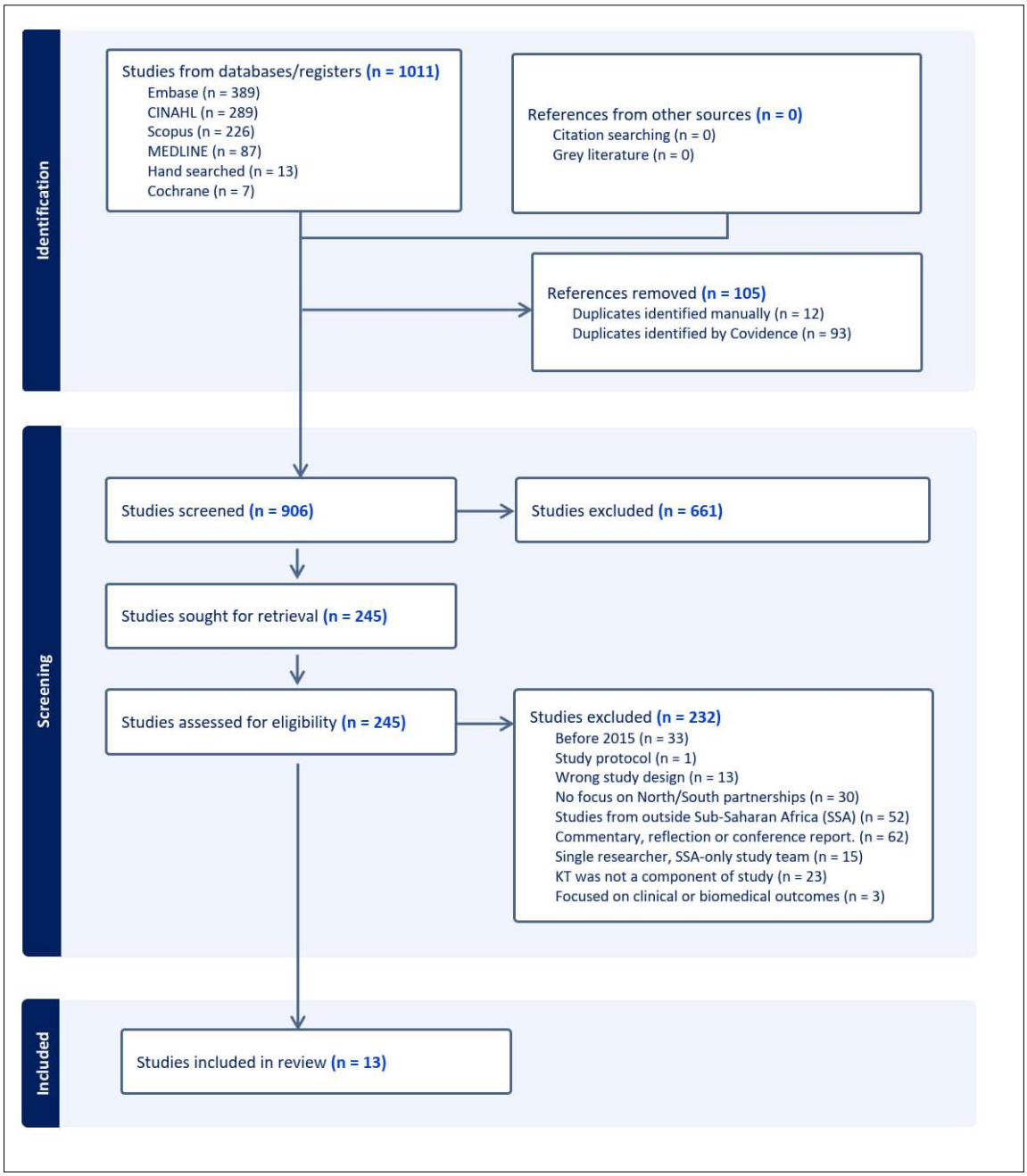

Figure 1 PRISMA Flow Diagram for a Critical Scoping Review on Knowledge Translation and Global Health Research Partnerships in Sub-Saharan Africa

4.1.2 Characteristics of Selected Literature

Table 4.1 (below) summarizes the characteristics of thirteen systematically selected studies that were included in this review. It outlines each study's authors, publication date, title, methodological approach, main objectives, and the KT implementation strategies adopted. Collectively, the contents of this table provided a comprehensive view of the recent efforts to implement and evaluate KT within GHRPs, the range of approaches used by the study teams and the geographical and thematic range of the research being conducted in this field. All the articles analyzed for this review varied in terms of their research method, their specific aims, their focus on diverse global health topics and the KT approaches adopted in their implementation.

Authors (Publication Date)	Title	Methods	Aims	KT Approach
Abekah-Nkrumah et al (2018)	A review of the process of knowledge transfer and use of evidence in reproductive and child health in Ghana	Qualitative	To conduct a situational analysis to examine the production, dissemination and utilization of reproductive and child health-related evidence to inform policy formulation in Ghana's health sector.	Evidence-based practice or evidence-informed policymaking
African Health Initiative (2022)	Barriers and Facilitators to Data Use for Decision Making: The Experience of the African Health Initiative Partnerships in Ethiopia, Ghana, and Mozambique	Qualitative	To learn from the experiences of partner countries by examining their data for decision-making (DDM) implementation strategies and the factors that shaped their effectiveness.	Consolidated Framework for Implementation Research (CFIR)
Ezeanolue et al. (2018)	Gaps and strategies in developing health research capacity: experience from the Nigeria Implementation Science Alliance.	Qualitative	To document insights from the experiences of Nigerian researchers, implementers and policymakers on the gaps in scaling locally-led health research and support the evidence-policy-practice continuum.	Implementation Science using collaborative research to assess research capacity
Ghilardi et al. (2020)	How useful are malaria risk maps at the country level? Perceptions of decision-makers in Kenya, Malawi and the Democratic Republic of Congo.	Qualitative	To explore the practices and perceptions of National Malaria Control Programmes staff and other malaria control stakeholders on the use of malaria risk maps in prioritization and targeting of interventions.	Impact Assessment using Risk Maps
Jessani et al. (2021)	IKT to advance non-communicable disease policy and practice in South Africa: application of the Exploration, Preparation, Implementation, and Sustainment (EPIS) framework.	Qualitative	To conduct a deep-dive description of the South African six-step IKT approach, using an implementation science lens guided by the EPIS framework.	Exploration, Preparation, Implementation, Sustainment (EPIS) framework for Implementation Science

Authors (Publication Date)	Title	Methods	Aims	KT Approach
Kavle et al. (2018)	Strengthening nutrition services within integrated community case management of childhood illnesses in the Democratic Republic of Congo: Evidence to guide implementation	Mixed Methods	To examine gaps & opportunities to strengthen service delivery of nutrition into iCCM in clinics & community level by examining beliefs, practices & influences among mothers, care providers & families.	Implementation science
McSween-Cadieux et al. (2017)	Research dissemination workshops: observations and implications based on an experience in Burkina Faso.	Mixed Methods	To evaluate the workshop and the policy briefs distributed there, the effects these produced on research results use and the processes that facilitated, or not, the application of the knowledge transmitted	Dissemination workshops as a KT tool
McSween-Cadieux et al. (2018)	A deliberative dialogue as a knowledge translation strategy on road traffic injuries in Burkina Faso: a mixed-method evaluation.	Mixed Methods	To present the results of the evaluation of a deliberative dialogue workshop on road traffic accidents	Deliberative Dialogues
Mpando et al. (2021)	Integrated Knowledge Translation in Non-Communicable Disease Research in Sub-Saharan Africa: A Comparison of Systematic and Ad Hoc Stakeholder Engagement	Qualitative	To share the perspective of researchers from partner countries engaged in systematic and ad hoc IKT with stakeholders	Integrated Knowledge Translation for evidence-informed decision-making
Mutale et al. (2019)	HIV Research Training Partnership of the University of Zambia and Vanderbilt University: Features and Early Outcomes	Qualitative	To report the research capacity-building activities conducted by the University of Zambia (UNZA)-Vanderbilt Training Partnership for HIV-Nutrition-Metabolic Research (UVP), drawing lessons and challenges for a wide global health audience.	Evaluation of a global health research training partnership

Authors (Publication Date)	Title	Methods	Aims	KT Approach
Olawepo et al. (2022)	Building a national framework for multi-centre research and clinical trials: experience from the Nigeria Implementation Science Alliance.	Qualitative	To report on the process of establishing locally driven infrastructure for multi-centre research and trials in Nigeria known as the Nigeria Implementation Science Alliance Model Innovation and Research Centres.	Exploration, Preparation, Implementation, Sustainment (EPIS) framework for Implementation Science
Soi et al. (2018)	Human papillomavirus vaccine delivery in Mozambique: identification of implementation performance drivers using the Consolidated Framework for Implementation Research (CFIR)	Qualitative	To show the utility of CFIR in identifying and documenting implementation barriers and facilitators for the scale-up of interventions in LMIC health systems, such as that of Mozambique	Evaluating program performance using Consolidated Framework for Implementation Research (CFIR)
Wang et al. (2021)	A qualitative evaluation of an operational research course for acute care trainees in Kigali, Rwanda	Qualitative	To understand the obstacles and cultural issues faced by participants in a self-paced research training program for anesthesiology residents in Rwanda	No specific KT label used in describing this study

Table 4.1 Overview of Systematically Selected Studies on Knowledge Translation in Global Health Research Partnerships

Table 4.2 (below) is a comprehensive summary of the characteristics of the thirteen studies included in this review, categorized by various attributes. It details the types of studies conducted, the countries in which the studies were implemented, the country of affiliation of first authors and last (senior) authors. In addition, the table describes the organizations that funded these studies (by type and country affiliation), and, lastly, the subjects of the research. The tabulated data offered insights into the dominant research methodologies used, the configuration of the international collaborations in the reported GHRPs, and the thematic focus areas for the research reported. Overall, the table contains characteristics that show the broad geographic and disciplinary scope of the articles screened for this review.

Characteristic	**Frequency (percentage)**
Type of study (N = 13):	
Qualitative methods.	10 (76.9%)
Mixed methods.	3 (23.1%)
Quantitative methods.	0 (0.0%)
Distribution of study sites across Sub-Saharan African countries (n = 21):	
Burkina Faso.	2 (9.5%)
DRC.	2 (9.5%)
Ethiopia.	2 (9.5%)
Ghana.	2 (9.5%)
Malawi.	2 (9.5%)
Mozambique.	2 (9.5%)
Nigeria.	2 (9.5%)
Rwanda.	2 (9.5%)
South Africa	2 (9.5%)
Kenya.	1 (4.8%)
Uganda.	1 (4.8%)
Zambia.	1 (4.8%)
Country of affiliation – first authors (by location of authors' primary institution) (N = 13):	
USA.	6 (46.2%)
Canada.	2 (15.4%)

Characteristic	Frequency (percentage)
Ghana.	1 (7.7%)
Malawi.	1 (7.7%)
South Africa.	1 (7.7%)
United Kingdom.	1 (7.7%)
Zambia.	1 (7.7%)
Country of affiliation – last authors (by location of senior or last authors' primary institution) (N = 13):	
USA.	3 (23.1%)
Canada.	2 (15.4%)
South Africa.	2 (15.4%)
Rwanda.	2 (15.4%)
Burkina Faso	1 (7.7%)
Nigeria.	1 (7.7%)
United Kingdom.	1 (7.7%)
Zambia.	1 (7.7%)
Subject of the study (N = 13):	
Research Training	3 (23.1%)
Malaria	2 (15.4%)
Health Info. Mgt. Systems (HMIS).	1 (7.7%)
Human Papilloma Virus vaccines.	1 (7.7%)
Integrated Knowledge Translation (IKT).	1 (7.7%)
Malnutrition	1 (7.7%)
Non-Communicable Diseases	1 (7.7%)
Reproductive and Child Health	1 (7.7%)
Road Traffic Accidents	1 (7.7%)
Stakeholder Management	1 (7.7%)
Organizations funding studies in articles (by organization type) (N = 13):	
Government-affiliated (country).	9 (69.2%)
Academic Institution.	1 (7.7%)
Multilateral agency (regional).	1 (7.7%)
Non-profit organization.	1 (7.7%)
No funding source was reported.	1 (7.7%)
Organizations funding studies in articles (by country of affiliation) (N = 13):	
NGO or No country of affiliation.	4 (30.1%)
USA.	4 (30.1%)
Canada.	2 (15.4%)
Germany.	2 (15.4%)
UK.	1 (7.7%)

Table 4.2 Distribution of characteristics of publications.

All the articles were primary research studies published in peer-reviewed journals, with 76.9% (n = 10) being qualitative studies (Abekah-Nkrumah et al., 2018; African Health Initiative, 2022a; Ezeanolue et al., 2018; Ghilardi et al., 2020; Jessani et al., 2021; Mpando et al., 2021; Mutale et al., 2019; Olawepo et al., 2022; Soi et al., 2018; Wang et al., 2021) and 23.1% (n = 3) using a mixed methods approach (Kavle et al., 2018; Mc Sween-Cadieux et al., 2017, 2018). The thirteen articles were published between 2017 and 2022, with relatively more publications in 2018 (n=5) and an overall increase in the volume of publications in 2021 and 2022.

There was significant variation in the distribution of the study locations in Sub-Saharan Africa, with 21 study sites spread across 12 countries. Regional distribution of study sites covered East Africa (n = 9 or 42.9% of countries) (African Health Initiative, 2022; Ghilardi et al., 2020; Mpando et al., 2021; Mutale et al., 2019; Soi et al., 2018; Wang et al., 2021; Kavle et al., 2018), West Africa (n = 6 or 23.8% of countries) (Abekah-Nkrumah et al., 2018; Ezeanolue et al., McSween-Cadieux 2017, 2018; Olawepo et al., 2022), Central Africa (n = 2 or 15% of countries) (Ghilardi et al., 2020; Kavle et al., 2018), and Southern Africa (n = 2 or 9.5% of countries) (Jessani et al., 2021; Mpando et. al., 2021). The East and West Africa clusters recorded a higher number of sites compared to Central and Southern African clusters. The specific countries that were reported to have hosted study sites included: Burkina Faso (n= 2 or 9.5% of countries) (Mc Sween-Cadieux et al., 2017, 2018); the Democratic Republic of Congo (DRC) (n = 2 or 9.5% of countries) (Ghilardi et al., 2020; Kavle et al., 2018); Ethiopia (n = 2 or 9.5% of countries) (African Health Initiative, 2022a; Mpando et al., 2021); Ghana (n = 2 or 9.5% of countries) (Abekah-Nkrumah et al., 2018; African Health Initiative, 2022a); Malawi (n = 2 or 9.5% of countries) (Ghilardi et al., 2020; Mpando et al., 2021); Mozambique (n = 2 or 9.5% of countries) (African Health Initiative, 2022a; Soi et al., 2018); Nigeria (n = 2 or 9.5% of countries) (Ezeanolue et al., 2018; Olawepo et al.); Rwanda (n = 2 or 9.5% of countries) (Mpando et al., 2021; Wang et al., 2021); and South Africa (n = 2 or 9.5% of countries) (Jessani et al., 2021; Mpando et al., 2021). Three countries, namely Kenya (Ghilardi et al. 2020), Uganda (Mpando et al., 2021)

and Zambia (Mutale et al., 2019) were hosts to only one study site (4.8%). The diverse range of participating countries within Sub-Saharan Africa might indicate the broad base of interest in KT in contrast to an over-concentration of KT activities in one country or a small group of countries within some regions of the continent.

All publications were authored by study teams whose members were spread across HICs and some LMICs in Sub-Saharan Africa. The attribute was analyzed based on the first author's and the last or most senior author's host institution's geographic affiliation (and not necessarily their country of origin). About half of the publications (n=6) had first authors affiliated with research networks or institutions in the United States (US) (African Health Initiative, 2022a; Ezeanolue et al., 2018; Kavle et al., 2018; Olawepo et al., 2022; Soi et al., 2018; Wang et al., 2021). The first authors of two studies (15.4%) were affiliated with institutions in Canada (n=2) (Mc Sween-Cadieux et al., 2017, 2018) while there were five countries to which only a single first author was affiliated and these were Ghana (Abekah-Nkrumah et al., 2018), Malawi (Mpando et al., 2021), South Africa (Jessani et al., 2021), the United Kingdom (Ghilardi et al., 2020), and Zambia (Mutale et al., 2019). Overall, 69.2% of the studies (n = 9) had first authors who were affiliated with institutions in HICs and 30.7% (n = 4) are associated with LMICs, highlighting a significant disparity in representation between the Global North and Global South.

The analysis of the distribution by the country of affiliation of the most senior or last authors also revealed a concentration of leadership in HICs. Eight studies (61.5%) have senior authors who are affiliated with institutions based in HICs with the US being the most notable with 4 studies (African Health Initiative, 2022a; Ezeanolue et al., 2018; Mutale et al., 2019; Soi et al., 2018). Canada was the country with the second-highest number of last authors with 2 articles (15.4%) (Mc Sween-Cadieux et al., 2017, 2018). Research networks in Belgium (Jessani et al., 2021) and the United Kingdom (Ghilardi et al., 2020) contributed one each (7.7%). Conversely, LMICs accounted for the senior or last authors of only 5 studies (38.5%). These included one study each from Burkina Faso (Abekah-Nkrumah et al., 2018), the Democratic Republic of the Congo (DRC) (Kavle et al. 2018), Nigeria (Olawepo et al., 2022), Rwanda (Wang et al., 2021), and South Africa (Mpando et al., 2021). This distribution indicates a possible disparity in senior authorship with a skew towards HICs,

which could reflect on the leadership and decision-making power within these GHRPs. It could also be indicative of levels of trust, sense of belonging and possible responsiveness to communication among non-researchers who are stakeholders in these studies (notably government officials and members of local communities).

Characterizing the domains of global health research investigated in the selected articles, there was a balanced distribution across several topics. Infective diseases management (which comprised of malaria management, vaccine prevention, and childhood diseases) was a major focus, constituting 30.8% (n = 4) of the research interests (Abekah-Nkrumah et al. 2018; Ghilardi et al., 2020; McSween-Cadieux et al., 2018; Mutale et al., 2019; Soi et al., 2018). Research on non-communicable diseases, such as malnutrition and road traffic accidents (Kavle et al., 2018; McSween-Cadieux et al., 2018; Mpando et al., 2021), accounted for three studies (23.1%), while optimizing research capacity, health systems issues and stakeholder management were the focus of the remaining six studies (46.2%) (African Health Initiative, 2022; Ezeanolue et al., 2018; Ghilardi et al., 2020; Jessani et al., 2021; Mpando et al., 2021; Olawepo et al., 2022; Wang et al., 2021).

Funding for research at the intersection of KT and GHRPs in Sub-Saharan Africa was found to be primarily sourced from government agencies (69.2%, n = 9) (African Health Initiative, 2022a; Ezeanolue et al., 2018; Ghilardi et al., 2020; Jessani et al., 2021; Kavle et al., 2018; Mc Sween-Cadieux et al., 2017, Mc Sween-Cadieux et al., 2018; Mpando et al., 2021; Mutale et al., 2019; 2022), while academic institutions (Olawepo et al., 2022), regional multilateral health agencies (Abekah-Nkruma et al, 2018), and non-profit organizations (Soi et al., 2018) each shouldered 7.7% (n = 1) of the financial burden. Furthermore, those government-affiliated funders were from HICs in North America and Europe. One non-governmental and non-profit funder was reported in Nigeria, where the Nigeria Implementation Science Alliance (NISA) fully funded one study and partially funded another (Ezeanolue et al, 2018; Olawepo et al., 2022), even though implementation was in partnership with researchers affiliated with institutions in the Global North.

4.1.3 Knowledge Translation Characteristics of Selected Literature

The table titled "Knowledge Translation theories, models and frameworks reported in selected literature" (Table 4.3, below) summarizes the range of KT approaches adopted in the selected articles. It indicates that several KT theories, models, or frameworks were investigated, each with varying degrees of frequency.

Characteristic	Frequency
KT theory, model or framework investigated in the study:	
CFIR[3] framework.	2 (15.4%)
Implementation Science.	2 (15.4%)
Integrated Knowledge Translation.	2 (15.4%)
Evaluation Research.	2 (15.4%)
Deliberative Dialogues.	1 (7.7%)
EPIS[4] framework.	1 (7.7%)
Evidence-Based Practice.	1 (7.7%)
Knowledge Dissemination.	1 (7.7%)
No KT concept studied.	1 (7.7%)

Table 4.3 Knowledge Translation theories, models and frameworks reported in selected

The frequency distribution table for KT theories, models, and frameworks used in the thirteen articles reviewed showed a balanced distribution of KT approaches. Two studies (15.4%) each applied implementation science (Olawepo et al., 2022; Kavle et al., 2018), CFIR (African Health Initiative, 2022; Soi et al., 2018), IKT (Jessani et al., 2021; Mpando et al. 2021), and research evaluations (Ghilardi et al., 2020; Mutale et al., 2019) as their KT approaches, showing a balanced interest in various KT frameworks and methodologies. Deliberative Dialogues (McSween-Cadieux et al., 2018), EPIS (Olawepo et al., 2022), Evidence-Based Practice (Abekah-Nkrumah et al., 2018), and Knowledge Dissemination

[3] CFIR - Consolidated Framework for Implementation Research

[4] EPIS - Exploration, Preparation, Implementation, Sustainment

(McSween-Cadieux et al., 2018) were each described in 7.7% of the studies (n = 1), indicating a diverse yet less frequent focus on these KT concepts. Notably, one of the studies (7.7%) did not explicitly apply a KT concept in its methodology (Wang et al., 2021).

4.1.4 Reported Barriers and Facilitators of Knowledge Translation

Table 4.4 (below) is a frequency distribution of the barriers and facilitators encountered in the thirteen articles retrieved for this review.

Authors (Publication Date)	Barriers (N)	Facilitators (N)
Abekah-Nkrumah et al (2018).	4	4
African Health Initiative (2022).	4	9
Ezeanolue et al. (2018).	6	0
Ghilardi et al. (2020).	6	4
Jessani et al. (2021).	2	12
Kavle et al. (2018).	1	1
McSween-Cadieux et al. (2017).	8	0
McSween-Cadieux et al. (2018).	4	1
Mpando et al. (2021).	4	5
Mutale et al. (2019).	1	1
Olawepo et al. (2022).	4	3
Soi et al. (2018).	4	0
Wang et al. (2021).	4	1
TOTAL	53	41

Table 4.4 Distribution of barriers and facilitators of KT in selected articles

A total of 53 barriers and 41 facilitators were reported across all 13 articles. While all the articles reported at least one barrier, three articles (Ezeanolue et al., 2018; Mc Sween-Cadieux et al., 2017; Soi et al., 2018) did not specifically report on any facilitators that optimized KT in their research. McSween-Cadieux et al. (2017) (n = 8) and Ezeanolue et al. (2018) (n = 6) reported the highest number of barriers, while Jessani et al. (2021) is notable for having the highest number of facilitators (n = 12). Kavle et al. (2018) and Mutale et al. (2019) reported the lowest number of barriers with one negative impact factor in each article.

Table 4.5 (below), titled “Reported Barriers and Facilitators to Knowledge Translation”, provides an in-depth representation of the specific challenges and supports identified in Table 4.4 above. By juxtaposing the different barriers and facilitators to KT in this table, a

more nuanced understanding of the KT landscape in the thirteen systematically selected studies is presented to facilitate comparison and further discussion of the categories into which these factors fall.

Authors (Publication Date)	**Barriers**	**Facilitators**
Abekah-Nkrumah et al (2018)	1. Competitive KT environment. 2. Research/policymaker engagement gap. 3. Inadequate incentives. 4. Funding management issues.	1. Policymaking incentives related to KT. 2. Collaborative platforms. 3. KT applied to policy and procedures. 4. Capacity for research higher quality.
African Health Initiative (2022)	1. Limited internet access. 2. Nonavailability of data collection tools. 3. Poor monitoring and evaluation processes. 4. Insufficient staffing.	1. Data-driven decision-making. 2. Capacity building and mentorship. 3. Supportive supervision. 3. Diverse funding sources. 4. Supportive external policies. 5. Work incentives. 6. Leadership drive. 7. Pilot testing before implementation. 8. Performance monitoring meetings. 9. Team learning through practice.
Ezeanolue et al. (2018)	1. Poor local commitment to funding research. 2.Deficient research capacity. 3. Deficit in institutional partnerships. 4. Increasing Research-Policy-Practice dissonance. 5. Low interest in research. 6. Poor leadership support for research.	None reported.
Ghilardi et al. (2020)	1. Lack of strategic sampling. 2. KT tool variability. 3. Inconsistent data use.	1. Comprehensive KT data gathering. 2. Data ownership and sharing. 3. Partner engagement and support.

Authors (Publication Date)	Barriers	Facilitators
	4. Non-reporting of KT products. 5. Distrust of study data. 6. Suspected bias in program participation.	4. Influence of KT products (like risk maps).
Jessani et al. (2021)	1. Excluding key stakeholders. 2. Ad-hoc stakeholder engagement.	1. Committed leadership. 2. Supportive policies for KT. 3. Organizational relationships. 4. Shared leadership. 5. KT-intermediaries (Knowledge Brokers) and champions. 6. Capacity building. 7. Funders incorporating KT principles. 8. Change readiness. 9. Monthly monitoring meetings. 10. Partner/KT innovation fit. 11. Data collection and reporting. 12. IKT institutionalization.
Kavle et al. (2018)	1. Language translation errors.	1. Research ethics and methods training.
McSween-Cadieux et al. (2017)	1. Absenteeism of senior officials at KT events. 2. Implementation feasibility concerns. 3. Information overload at events. 4. Simpler language in policy briefs. 6. Funding and HR constraints. 7. Better use of knowledge brokers.	None reported.

Authors (Publication Date)	Barriers	Facilitators
	8. Poor commitment to post-workshop goals.	
McSween-Cadieux et al. (2018)	1. Poorly communicated research scope. 2. Insufficient meeting time for deliberations. 3. Drafts documents are not shared. 4. Absence of decision-makers at events.	1. Participatory stakeholder meetings.
Mpando et al. (2021)	1. Staff turnover. 2. Incorrect assumption regarding the degree of stakeholder commitment to project. 3. COVID-19 pandemic as a force majeure. 4. Difficulty scheduling meetings due to different work calendars.	1. Ad hoc stakeholder engagements when no other options exist. 2. Capacity boosted by engagements with stakeholders. 3. Co-synthesis of research. 4. Stakeholder consultations during the conceptualization phase. 5. Anticipating environmental changes.
Mutale et al. (2019)	1. No access to technology and software not supported by grants.	1.Piloting before full-scale projects.
Olawepo et al. (2022)	1. Low fundraising capacity. 2. Limited capacity for research. 3. Inadequate health IT infrastructure. 4. Leadership rivalry and distrust.	1. Early stakeholder engagements. 2. Government engagement. 3. Systematic stakeholder engagement process.
Soi et al. (2018)	1. Geographic disparities affect KT outcomes. 2. Funding limitations. 3. Misinformation leading to cultural misunderstandings. 4. Confidentiality concerns among interviewees.	None reported.

Authors (Publication Date)	Barriers	Facilitators
Wang et al. (2021).	1. Lack of publication support for Global South. 2. Time allocation for mentorship. 3. Mentor availability. 4. Language and communication considerations.	1. Research trainings.

Table 4.5 Reported Barriers and Facilitators to Knowledge Translation in Global Health Research Projects.

In the sections that follow, more detailed descriptions of seven set of factors identified in the thirteen articles as impacting on the potential for KT initiation, implementation, and evaluation are presented. These seven factors are project and organizational management, stakeholder engagement and partnerships, capacity for higher-quality research and knowledge translation, organizational culture and cultural competence, visionary and committed leadership, use of data and health information technology for knowledge translation, and the impact of funders, funding and resource allocation. Under each synthesized presentation of a factor, the authors' explanations of how and why this factor has served as a facilitator or barrier in specific instances is described.

4.1.4.1 Project and Organizational Management.

Seven articles (54%) described the benefits of strong coordination mechanisms for KT (Abekah-Nkrumah et al., 2018; Ghilardi et al., 2020; Jessani et al., 2021; Mc Sween-Cadieux et al., 2018; Mpando et al., 2021; Olawepo et al., 2022; Wang et al., 2021). Well-coordinated projects have features like regular meetings and collaborating platforms (Abekah-Nkrumah et al., 2018; African Health Initiative, 2022a; Jessani et al., 2021; Wang et al., 2021). For instance, Jessani et al. (2021) highlighted how bi-monthly monitoring meetings kept their project aligned with strategic objectives while Wang et al. (2021) underscored meetings are a key platform for successful mentor-mentee relationships in KT initiatives. African Health Initiative et al. (2022a) described meetings as the hub for knowledge co-production among stakeholders. Also reported were the facilitatory effect of piloting plans before fully implementing them (African Health Initiative, 2022a; Mutale et al., 2019) and change management (Jessani et al., 2021; Mpando et al., 2021). Barriers related to organizational and research management were described by eight articles (62%) (African Health Initiative, 2022a; Ezeanolue et al., 2018; Mc Sween-Cadieux et al., 2017, 2018; Mpando et al., 2021; Mutale et al., 2019; Olawepo et al., 2022; Soi et al., 2018) and these included poor communication, with specific examples related to too much information (Mc Sween-Cadieux et al., 2018), complicated language (Mc Sween-Cadieux et al., 2017; Wang et al., 2021) and poorly communicated research scope (Mc Sween-Cadieux et al., 2018). Low quality communication limited the clarity and understanding necessary for effective information

exchange and co-production by project stakeholders. When information was abundant or complex, it could overwhelm recipients, leading to misunderstandings or even disengagement from the partnership goal. Complicated language and jargon further alienate non-specialist or lay audiences, reducing the accessibility and applicability of research findings, and undermining the collaborative efforts and the overall efficacy of KT initiatives. Other articles noted the effect of poor logistic support (African Health Initiative, 2022a; Soi et al., 2018), the unavailability of equipment (African Health Initiative, 2022a; Mutale et al., 2019; Olawepo et al., 2022) and operational funds or incentives (Ezeanolue et al., 2018; Mc Sween-Cadieux et al., 2017; Mpando et al., 2021; Olawepo et al., 2022) for research implementation. These barriers suggest an environment constrained by poor coordination and planning with the effect that KT activities are not conducted in a timely manner, research milestones are unmet and morale and commitment among stakeholders become diminished over time.

4.1.4.2 Stakeholder Engagement and Partnerships

Early, frequent and documented partner engagements were reported to facilitate KT integration in GHRPs in Sub-Saharan Africa in 31% of the articles (n = 4) reviewed (Ghilardi et al., 2020; Jessani et al., 2021; Mpando et al., 2021; Olawepo et al., 2022). Six articles (46%) reported benefits when coordinating government agencies were engaged and committed to KT, evidenced by policies enacted or resources allocated to promote KT activities, demand for knowledge products from government partners and greater data ownership and use (Abekah-Nkrumah et al., 2018; African Health Initiative, 2022a; Ghilardi et al., 2020; Jessani et al., 2021; Mc Sween-Cadieux et al., 2017; Olawepo et al., 2022). Similarly, when KT planning and implementation received inputs from multiple local and international collaborators they were more likely to succeed as KT platforms (Abekah-Nkrumah et al., 2018; African Health Initiative, 2022a; Mc Sween-Cadieux et al., 2018). Three articles (23%) reported on the multi-dimensional benefit of having knowledge brokers or "boundary spanners" with expertise in KT, knowledge of the local research environment, current and potential collaborators as well as valuable individual or organizational attributes (Jessani et al., 2021; Mc Sween-Cadieux et al., 2017; Wang et al., 2021). Boundary spanners were facilitators of KT because they bridged the gaps

between researchers, stakeholders, and policymakers, facilitating new collaborations as well as the effective dissemination and application of knowledge products through their deep understanding of the local context for KT and opportunities within the GHRP networks to which they belong.

At least one barrier to KT that was related to weak stakeholder collaborations was found in each of the thirteen articles. Stakeholder collaboration-related barriers described included financially weak communities of practice for research (Ezeanolue et al., 2018; Mc Sween-Cadieux et al., 2017; Mpando et al., 2021; Olawepo et al., 2022; Soi et al., 2018) and the unavailability of health information technology (HIT) (African Health Initiative, 2022a; Mutale et al., 2019; Olawepo et al., 2022). Financial constraints and the lack of adequate health information technology in GHRPs impeded a stakeholder's ability to communicate with other collaborators, conduct activities or manage and utilize data efficiently, all of which are essential for a robust KT project. Barriers specifically related to communication included uncoordinated transmission of information to collaborators, rivalry, distrust, and feeling overloaded with information or, conversely, being excluded from communication (Abekah-Nkrumah et al., 2018; Ezeanolue et al., 2018; Mc Sween-Cadieux et al., 2017; Mpando et al., 2021; Olawepo et al., 2022; Soi et al., 2018; Wang et al., 2021). Abekah-Nkrumah et al. (2018), Ezeanolue (2018) and Mc Sween-Cadieux (2017, 2018) also reported that government agencies and their leadership were sometimes not well engaged in research projects (Abekah-Nkrumah et al., 2018; Ezeanolue et al., 2018; Mc Sween-Cadieux et al., 2017, 2018), and communication with stakeholders could lack intentionality and clarity (Ezeanolue et al., 2018; Ghilardi et al., 2020; Soi et al., 2018; Wang et al., 2021). For example, Ezeanolue et al. (2018) highlighted the dissonance between research, policy, and practice; Ghilardi et al. (2020) noted the mistrust stemming from perceived biases in program participation; Soi et al. (2018) observed that misinformation often led to cultural misunderstandings within teams; and Wang et al. (2021) explained how language choices during interviews influenced rapport and power dynamics, undermined effective communication and engagement. Other barriers to good stakeholder management described include cultural insensitivity in language use (Ghilardi et al., 2020; Mc Sween-Cadieux et al., 2017; Wang et al., 2021) because language barriers emerged, and the associated tensions led to

misunderstandings and reduced stakeholder engagement. Similarly, an organizational culture that does not promote research and KT adoption, evidence-based practice or policymaking (African Health Initiative, 2022a; Ghilardi et al., 2020; Jessani et al., 2021; Soi et al., 2018) is a barrier because such an environment limits commitment to goals, resists change and a reluctance to address operational and infrastructure needs, ultimately reducing stakeholder engagement, and restricting opportunities for capacity building in KT practices. Failure to plan for long-term KT goals (Mc Sween-Cadieux et al., 2018) and poor alignment between government policies and the evidence being generated by research teams (Abekah-Nkrumah et al., 2018; Ezeanolue et al., 2018) are other examples of stakeholder management related constraints. These are important because they created disconnections between expectations and deliverables for all stakeholders (particularly the stimulatory effect that a receptive policy environment can have on demand for knowledge products and KT in general), inefficient utilization of research outcomes and a near absence of evidence to guide the work of policymakers and practitioners for evidence.

4.1.4.3 Capacity for Higher-Quality Research and Knowledge Translation

Higher-quality research and KT capacity are attributes that augment the existing knowledge, skills, and competencies of researchers and stakeholders. These enhancements are vital because they provide the necessary tools for these essential members of the research team to effectively address and close the persistent know-do gaps in global health. By fostering a culture of continuous learning and adaptation, enhancing skills in research methodologies, use of KT theories, models and frameworks and building data analysis competencies, capacity building directly results in higher quality research and KT; both of which improve the quality of knowledge products, health policies, ultimately evidence-based healthcare practices in communities, clinics and health agencies. Six articles (46%) described capacity building for GHRPs as a key facilitator of research and KT that influenced policy formulation and closed service gaps (Abekah-Nkrumah et al., 2018; African Health Initiative, 2022a; Jessani et al., 2021; Olawepo et al., 2022; Wang et al., 2021). Kavle et al. (2018) reported on the impact of

trainings on research fundamentals like research ethics, consent, confidentiality, qualitative data collection, and data, all of which promoted KT because it built trust with respondents and other stakeholders and improved the quality and validity of research data. Abekah-Nkrumah et al. (2018) and Jessani et al. (2021) described capacity-building activities as impactful to evidence-based policymaking, while the African Health Initiative reported similar impacts on the partnerships and co-creation components of KT, stating that "Training opportunities should be situated in health program implementation to further strengthen essential partnerships" (2022, p. 5) Several authors stressed the potential for fostering responsiveness, ensuring data integrity, facilitating reflective feedback, supporting informed decision-making, promoting accountability, and strengthening stakeholder engagement through regular project performance monitoring meetings (African Health Initiative, 2022a; Ghilardi et al., 2020; Jessani et al., 2021). One team reported that they used feedback loops and experience sharing to get evidence to decision-makers to close gaps in their maternal, child and newborn program working through routinized quarterly meetings where "facility managers present their progress and deliberate on the root causes of challenges and what to do about them" (African Health Initiative, 2022a, p. 6). Similarly, Wang et al., whose research was on a KT-focused training program, engaged "decision-makers in interpreting findings from embedded IR [implementation research], which helped guide adaptations in implementation strategy" (2021, p. 6). Performance monitoring sessions employed tools like strategy and data audits, structured supportive supervision and mentorship reviews, reflexivity exercises, re-training and institutional exchange programs for researchers (African Health Initiative, 2022a; Ghilardi et al., 2020; Jessani et al., 2021).

The articles suggested that research networks exposed to multiple funders and stakeholders were more inclined to be "learning organizations" (Abekah-Nkrumah et al., 2018; African Health Initiative, 2022a; Jessani et al., 2021; Mpando et al., 2021), which can be described as an entity that conducts research while embracing a culture of continuous improvement and adaptation based on new knowledge and evidence, suggesting that they facilitate KT. For example, Soi et al. (2018) reported standardized application processes and improved access to funding after they gained more experience managing grants. Similarly, research networks that accommodate pilots or stepwise

implementation (“learning by doing” or "trialability") (African Health Initiative, 2022a; Mutale et al., 2019) reported that this gave them a trial period to address stakeholder management issues in the initiation phase of KT while making their KT interventions easier to course correct and adapt to emerging local contexts. Other studies (Abekah-Nkrumah et al., 2018; African Health Initiative, 2022a; Ezeanolue et al., 2018; Jessani et al., 2021; Mpando et al., 2021) explained that the more funders and stakeholders they had working together, the easier it was finding new opportunities for knowledge co-production.

Barriers to ensuring capacity for higher-quality research and KT were reported by three articles (23%) (African Health Initiative, 2022a; Ezeanolue et al., 2018; Wang et al., 2021). One constraint was the observation that few researcher-scientists with knowledge of KT lived and worked in Sub-Saharan countries (African Health Initiative, 2022a; Ezeanolue et al., 2018) suggesting that finding training facilitators with knowledge of the local KT implementation landscape would be challenging. In addition, Ezeanolue (2018) observed that the curriculum for training undergraduate and graduate scientist-researchers contained insufficient content related to planning, implementing and reporting high-quality research. Limitations to curriculum development implied a restriction to how well researchers can execute the basic tenets of KT - synthesis, dissemination, exchange, and ethical utilization - thus impacting the overall efficacy of KT initiatives. Wang et al. (2021) described the constraints on mentor-mentee relations in global health research due to significant time requirements and the small number of reputable and experienced senior researchers and trainers. A reduced ability to mentor less experienced researchers leads a decreased effectiveness in research and KT capacity. It also erodes institutional and domain-specific KT memory and the cultural considerations that are often informally transferred from older to younger team members (like relationship building, appreciation of unique stakeholder preferences and interests, clarity in communication and appreciation for unique local contexts).

4.1.4.4 Organizational Culture and Cultural Competence

Factors related to “organizational culture and cultural competence” describe how KT work is impacted by the organizational culture in a research community and their

alignment (or not) with the cultural factors related to the broader norms and beliefs of the host community or geographical region in which their research is being conducted. Eight articles (61%) described how organizational cultures that were positive, efficiency-focused, inclusive and sensitive to local norms and practices could facilitate KT in GHRPs (Abekah-Nkrumah et al., 2018; African Health Initiative, 2022a, 2022a; Ghilardi et al., 2020; Jessani et al., 2021; Mc Sween-Cadieux et al., 2018; Mpando et al., 2021; Wang et al., 2021) and these impacts were seen on the effect on KT implementation environments and they directly affected the work ethic and values of the KT team, stakeholder communication and engagement, the adoption of KT practices and eventual knowledge utilization, depth and transparency of collaboration, contextual relevance, degree of promotion of ethical and equitable KT practices and outcomes. The articles cited examples like a culture where government health agencies are consistently active in their communities of practice (Mpando et al., 2021; Wang et al., 2021) and policies that create a demand for data and evidence-based guidelines and procedures are enacted (Abekah-Nkrumah et al., 2018; African Health Initiative, 2022a; Mpando et al., 2021; Olawepo et al., 2022). Other enablers of positive organizational cultures encourage the emergence of KT champions and knowledge brokers (Jessani et al., 2021; Mc Sween-Cadieux et al., 2018) or situations where research communities coordinated themselves as learning organizations where KT insights and practices, which would otherwise be novel and unfamiliar, were embraced and promoted by stakeholders (African Health Initiative, 2022a; Jessani et al., 2021; Wang et al., 2021). The culture of pragmatic organizational leadership and the robust adoption of project monitoring practices (African Health Initiative, 2022a; Ghilardi et al., 2020) have contributed to the timely and complete delivery of knowledge products and of evaluation, knowledge sharing and reputation management as important values for the community (Jessani et al., 2021; Mutale et al., 2019; Wang et al., 2021).

Seven articles (54%) described barriers to stakeholder communication, data collection, ownership of research data and local contexts regarding remuneration for KT work, suggesting that these constraints were more commonly seen among less culturally competent research teams. Bias in participant selection and interviewer bias arising from non-use of local languages, as reported by Ghilardi et al. (2020), Soi et al. (2018) and

(2018) and African Health Initiative (2022), hinder the effectiveness and efficiency of KT because the inclusivity and cultural relevance of research outcomes are compromised, ultimately impacting the integrity and applicability of KT efforts. When knowledge is disseminated using technical and complex language, a cultural barrier is created that impedes effective communication, erodes stakeholder confidence and buy-in, and diminishes the accessibility and utilization of KT findings in policymaking or practice. Research projects that fail to adapt and incorporate local languages, particularly when complex descriptions are required, display a lack of cultural competency (Mc Sween-Cadieux et al., 2017; Wang et al., 2021). Poorly articulated data access practices by members of the research team increase the risk of partner distrust in the data collection process, the accuracy and fidelity of the data and the overall objective of the research itself (Ghilardi et al., 2020; Mpando et al., 2021). Local expectations for incentives or remunerations for participation in research or attendance at meetings as noted by Abekah-Nkrumah et al. (2018), African Health Initiative (2022a), and Mpando et al. (2021), can significantly influence how KT projects are received by their host communities, such that public perception and stakeholder confidence (especially among local government health officials and community leaders) may be eroded when unmet expectations are interpreted as a lack of appreciation or even disregard for ones participation. The resultant negative reception by internal and external (community-based) stakeholders severely restricts not just engagement and collaboration for knowledge co-production but even the reception and utilization of the knowledge products created

4.1.4.5 Visionary and Committed Leadership

Two articles (15%) highlighted the impact of visionary and committed leadership when seeking to implement KT in GHRPs (African Health Initiative, 2022a; Jessani et al., 2021). Specific facilitators included envisioning research direction, motivating the research team with their commitment, funder management and driving inter-organizational rapport. Conversely, 46% of studies (n = 6) noted weak or absent leadership as a barrier effective implementation of KT because the expected levels of visioning and accountability to funders and stakeholders were missing (Ghilardi et al., 2020; Jessani et al., 2021; Mc Sween-Cadieux et al., 2017, 2018; Mpando et al., 2021;

Soi et al., 2018; Wang et al., 2021). Examples of leadership gaps described included rivalry and poor collaboration (Abekah-Nkrumah et al., 2018; Ezeanolue et al., 2018; Olawepo et al., 2022) or the failure to create a supportive environment for research (African Health Initiative, 2022a; Ezeanolue et al., 2018; Kavle et al., 2018; Mc Sween-Cadieux et al., 2017, 2018; Olawepo et al., 2022, 2022). Effective leadership is crucial for KT because it fosters trust, a shared vision and ensures commitment to the milestones of the research project itself and the terms of the partnership. It steers the collaborative efforts necessary for successful implementation and integration of research findings into practice.

4.1.4.6 Data and Health Information Technology for Knowledge Translation

High-quality data and health information technology were reported as crucial for the effective and efficient implementation of KT as they underlie essential activities such as data-driven decision-making and performance monitoring. These systems rely on consistent data quality, availability, and transmissibility, which are crucial for the applicability and reliability of KT findings and products. About 23% (n = 3) of articles highlighted the role of high-quality data in facilitating effective KT, focusing on data-driven decision-making and performance monitoring meetings (African Health Initiative, 2022; Ghilardi et al., 2020; Jessani et al., 2021). Additionally, these articles discussed the importance of comprehensive data gathering, data ownership, partner engagement and support, and the influence of KT products like risk maps to increase understanding and accessibility of data through visualization.

Poor data quality and the associated loss of confidence in research data among stakeholders like community leaders and government officials were barriers described by four articles (31%) (African Health Initiative et al., 2022; Ghilardi et al., 2020; Mutale et al., 2019; Olawepo et al., 2022). On one hand, the lack of transparency in data collection and analytical processes was said to contribute to skepticism among stakeholders (Ghilardi et al., 2020; Mutale et al., 2019) while the challenges posed by insufficient infrastructural and technological resources (which were occasionally due to the stipulations of the research grant) limited the ability of research teams to gather, analyze,

and disseminate data effectively (African Health Initiative et al., 2022; Ghilardi et al., 2020; Mutale et al., 2019; Olawepo et al., 2022).

4.1.4.7 Impact of Funders, Funding and Resource Allocation

Two articles (15%) described the positive impact of diversified funding and sustainable resource mobilization for KT activities (African Health Initiative, 2022; Jessani et al., 2021). Diversified funding sources enabled research teams to implement a broader range of activities and respond to unexpected changes in the research project with more flexibility, an attribute that was crucial for maintaining project momentum and adapting KT strategies to emerging local contexts (African Health Initiative, 2022). Sustainable funding ensures long-term project viability, and this allowed for continuous improvement and iterative learning processes that were essential for effective KT (Jessani et al., 2021). In addition, KT projects that were stable and sufficient were better able to support ongoing stakeholder engagement and partnership development, which are key components for the initiation and dissemination phases of a KT initiative (Jessani et al., 2021).

Conversely, funding was also reported as a constraint in seven articles (54%) (Abekah-Nkrumah et al., 2018; African Health Initiative, 2022; Ezeanolue et al., 2018; McSween-Cadieux et al., 2017; Mutale et al., 2019; Olawepo et al., 2022; Soi et al., 2018). For example, insufficient funding often limited the number of researchers in a study, the availability of incentives for research work, affected the purchase of infrastructure like IT and ultimately, the translation of recommendations to practice (African Health Initiative, 2022; McSween-Cadieux et al., 2017; Mutale et al., 2019; Soi et al., 2018). Ezeanolue (2018) and Olawepo (2022) were concerned about the capacity of local partners to mobilize resources on their own and how this could constrain project scope and the sustainability of knowledge production efforts. Abekah-Nkruma et al. (2018) highlighted the lack of grantsmanship experience and capacity among research teams which could result in poorly completed funding applications or mismanagement of research grants, underscoring the need for capacity building and external technical support from persons or partners familiar with the grantmaking process.

4.2 Part 2: Results of the Partnership Principles Critical Assessment Scorecard

The second part of this Chapter describes the "Partnership Principles and Practices Critical Assessment Scorecard," a methodical evaluation of the thirteen systematically selected articles in response to the second research question in this thesis: to assess the role partnership principles and practices play in the success of KT initiatives in GHRPs between researchers in Sub-Saharan Africa and those in the Global North? These partnership principles - Equity and Justice, Strong Coordination, Commitment to Learning and New Approaches to Partnered Research, Local Content and Context, and Intrinsic Partnership Values - were the products of an informal synthesis of contemporary scholarly work reflecting the latest systematic reviews and real-life applications of equity, social justice and decolonization in global health contexts (Hodson et al., 2023; Monette et al., 2021; Nakanjako et al., 2021; K. M. Plamondon & Bisung, 2019b). Similarly, the use of a scoring rubric as a tool for critical thematic analysis provided a consistent way to evaluate and compare the articles (Davison et al., 2015).

Table 4.5 (below) presents the findings of the "Partnership Principles Critical Assessment Scorecard," with scores reflecting the degree to which each principle was represented in each article. Scores ranged from “0” (no reference) to “2” (clear and multiple references), culminating in a total possible score out of ten. This structured scoring helped highlight the areas of strength and those that needed improvement in implementing KT principles and practices effectively across different research contexts.

Study Reference ID	**Partnership Principles**					
	Equity and justice	Strong coordination	Commitment to learning and new approaches to partnered research	Local Content and Context	Intrinsic partnership values	SCORE (n/10) (%)
Abekah-Nkrumah et al (2018)	1	2	1	1	2	7 (70%)
African Health Initiative (2022)	2	2	2	2	2	10 (100%)
Ezeanolue et al. (2018)	0	2	1	0	2	5 (50%)
Ghilardi et al. (2020)	2	2	2	0	2	8 (80%)
Jessani et al. (2021)	1	2	2	2	2	9 (90%)
Kavle et al. (2018)	2	0	2	2	0	6 (60%)
McSween-Cadieux et al. (2017)	1	2	0	1	1	5 (50%)
McSween-Cadieux et al. (2018)	0	2	0	0	2	4 (40%)
Mpando et al. (2021)	0	2	1	1	2	6 (60%)
Mutale et al. (2019)	0	1	1	0	0	1 (10%)
Olawepo et al. (2022)	1	2	1	0	2	6 (60%)
Soi et al. (2018)	2	2	0	1	1	5 (50%)
Wang et al. (2021).	1	0	1	1	1	4 (40%)
SCORE (n/26)	13	21	13	11	19	

Table 4.6 Scores from Partnership Principles Critical Assessment Scorecard

4.2.1 Distribution of Scores by Study

Of the seven articles that scored above the median possible score, three were high-scoring studies from African Health Initiative (2022) (100%), Jessani et al. (2021) (90%), and Ghilardi et al. (2020) (80%) while Abekah-Nkrumah et al. (2018) (70%), with Olawepo et al. (2022), Mpando et al. (2021), and Kavle et al. (2018) each scored 60%. Low-performing assessments were found in the McSween-Cadieux et al. (2017), Ezeanolue et al. (2018), McSween-Cadieux et al. (2018), and Soi et al. (2018) articles, all scoring between 40-50% while the least performing study a score of 10% (Mutale et al., 2019).

4.2.2 Scores by Partnership Principles and Practices

"Strong coordination" was the partnership principle and practices with the highest cumulative score of 21 out of a possible 26, with strong alignment between this principle and ten articles (77%) that had a score of "2" (Abekah-Nkrumah et al., 2018; African Health Initiative, 2022; Ghilardi et al., 2020; Jessani et al., 2021; Kavle et al., 2018; McSween-Cadieux et al., 2017; McSween-Cadieux et al., 2018; Mpando et al., 2021; Olawepo et al., 2022; Soi et al., 2018; Wang et al., 2021) while "Intrinsic partnership values" scored 19 and eight articles strongly demonstrated this principle with a score of "2" (Abekah-Nkrumah et al., 2018; African Health Initiative, 2022; Ezeanolue et al., 2018; Ghilardi et al., 2020; Jessani et al., 2021; McSween-Cadieux et al., 2018; Mpando et al., 2021; Mutale et al., 2019; Olawepo et al., 2022). Assessments with the "Equity and justice" and "Commitment to learning and new approaches to partnered research" principles both yielded a moderate score of 13: for the former, four articles (31%) had a score of "2" (Abekah-Nkrumah et al., 2018; African Health Initiative, 2022; Ezeanolue et al., 2018; Mpando et al., 2021) while for the latter, a different set of four (31%) articles showed strong alignment with this principle (scoring the maximum of "2") (African Health Initiative, 2022; Ghilardi et al., 2020; Jessani et al., 2021; Kavle et al., 2018). Lastly, "Local Content and Context" was the principle with the lowest cumulative score of 11 with only three articles (23%) showing strong alignment with this principle (African Health Initiative, 2022; Jessani et al., 2021; Kavle et al., 2018).

4.2.3 Analysis by Specific Knowledge Translation Theory, Model or Framework

The adapted Consolidated Framework for Implementation Research (CFIR) (African Health Initiative, 2022), IKT (Jessani et al., 2021) and Narrative Synthesis using the Research Impact Framework (Ghilardi et a., 2020) had scores on the higher end of the scorecard. These frameworks, deeply rooted in the principles of effective KT, underscore a rigorous approach to synthesizing and applying research findings in ways that are contextually relevant and promote sustained health improvements. Conversely, studies employing routine Research Evaluations (Mutale et al., 2019) or Dissemination Workshops (McSween-Cadieux et al., 2018) as a KT tool, and the article that did not describe a specific KT-related theory, model or framework guiding its implementation (Wang et al., 2021) all demonstrated a varied application of KT principles as reflected in the Partnership Principles Critical Assessment Scorecard. The absence of a specific KT-related theory, model, or framework in the study by Wang et al. (2021) indicates a potential gap in the structured application of KT approaches, which may impact the overall effectiveness and integration of KT principles and practices within that particular study.

4.3 Closing: Synthesizing Findings and Setting the Stage for Discussion

This chapter has systematically presented two distinct but interconnected facets of analysis: the thematic exploration of KT within GHRPs and the results of the Partnership Principles and Practices principle Critical Assessment Scorecard. By examining the thematic content alongside the scorecard results, we have not only illuminated the varied applications and interpretations of KT principles but also assessed their integration and alignment with the experiences of the different study teams.

The fusion of thematic insights with scorecard evaluations sets a solid foundation for the forthcoming discussion in Chapter 5, where we will explore how these findings inform broader KT practices and policymaking in global health with descriptions of how these integrated insights can influence future research directions, enhance policy interventions, and foster more effective and equitable GHRPs.

Chapter 5

5 Discussion

This chapter examined the synthesized findings from a critical scoping review of KT in GHRPs in Sub-Saharan Africa. The review sought to understand, firstly, what barriers and facilitators to implementing KT have been reported by researchers or research communities in Sub-Saharan Africa, and secondly, what role equitable partnership principles play in the success of KT initiatives in these GHRPs. Guided by these queries, this thesis initially extracted a range of multifaceted factors ranging from the individual (or researcher-driven) elements, environmental (or institutionally determined) conditions, to systemic priorities (of funders and governments), which collectively influence KT effectiveness. Building on this foundational evaluation, the study employed a second-tier analytical process involving the application of a scored Partnership Principles and Practices Critical Assessment rubric. The scoring rubric was developed to evaluate how well the reviewed studies adhered to key partnership principles and practices that were purposively synthesized from the literature on equitable GHRPs. These principles include Equity and Justice, Strong Coordination, Commitment to Learning and New Approaches to Partnered Research, Local Content and Context, and Intrinsic Partnership Values. This dual-layered analysis sought not only to assess the alignment of the selected studies with these principles and practices but also to deepen the understanding of their practical implications when implementing KT in Sub-Saharan Africa.

In the subsequent discussion, the insights gained from the scoping review and the scorecard assessment were synthesized to facilitate a nuanced understanding of how specific barriers and facilitators faced by research teams in Sub-Saharan Africa aligned with, or diverged from, the partnership principles observed through the scorecard. Moreover, this layered analysis underscored broader implications of our findings in the context of the overarching study objectives, particularly how these results could inform the institutionalization of effective and ethical practices that can close the persisting Know-Do gap in global health and contribute to better health outcomes on the continent.

Beginning with a reflection on the characteristics of the selected studies, and the barriers and facilitators enumerated in the Scoping Review, this chapter then presented insights from the Partnership Principles and Practices Critical Assessment scorecard as they relate to the selected articles. Subsequently, areas of intersection with the wider global health research literature, such as the relevance of these findings to other LMICs, the influential role of Northern funding and academic institutions on GHRPs, potential friction between a researcher's country of origin and their country of affiliation and the ubiquitous role of new media and information technology in knowledge dissemination were discussed. Next, the study results are considered in the context of the broader implications for GHRPs in Sub-Saharan Africa, specifically in terms of the SDGs but also exploring other environmental factors that influence the viability of long-term partnerships and planning in Sub-Saharan Africa. Finally, recommendations based on the findings of this review are discussed, followed by a listing of the study's limitations and opportunities for future research.

By reflecting on themes extracted and analyzed from the scoping review alongside the scorecard results, this chapter offers a comprehensive approach that not only highlights the complexity of KT in GHRPs but also reinforces the necessity of adhering to established partnership principles and practices as frameworks to achieve sustainable health development goals in the region. However, it is crucial to recognize that the connections made between these partnership principles and practices and better integration of KT into GHRPs were based on observed patterns and interpretations derived from the scoping review of a limited number of studies based on the eligibility criteria. This approach, therefore, should be understood as hypothesizing potential relationships and dynamics within GHRPs, rather than confirming them definitively. Such an interpretative stance acknowledges the complex and multifaceted nature of implementing KT in varied settings and underscores the tentative nature of linking specific facilitators and barriers to the broader conceptual frameworks of partnership principles. This reflective examination invites a broader discourse on the implications of these findings for LMICs, the impact of Northern funders and academic influences, as well as the evolving role of technology in knowledge dissemination. As we navigate these discussions, it is pertinent to view the insights offered as contributions to the ongoing

conversation in global health research, providing a foundation for future empirical validation and a nuanced understanding of the interplay between partnership principles and KT efficacy.

5.1 Notable Characteristics in the Selected Articles

The selected literature highlights the multifaceted nature of GHRPs as exemplified by the diversity of articles analyzed in this review. For example, the geographic diversity of the authors' affiliations and the research locations highlight the widespread interest and involvement in addressing global health disparities and closing the Know-Do gap through KT. This can be seen as a positive observation suggesting an increased interest in KT consistent with global trends (Edwards et al., 2019b), which contrasts other reports that note little application of KT on the continent (Kalbarczyk et al., 2021; Yao et al., 2022). However, the conspicuous under-representation of first-authored publications as well as the influence of senior authors from researchers affiliated with African institutions is consistent with the well-documented pattern of epistemic injustice in the global health literature (Besson, 2022; Bhakuni & Abimbola, 2021; Garbern et al., 2022; Ghani et al., 2021; Rees et al., 2021). This skewed distribution in authorship affiliations suggests a representational disparity which could reflect on the leadership and decision-making power within these research collaborations. The finding highlights the need to firstly, investigate the influence of this geographic distribution on the research's focus, outcomes, and overall direction; and secondly, offer a yardstick that can be applied at the point of research conceptualization and planning at the time of a research teams' constitution to ensure equitable representation and leadership. Ultimately, this finding validates the motivation of scholars (Besson, 2022; Bhakuni & Abimbola, 2021; Lavazza & Farina, 2020; Pantelic et al., 2022; Sesia, 2023; Weber et al., 2022) calling for epistemic justice in global health, unmuting Southern voices and exposing the inequities in coproducing knowledge and policies needed to close the developmental gaps in Sub-Saharan Africa

On the other hand, the geographic distribution of the studies reported may suggest research nodes for KT and partnered research within Africa and between research teams in Africa and other parts of the world, highlighting global collaborations involving Anglophone, Francophone and Lusophone researchers that would require innovative and

inclusive research management approaches (Edwards et al., 2019b; Guieu et al., 2016; Solarin et al., 2020). Reportedly, when researchers of African descent are affiliated with Northern scientific and academic institutions, they can facilitate access to increased research funding and more rigorous use of KT frameworks, leading to better-resourced projects and enhanced visibility of co-created knowledge products (Aboderin et al., 2023; Mitchell et al., 2020; The British Academy, 2011; Zhao et al., 2021). However, it is important to note that such affiliations, while beneficial, do not address all challenges faced by research institutions in Sub-Saharan Africa. Notably, the faux diversity in geographic affiliations masks a covert disparity in the representation and an entrenchment of power hierarchies because Northern institutions are still directing the energies and operations of these GHRPs either through mentors or the loyalty of the migrant researcher to their host organization. In addition, these partnerships do not solve issues related to weak coordination and resource limitations, which are complex and pervasive in the global South and not confined to any single region. Enhancing local research capacities and infrastructure is therefore essential, and collaborations with Northern institutions should be viewed as part of broader efforts towards this goal (Academy of Medical Sciences, 2012; Faure et al., 2021; Gautier et al., 2018; Mitchell et al., 2020; Olufadewa et al., 2020) rather than an “us versus them” problem.

There were missing data in some aspects of the characterizations of the articles analyzed and these included funding sources (Wang et al. 2021), and unstated or poorly described KT frameworks and models implemented (Abekah-Nkrumah et al., 2018; Mutale et al., 2019; Wang et al., 2021). These omissions limit the depth of insights we could generate from the articles. However, as inferences are drawn from the KT-specific attributes reported in the selected studies, we should acknowledge that study teams do not report every detail of their processes in planning, implementing or evaluating a research project and journal submission restrictions may prevent elaborate explanations by authors (Fox et al., 2016; Helbach et al., 2022; Watson, 2022). The first recommendation stemming from this review is for increased procedural clarity and reflexivity when a study suggests a KT approach was followed (Aronowitz et al., 2015; Gopal et al., 2022; Ide & Beddoe, 2023; Subramani, 2019). Enhanced procedural clarity and researcher reflexivity in reporting KT methodologies not only improve the reliability and utility of research for evidence-based

decision-making but also ensure that researchers are intentional in scrutinizing and modifying methodologies in their research that may perpetuate systemic biases and therefore, promote the kind of inclusivity and transparency that centers community voices (especially those most affected) and enhances the reliability of research findings and knowledge products for decision-making and community empowerment (Andrews et al., 2019; Caldwell & Bledsoe, 2019; Committee on Community-Based Solutions to Promote Health Equity in the United States et al., 2017; Jacobson & Mustafa, 2019; Tillman, 2002). By adopting a reflexive, equity-first approach across the knowledge synthesis-dissemination-exchange-utilization cascade in KT, researchers and policymakers promote trust, inclusivity, accountability and reliability through their research, meaning that the evidence for closing know-do gaps become more broad-based in terms of ownership and sustainability.

5.2 Barriers and Facilitators to KT in GHRPs in Sub-Saharan Africa

The analysis of the thirteen systematically selected articles revealed seven categories of barriers and facilitators. A summary of the factors within each subset of these constraints and enablers is presented in Figure 2 below.

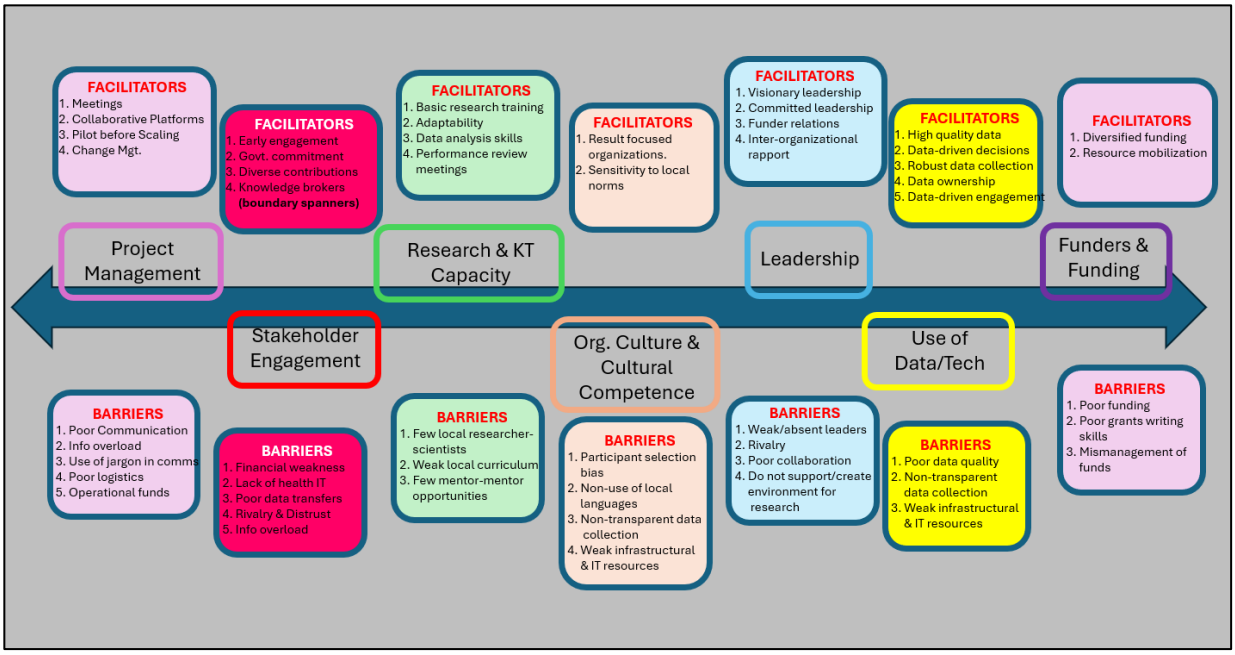

Figure 2 Barriers and Facilitators of Knowledge Translation in Global Health Research Partnerships

5.2.1 Barriers

Several articles described barriers that constrained the effective implementation of KT in GHRPs. These include limited capacity and funding for the knowledge generation component of KT (Abekah-Nkrumah et al., 2018; African Health Initiative, 2022a; Jessani et al., 2021; Mpando et al., 2021; Olawepo et al., 2022; Wang et al., 2021). Consistent with the literature (Alemayehu et al., 2018; Goyes & Skilbrei, 2023; Kasprowicz et al., 2020; Musumba, 2023; Olufadewa et al., 2020; Sam-Agudu et al., 2017), this review submits that most African researchers are still constrained by the

inadequate financial and human capacity for research activities and KT implementation. With funding as a key input for capacity building (Abu-Odah et al., 2022; Ezeanolue et al., 2019; Goyes & Skilbrei, 2023; Sam-Agudu et al., 2017), we can infer that scarcity of resources (as described in the articles) would limit the implementation scope of a GHRP, the ability of research communities to access funding for future research and, ultimately, conduct KT activities like disseminating their findings to stakeholders. Consequently, the initial investments to fund global health research are effectively wasted if provision is not made for longer-term funding of KT (by usual funders and African governments) which would ensure that knowledge products are incorporated into global health policies of Southern health ministries of health and their implementation partners.

Weak leadership and ineffective coordination mechanisms when integrating KT in GHRPs was another well-documented barrier (Addo-Atuah et al., 2020; Asamani & Nabyonga-Orem, 2020; Atkins et al., 2016; Basu et al., 2017; Brown, 2015; Canas et al., 2022; Cash-Gibson et al., 2015; Kasprowicz et al., 2020; Malla et al., 2018; Mercer et al., 2018; Murunga et al., 2020; Sam-Agudu et al., 2017; Sturke et al., 2016, 2016). Leadership has been linked to the visioning, innovation and partnership commitments that make the conceptual and planning stages of GHRPs implementing KT successful in research networks (H. Brown, 2015; Murunga et al., 2020), with Murunga and colleagues specifically referencing how leadership drives strategic planning and relationship management with funders (2020). Leadership was also reported as a key factor in promoting ethical and equitable GHRPs (Basu et al., 2017; Canas et al., 2022; Monette et al., 2021) and in driving capacity building for global health researchers (H. Brown, 2015; Cash-Gibson et al., 2015; Mercer et al., 2018; Sam-Agudu et al., 2017; Voller et al., 2022). Consequently, when leadership is weak or absent in researcher networks, there is a lack of direction and accountability in guaranteeing institutional outputs and outcomes. Communication and meeting management are suboptimal, and stakeholders feel even more disconnected from the research implementation and seldom commit to post-research activities.

Deficiencies in data quality and the subsequent distrust for evidence from such data can directly impact the dissemination and utilization of KT products (African Health

Initiative, 2022; Ghilardi et al., 2020; Mutale et al., 2019) while the challenges with procurement and maintenance of information technology assets mean that computational and collaborative work are compromised for research teams in Sub-Saharan Africa (African Health Initiative et al., 2022; Ghilardi et al., 2020; Mutale et al., 2019; Olawepo et al., 2022). This finding concurs with the literature regarding the differing experiences of African researchers and their counterparts affiliated with institutions in the Global North in terms of data quality for research work (Bernardi et al., 2023; Moorthie et al., 2022) and access to the internet, computer hardware, and research-related software is routinely available (Akinfaderin-Agarau et al., 2012; Gallegos-Rejas et al., 2023; Saeed & Masters, 2021; Sant Fruchtman et al., 2022; UN Women, 2021).

The opportunities to transform Africa by closing the so-called digital divide, as a KT barrier, are well documented (Gallegos-Rejas et al., 2023; C. Holst et al., 2020; Ibeneme et al., 2022; Saeed & Masters, 2021; Sant Fruchtman et al., 2022; Stoumpos et al., 2023; van Stam, 2022). For example, in discussing the potential for using mobile health (mHealth) for data collection and management and the potential of electronic medical records and telemedicine, Mercer (2018) and Vollmer (2022), hint at possible enhancements to global health research in Africa and using technology to address the continent's health challenges. Ongoing and scalable activities to close the digital divide include enacting national digital health strategic policies that align with the WHO digital health framework (Victor et al., 2023; WHO, 2020a), capacity-building programs on digital health which target researchers, policymakers and implementers on the continent (Agley et al., 2021; McNabb et al., 2021; Munstermann, 2022; Sam-Agudu et al., 2017; Thies et al., 2019; Victor et al., 2023), and computer hardware and software donation programs to lower the barriers to information technology access in Sub-Saharan Africa (Trend Africa, 2023). These advancements in health information technology could improve the collection, management, and dissemination of health data, including predictive models for population-level data using machine learning and artificial intelligence to complement on-the-ground efforts to close the know-do gap with health challenges across the continent.

As another KT barrier, the global health literature extensively describes the deleterious effect of ethical misconduct and cultural insensitivity in GHRPs in Africa (Aellah et al., 2016; Canas et al., 2022; Kombe et al., 2014; Monette et al., 2021), challenging researchers and practitioners to go beyond tokenism and consistently promote respectful collaboration, mutual respect, transparency, and accountability in their research projects. The systemically selected articles highlighted the relevance of such recommendations for KT work on the continent, as several demonstrated that cultural competencies in research and KT communities were a notable barrier to partnerships and KT activities (Abekah-Nkrumah et al., 2018; African Health Initiative, 2022a; Ghilardi et al., 2020; Mc Sween-Cadieux et al., 2017; Mpando et al., 2021; Mutale et al., 2019; Soi et al., 2018; Wang et al., 2021). Intercultural or cultural competency education in global health is a well-documented intervention for enhancing mutual understanding, improving communication, reducing cultural insensitivity and ethical misconduct, facilitating equitable participation, and ensuring the sustainability and ethical integrity of health interventions (Aubel & Chibanda, 2022, 2022; M. A. Cole & Gunther, 2017; Connor et al., 2022; Liu et al., 2022; Mews et al., 2018). Indeed, this re-education of researchers, like KT-related capacity building and institutionalization, will itself need co-production because "increasing the attention given to cultural parameters and their inclusion in global health research and practice will require commitment, open-mindedness and courage on the part of global health practitioners both from the North and South" (Aubel & Chibanda, 2022, p. 3).

5.2.2 Facilitators

On a positive note, the articles also elicited several facilitators promoting efficient GHRPs by integrating KT in their operations. The benefits of robust stakeholder engagement and government involvement in KT were well described in the articles (Abekah-Nkrumah et al., 2018; African Health Initiative, 2022a; Ghilardi et al., 2020; Jessani et al., 2021; Mc Sween-Cadieux et al., 2017; Mpando et al., 2021; Olawepo et al., 2022). Early and frequent stakeholder engagements, along with successful government participation, were noted as crucial facilitators (Ghilardi et al., 2020; Jessani et al., 2021). These align with broader literature recommending co-created community and governmental insights in the research process to ensure relevance and applicability (Damba et al., 2022; Monette et al.,

2021; Nakanjako et al., 2021). For example, Mwendera and colleagues (2022) noted the role stakeholders in government and partner research communities played in strengthening KT in Burkina Faso, Cameroon and Malawi through Technical Advisory Groups (TAGs). Similarly, a recent scoping review (Damba et al., 2022) highlighted the importance of diverse and flexible stakeholder engagements, including government support, in increasing the relevancy, credibility, and uptake of research findings into policy, citing the restructuring within the Kenyan government to establish a division of Research and Development is as an example of government support for evidence-driven high-quality research. The implication of better stakeholder management and government participation (especially in terms of an enabling policy framework) is that knowledge products are more likely to be relevant, trusted, and utilized by Ministries of Health and implementing partners, leading to policies and practices that are both informed by evidence and tailored to the specific global health needs of the country or region of African. In addition, there is a "demand creation" effect such that there is an increased appetite for research that is strongly aligned with KT principles and best practices, ultimately closing the know-do gaps related to health outcomes and accelerating progress towards sustainable development goals.

Another notable facilitator of KT in GHRPs found in the Stakeholder Engagement and Partnerships theme was the role of boundary spanners, animated KT champions or mentors to junior researchers who bridged both relational and technical gaps between research, practice, and policy (Jessani et al., 2021; Mc Sween-Cadieux et al., 2017; Wang et al., 2021). These individuals or entities are recognized for their ability to navigate across different domains, connecting researchers, practitioners, and policymakers to enhance the uptake and application of research findings (Eljiz et al., 2019; Olubajo et al., 2022; Schröter et al., 2023; Sheikh et al., 2016). Sometimes they act as embedded researchers (Vindrola-Padros et al., 2017), researchers in residence (Marshall et al., 2014) or embedded health management academics (Eljiz et al., 2019) . Eljiz et al. offer a succinct description, stating that such individuals had "an insider-outsider position in a health organisation with the task of being a knowledge spanner… contributing to both health services and university institutions knowledge needs…. the role co-creates, mobilises and diffuses knowledge" (2019, p. 172). Mentors can act as KT champions,

potentially maximizing the often informal nature of the KT champion's role while serving as a resource for networking, capacity building, contributing to reverse the low epistemic contributions of Southern researchers and ensuring an intergenerational transfer of KT values, principles and practices (Abdullah et al., 2014; Brizuela et al., 2023; D. C. Cole et al., 2016; Gagliardi et al., 2014, 2015; Kwamie & Jalaghonia, 2020; Oronje et al., 2022; Straus et al., 2008).

By strengthening the application and influence of the identified facilitators while anticipating and mitigating the identified barriers, researchers, practitioners and policymakers on the continent are presented with a toolkit of promising practices offering a beacon of hope for enhancing the capacity of research partnerships to navigate the challenging yet dynamic landscape of global health in the region.

5.3 Evaluating Adherence of Articles to Partnership Principles and Practices

The concept of using principles and practices to guide partnerships aligns with global health initiatives advocating for collaborative, equitable, and culturally sensitive research partnerships (Hodson et al., 2023; Monette et al., 2021; K. M. Plamondon & Bisung, 2019a). The development of the scoring tool, designed to objectively assess adherence to established partnership principles and practices in the global health literature, links back to that broader global health movement embedded in the SDGs and sustainably closing the know-do gaps in Sub-Saharan Africa. While the principles and practices guiding the scoring tool were crafted to align with contemporary GHRPs' literature and the standards advocated for by multilateral and national developmental agencies, it is worth remembering that these connections between the partnership principles and practices critical assessment scorecard and better implementation of KT in GHRPs are observational and inferential without being established evidence in their own right. The **Partnership Principles and Practices Critical Assessment Scorecard** revealed that the studies generally demonstrated moderate to high adherence to key principles and practices that are crucial for promoting equitable and ethical GHRPs. This scorecard was used to objectively evaluate how well each study aligned with these established partnership principles. Based on over a decade of research by other scholars, one can infer

that the five partnership principles and practices were crucial for the successful translation of research into actionable outcomes (Bates et al., 2011; Chu et al., 2014; Franzen et al., 2017; Kok et al., 2017; Sam-Agudu et al., 2017; Syed et al., 2012; Twinoburyo et al., 2021) and that they aligned with the Sustainable Development Goals, particularly Goals 3 and 17 which emphasized global health and partnerships, respectively (Addo-Atuah et al., 2020; Breuer et al., 2019; Stibbe et al., 2020; Twinoburyo et al., 2021). The selected articles in this review scored moderate to high marks in the partnerships principles and practices scorecard. The inferences drawn from the scorecard serve not only as benchmarks for "promising partnerships principles and practices" for better implementing KT in GHRPs but also as indicators of the health and efficacy of research partnerships and as reminders to center equity in global health (Amisi et al., 2023; Canas et al., 2022; K. M. Plamondon et al., 2021). Building on these insights, this thesis hypothesized that adhering to these principles and practices not only fostered more equitable and ethical partnerships but also significantly enhanced the applicability and sustainability of research outcomes, thereby contributing effectively to global health advancements in line with SDG targets.

5.3.1 Strong Coordination

Strong coordination was the practice with the highest score in the partnership principles and practices assessment scorecard which correlates well with its frequent citation in the broader global health literature as being vital to establishing and maintaining effective research partnerships (African Development Bank, 2017; Agbo et al., 2019; Asamani & Nabyonga-Orem, 2020; Beyeler et al., 2019; Hameed et al., 2022; Lee et al., 2020; Lokossou et al., 2021). Asamani & Nabyonga-Orem (2020) in particular, caution against ambitious expectations for GHRPs outcomes in Sub-Saharan Africa because coordination, supportive policy frameworks and change management processes are less efficient in the region and, consequently, sustained KT results are less common. Intersections between the findings in the thirteen articles reviewed and the literature on KT in GHRPs include arguments in favour of clearly defined roles and responsibilities for members of research teams, open lines of communication and robust communication strategies between partners, which are all important to mutual understanding and successful collaborations.

Additionally, well-coordinated GHRPs have enhanced the effectiveness and credibility of the research project by aligning it more closely with local needs and priorities by communicating better with stakeholders (particularly, policymakers) and creating a demand for even more evidence to guide policies and practice, ultimately contributing to closing the know-do gap on the Continent (Agbo et al., 2019; Asamani & Nabyonga-Orem, 2020; Johnson et al., 2022; Lokossou et al., 2021).

Sub-Saharan Africa does have experience implementing complex, multi-country, multi-stakeholder global health projects that span sectors like graduate training, infectious disease prevention and control, and global health system strengthening (Agbo et al., 2019; Keita et al., 2017; Lokossou et al., 2021; Nkimbeng et al., 2021; Solarin et al., 2020). The principle of strong coordination aligns with observations in the selected articles regarding timely and comprehensive communication, efficient stakeholder management and proactive engagement of government officials (African Health Initiative, 2022b; Ghilardi et al., 2020; Jessani et al., 2021).

5.3.2 Intrinsic Partnership Values

Consistent with global health research, the critical role of intrinsic partnership values in fostering productive, long-term collaborations and consequently, driving demand and utilization of KT was evident in the results of this review. Intrinsic partnership values, such as trust, transparency, mutual respect, and having a shared vision, encapsulated a set of principles that collectively achieved a high score on the partnership principles and practices assessment scorecard (African Health Initiative, 2022b; Ezeanolue et al., 2018; Ghilardi et al., 2020; Jessani et al., 2021; Mc Sween-Cadieux et al., 2017, 2018; Mpando et al., 2021; Olawepo et al., 2022; Soi et al., 2018; Wang et al., 2021). This rating is consistent with the broader global health literature supporting values-based partnerships as fundamental to fostering long-term and productive collaborations between researchers and stakeholders (Canas et al., 2022; Citrin et al., 2017; Monette et al., 2021; Nguyen et al., 2020; K. M. Plamondon et al., 2021; K. M. Plamondon & Bisung, 2019a). For these partnerships to cultivate values that are intrinsic or authentic, significant time must be invested in relationship building (Nguyen et al., 2020) with boundary spanners breaking organizational silos (Jessani et al., 2021; Long et al., 2013; Sheikh et al., 2016) and

fostering the initial connections that crystallize into longstanding collaborations. Similarly, Zych et al., (2020) and Matenga et al. (2019) highlight the importance of signalling honesty, trust, transparency and respect in the initiation phase of a research partnership to build strong values that are sustained throughout the current project but well into the future, facilitating translation of knowledge products into policy or access to future funding opportunities (Mutale et al., 2019; Zych et al., 2020). Maintaining these intrinsic partnership values through open communication creates a conducive environment for impactful research and the co-production of knowledge.

5.3.3 Commitment to Learning & New Approaches to Partnered Research

Despite the stated gaps in training and re-training human resources for global health research, the practice of committing to learning and the adoption of new approaches in GHRPs achieved moderate scores compared to the other criteria on the partnership principles and practices assessment scorecard, (Abekah-Nkrumah et al., 2018; African Health Initiative, 2022b; Jessani et al., 2021; Kavle et al., 2018; Mpando et al., 2021; Mutale et al., 2019; Olawepo et al., 2022; Wang et al., 2021). In practice, this principle would mean that research teams were open to not just the traditional didactic transfer of new knowledge in global health research, but also that they accommodated new ways of knowing, new expressions for communicating known concepts, and had more faith in the experience of partners who are more familiar with the local context, if not the subject, of the research project. Such openness to learning and new approaches is vital for KT, as it facilitates the integration of diverse perspectives and local knowledge, thereby enhancing the relevance and applicability of research findings in real-world settings. Novel approaches to shared, global learning (Basu et al., 2017; Ogbolu et al., 2022) and the insights from reverse innovation (Harris et al., 2016, 2020; Ibe et al., 2018) demonstrate the value of incorporating experiences and innovations from LMICs to enhance primary health care and address health in other parts of the world. The integration of new approaches, supported by the crucial role of boundary spanners in KT and mutual learning (Eljiz et al., 2019; Ndalameta-Theo et al., 2021; Zeigermann & Ettelt, 2023) creates a synergy that can be amplified for cross-border learning and impact by technology-enhanced learning environments (Cripps & Scarbrough, 2022; Sant

Fruchtman et al., 2022; Stoumpos et al., 2023). When established concepts around "ways of knowing" are redefined, it not only bridges the know-do gap in the Global South by ensuring that innovations and strategies are contextually relevant and effectively implemented but it also strengthens the overall impact of KT by balancing Eurocentric standards for planning, implementation and disseminating research with Southern voices and knowledge.

5.3.4 Equity and Justice

Despite the over quarter century advocacy on decolonizing global health and KT's emphasis on equitable partnerships including the availability of approaches like IKT, equity and justice emerged as the other set of partnership principles with moderate scores on the partnership principles and practices assessment scorecard. This was unexpected because as a partnership principle that highlighted the necessity for fairness in the distribution of resources, respect, recognition, epistemic justice, access and ownership of data and coordinating authority within GHRPs (Abimbola et al., 2021; Bierer et al., 2021; Braveman, 2014; Braveman & Gruskin, 2003), the thirteen articles suggest that there is a rhetoric-action gap in addressing decolonization in GHRPs in Africa and how, in real-world settings, there may be patchy and selective progress in addressing structural imbalances and inequities in African GHRPs (Abimbola et al., 2021; DeCamp et al., 2023; Kalbarczyk et al., 2023; Krugman, 2023). This principle was to monitor how decolonizing research implementation empowered local researchers and communities, ensuring their voices shape research agendas, and decision-making that is reflective of local realities and priorities. Despite not featuring prominently as a barrier or facilitator in the thirteen articles, when it was mentioned, it was associated with issues like clarity of partnership terms, promptness and sufficiency for funding packages for researchers and research institutions (African Health Initiative, 2022b; Jessani et al., 2021; Soi et al., 2018). In the same vein, Kavle et al. (2018) touched on the justice issues surrounding the use of local languages in data collection and training local partners on research ethics. Demonstrable emphasis on equity and justice in GHRPs directly impacts KT because of KT's emphasis on fair practices and inclusive partnerships, which are inherent in the co-production required for synthesis, dissemination, exchange and ethical utilization of knowledge. When equity and justice are not fully integrated into KT practices, there is a

lack of a shared vision, minimal local engagement and low vested interests in the research outcomes. For KT to be successful, it requires that all partners, particularly those from the local contexts where the research is conducted are actively involved in decision-making processes because this guarantees that knowledge is co-produced, legitimized, trusted and remains relevant and utilized within the community for the long term.

5.3.5 Local Content and Context

Respecting and integrating local content and context within research initiatives significantly enhances the relevance, effectiveness and accountability of GHRPs to the host governments, policymakers and scientific communities (Bain et al., 2022; Boutilier et al., 2011; Lebu et al., 2024; Mahendradhata et al., 2016; Malla et al., 2018b; Pulford et al., 2020). Despite its prominence in the wider global health literature, particularly in the context of decolonization and global health equity, this partnership principle was the lowest scoring criteria on the partnership principles assessment scorecard (African Health Initiative, 2022a; Ghilardi et al., 2020; Kavle et al., 2018; Soi et al., 2018). Acknowledging the cultural, social, and economic nuances specific to Sub-Saharan Africa ensures that KT is not only about importing external knowledge but also about valuing and elevating local knowledge systems. A starting point could be the community engagement process where GHRPs could more consistently acknowledge the community as co-creators and users of the KT products, instead of study participants and deriding their values and practices (Beeston, 2022; Bowen & Martens, 2005; M. Ward et al., 2018). Some scholars (Abimbola et al., 2021; Hindmarch & Hillier, 2023; Iloka, 2016; Jull et al., 2017) have suggested the centering of local knowledge as the more tangible evidence of progress with the decolonization agenda of the last two decades. Monette et al. (2021), for example, prescribe greater respect for and involvement of local knowledge in research initiatives. In the context of this review, this respectful consideration could foster a deeper understanding of wellness and ill health unique to African communities (Gwenzi & Rzymski, 2021; Hesse-Biber & Johnson, 2013; Sharley et al., 2019; Sousa et al., 2019). Little to no emphasis on the incorporation of local content and context in a GHRPs in Sub-Saharan Africa suggests missed opportunities for implementing KT that is grounded in local perspectives and knowledge and engaged local stakeholders who see themselves, their communities and their culture reflected in the research. These omissions

ultimately compromise the effectiveness and sustainability of global health interventions implemented in Africa.

5.4 Consolidating Insights: Synthesizing Key Findings and Their Global Impact

5.4.1 Insights from Barriers and Facilitators

The barriers extracted from the thirteen articles describe a landscape marked by systemic challenges (like limited capacity and funding for research, a scarcity of robust leadership and coordination systems, deficiencies in health information technology and associated data quality concerns) that significantly obstruct knowledge translation within research partnerships to address global health challenges in Sub-Saharan Africa. Conversely, the identified facilitators (notably, stakeholder engagement, robust communication and the pivotal role of boundary spanners) reflect promising strategies and resources that could strengthen ongoing knowledge co-creation and dissemination efforts. These barriers and facilitators collectively inform a more critical view of the current evidence on the effectiveness of KT in GHRPs in Sub-Saharan Africa. First, there were instances where the barriers that reportedly constrained KT activities were simply a failure of the study teams to properly prepare for implementing KT projects in Sub-Saharan Africa. Mc Sween-Cadieux and colleagues, for example, reported that “if stakeholders were better prepared before the workshop, developing an action plan would be achievable…. [and that] the likely influence of the per diem culture on policy-makers’ participation in research dissemination workshops should also be noted” (2018, p. 11). Similarly, there were multiple references to a lack of KT vision and absenteeism from KT activities by health leaders in government (Abekah-Nkrumah et al., 2018; Ezeanolue et al., 2018; Jessani et al., 2021; Mc Sween-Cadieux et al., 2018; Wang et al., 2021) who should be the primary advocates for the success of the studies. While stakeholder engagement was reported as a facilitator to KT, some articles demonstrated insufficient engagement with collaborators, such as not incorporating local voices in their dissemination, thus threatening the impact of their KT efforts. For example, Mc Sween-Cardieux et al. reported that “it would have been useful to invite certain key stakeholders to a pre-workshop consultation meeting to validate the research briefs, clarify and verify the

acceptability of the workshop objectives, and use their networks of contacts to maximize the presence of important stakeholders" (2018, p. 11) while Mpando et al. noted that "the level of stakeholder interest had been misjudged or incorrectly assumed…. the timing and frequency of some engagements was also misjudged" (2021, p. 5).

This failure to learn from history and the evidence of local researchers suggests that merely "knowing" the barriers and facilitators to one of the proven tools to closing the know-do gaps in global health is not enough (Abouzeid et al., 2022; Damba et al., 2022; Mpando et al., 2021). By critically reflecting on obvious and remote determinants of successful KT and investing in more authentic engagement of local voices, future research teams can be better informed and more effective in designing and implementing KT initiatives that can overcome entrenched colonial obstacles in the region (Damba et al., 2022; Edwards et al., 2019b; Monette et al., 2021; Zych et al., 2019).

5.4.2 Insights from Partnership Principles Assessment Scorecard

In synthesizing the partnership principles assessment scorecard with the broader discussion on the five partnership principles, a clear pattern emerges, indicating varying degrees of emphasis on these principles in the body of literature reviewed. "Strong coordination" and "Intrinsic partnership values" are highly emphasized in the thirteen articles in this review as well as in the broader literature on GHRPs, indicating their importance in trust building and enhancing effective collaborations in the often-complex global health research projects across Sub-Saharan Africa. Interestingly, partnership principles like "Equity and justice", "Commitment to learning and new approaches for partnered research", and "Local Content and Context" received moderate scores despite featuring prominently in scholarly work on KT and calls to decolonize in global health policy and practice. With their records of limited engagement of researchers from Sub-Saharan Africa, were some of the articles reviewed exhibiting tokenism in the way the contributions of local partners were acknowledged but not substantively incorporated into decision-making roles? And should researchers from Sub-Saharan Africa be more circumspect when principles and practices that are decolonizing (like the low to

moderate-scoring examples in our sample set) are missing from the initiation of a GHRP with an institution from an HIC? Going by the reduced alignment recorded in this study, such caution before collaboration may communicate the demand for authenticity and trust espoused by IKT (Erondu et al., 2021; Voller et al., 2022). This friction simultaneously prescribes more research into culturally competent partnerships while advocating for more reflexive integration of these lesser-reported partnership principles into current and future KT work in Sub-Saharan Africa. The gap between the theoretical advocacy and practical application of key partnership and practices principles highlights a critical need for three-pronged transformative approach: (1) further research into these barriers, (2) proactive integration of these values into KT initiatives to ensure culturally resonant, effective, and sustainable health improvements, and (3) development of a sentinel system for detecting GHRPs that are weak substrates for acculturation of KT. The observed pattern (that system coordination and traditional values in a partnership seem to lead, while other principles follow) may suggest where future efforts need to focus to strengthen GHRPs and KT in Sub-Saharan Africa. It presents an opportunity for stakeholders to re-examine and potentially recalibrate their approaches to ensure a balanced incorporation of all five partnership principles in research communities on the continent. Consistent with evidence synthesis research by several scholars, consistently incorporating the partnership principles and practices into KT and monitoring for accountability across Sub-Saharan Africa is essential for co-producing the much-needed evidence for transformative healthcare and ethically decolonizing global health research and practice such that improvements in health outcomes are aligned with health ethics, equity and SDGs 3 and 17 (Canas et al., 2022; Damba et al., 2022; Edwards et al., 2019b; Hodson et al., 2023; Monette et al., 2021; Nakanjako et al., 2021; K. M. Plamondon & Bisung, 2019a; Sell et al., 2023).

5.4.3 Broader Implications for Global Health Research Partnerships

While focused on Sub-Saharan Africa, the findings in this review have broader implications, highlighting the necessity for constant reflexivity and openness to reforming what is known and accepted regarding the North-South partnerships conducting global health research. The analysis of the scoping review and the subsequent thematic

discussions reveal pivotal insights into the broader implications for GHRPs in the context of Sub-Saharan Africa and potentially in other LMICs.

It was insightful to observe the distinction between the country of origin of study team members and the country of affiliations (through employment or scholarly relationships with institutions outside Sub-Saharan Africa). The extent to which these affiliations expose the potential for brain drain and migration of researcher-scientists from LMICs (CIHR, 2019; Dimitris et al., 2021; Kamarulzaman et al., 2022) as well as whether these affiliations influence research advocacy, ideation, stakeholder engagement, data collection and dissemination that is focused on the less developed nations of the world is worthy of additional research (Harris, Macinko, et al., 2015; The Lancet Global Health, 2023). Similarly, the extensively enumerated barriers and facilitators mirror and extend the discussions found in the broader literature on KT and GHRPs in Sub-Saharan Africa (Alemayehu et al., 2018; Damba et al., 2022; Mwendera et al., 2016). Funders that wield significant influence in GHRPs appear not to convey the benefits in KT from the analyses conducted, despite multiple calls to do so (Brantnell et al., 2015; Cardoso-Weinberg et al., 2022; Charani et al., 2022; Erondu et al., 2021). Similar parallels may be drawn for academic and other training institutions (Binagwaho et al., 2021; Citrin et al., 2017; Kalbarczyk et al., 2021) because of the recurrent reference to poor capacity and resources for research despite numerous GHRPs focused on training and skill-building. The critical interplay between effective partnership principles and knowledge translation practices underscores the current global shift towards more equitable, sustainable, and contextually relevant health research collaborations. However, one area where no new globally relevant insights were unearthed by this analysis was concerning data access and ownership in GHRPs. On a positive note, there is increasingly more evidence that GHRPs are recognized not just as conduits for resource transfer from HICs to LMICs, but as platforms for mutual learning, capacity building, and co-creation of knowledge that respects and incorporates local contexts and knowledge systems (O. Bhattacharyya et al., 2017; Harris et al., 2020). This shift is essential for addressing the complex health challenges in the region and aligning research efforts with the SDGs, especially SDG 3 (Good Health and Well-being) and SDG 17 (Partnerships for the Goals). Similarly, global health emergencies like Ebola epidemic in 2014 and the COVID-19 pandemic between

2020 and 2022 have clear, catalytic impact on the awareness, utility, coordination and outputs of KT in Sub-Saharan Africa (Ajide et al., 2020; Chitungo et al., 2021; Dodoo et al., 2021; Gwenzi & Rzymski, 2021; Harris, Dadwal, et al., 2015). At the heart of this renaissance of Southern ways of knowing and disseminating knowledge are the opportunities offered by technology and New Media with knowledge brokers no longer restricted to academic institutions and research projects (Agley et al., 2021; TDR, 2023). The role of boundary spanners or knowledge brokers emerged from the analysis as a critical brick in bridging the gaps between research, policy, and practice, facilitating the flow of knowledge and ensuring that research outputs are actionable and impactful. The internet and its do-it-yourself platforms for community building, remote collaborations for ideation and knowledge co-production and dissemination offer significant opportunities to partner, learn, and teach.

5.4.4 The Intersection of The Author's Positionality and the Review Findings

Drawing on my background as a physician, a global health practitioner and my African heritage, the insights from this research do not merely reflect abstract academic findings; they are interwoven with my lived experiences. My role in spearheading large-scale global health interventions in Sub-Saharan Africa has granted me firsthand exposure to the complexities and challenges within GHRPs.

All the seven categories of barriers and facilitators to effective KT in GHRPs mapped in this critical scoping review can influence global health implementation and outcomes in any region of the world. However several of them have an exaggerated impact on health systems in Sub-Saharan Africa due to the region's unique historical, socio-political and economic context (Damba et al., 2022; Edwards et al., 2019b).

On one hand, factors like project and organizational management, stakeholder engagement and partnerships, and the use of data and health information technology for KT affected research teams in both HICs and LMICs. However, capacity for higher quality research, cultural competence, visionary and committed leadership and the impact of funders and funding for global health have a greater impact in Sub-Saharan Africa,

based on this researcher's experience. Making this distinction using scientific evidence and lived experience of global health practitioners is important in ensuring that initiatives that best mitigate the barriers while optimizing the facilitators are deployed in coproducing the evidence to bridge the know-do gaps in global health (Boland, Kothari, McCutcheon, Graham, et al., 2020; Damba et al., 2022; Edwards et al., 2019b; Ogony et al., 2021; Voller et al., 2022).

These experiences, coupled with my scholarly pursuits in Canada, provide a dual perspective that enriches this work. As a researcher who has navigated the dichotomy of being a knowledge user in the Global South and a knowledge creator in the Global North, I recognize the intricate dynamics that can influence KT in GHRPs. This duality informs a reflexive and yet hopeful outlook reviewing the findings of this Critical Scoping Review against the background of persistent health issues in Sub-Saharan Africa that defy decades of research and interventions. Reflecting on my own experiences with projects funded by USAID, the lack of authenticity in the offer to collaborate, the superficial engagement of local leadership and the monopoly of decision-making power reported in the articles resonates deeply. This underrepresentation of African researchers in leadership roles not only perpetuates dependency and a lack of ownership of global health programs but it also undermines local capacity building and our ability to solve global health problems.

5.5 Recommendations

This review illuminates several paths for further reflection and possible investments of time and resources to optimize KT in GHRPs in Sub-Saharan Africa. However, three potentially transformative recommendations are presented which are pragmatic and build upon key findings discussed in the preceding sections of this chapter:

5.5.1 A Continental Knowledge Translation Strategy Led by Regional Knowledge Translation Hubs

Some of the insights from this review suggest that Sub-Saharan Africa has some leadership and coordination strengths at the intersection of KT and GHRP and these are distributed across several regional, globally recognized research hubs. They offer a coordination structure similar to the WHO model presented in the second chapter of this work. Regional health agencies like the West African Health Organization (WAHO) and the East, Central and Southern Africa Health Community (ECSA-HC) as well as the more centralized African Centre for Disease Control all command significant policy and political influence working with the National public health institutes (Africa CDC, 2020). If these networks are harmonized into a continental coordination agency, it presents a well-structured and sustainable framework for institutionalizing KT in regional, national and sub-national research communities, academic institutions and non-governmental organizations. Global health literature has described the fundraising and coordination potential of these "regional KT hubs" (Africa CDC, 2020; African Development Bank, 2017; Agbo et al., 2019; Asamani & Nabyonga-Orem, 2020; Beyeler et al., 2019; Lokossou et al., 2021) and knowledge products that have emanated from regional and national KT initiative in Sub-Saharan Africa (Aidam & Sombié, 2016; Jessani et al., 2023; Johnson et al., 2022; Keita et al., 2017; Mwendera et al., 2022; Ndenga et al., 2016; Ogony et al., 2021; Pfadenhauer et al., 2021; Sell et al., 2023; Sombie et al., 2023; Sombié et al., 2020). A significant opportunity lies in the development of a strategic document for KT as none of the three continental global health agencies mentioned (A-CDC, WAHO, and ECSA-HC) have a KT strategic document on their organizational websites (Africa CDC, 2024; ECSA - HC, 2021; WAHO, n.d.). The closest substitutes are the ECSA-HC's knowledge management cluster (ECSA-HC, 2021) and the Africa Charter for Transformative Collaborations. The latter is a network of academic institutions which aspires to drive "equitable Africa-Global North research partnership efforts… [and] ensure more equity and address asymmetries in the arrangements that shape 'global South-global North' research partnerships" (Perivoli Africa Research Centre (PARC), 2023, p. 4) but this Charter is not indigenous to the continent being the product of a GHRP between the University of Bristol and selected university and research

networks in Sub-Saharan Africa. At the time of finalizing this thesis, none of the three continental global health agencies were partners or signatories to the Africa Charter.

5.5.2 Implementation Research and Capacity Building Led by African Knowledge Translation Researchers with African Funding

With a continental coordination system, an enabling policy framework, a continental financing plan for KT activities, a uniquely Sub-Saharan African and epistemologically independent KT model could emerge. This model would be built upon the foundation laid by the first recommendation, generating demand for authentic, local, co-created knowledge products. It would be focused on implementation research and capacity building spearheaded by Sub-Saharan African KT researchers, funded locally, and represent a shift towards self-sustaining and impactful health research on Sub-Saharan African priorities using African knowledge. The prerequisite of a policy framework not only strengthens local ownership but also ensures that the research agenda and outcomes are directly relevant to the region's specific health challenges and priorities. The frequently reported capacity gaps in global health (and potentially other SDGs) would be positioned on a singular, continental strategic agenda and member countries and coordinating principal investigators are kept accountable and inspired by this vision of a South-South global health plan with defined and measurable milestones. Interestingly, examples of this strategy exist and previous chapters of this review examined some of them (Aarons et al., 2014; Anane-Sarpong et al., 2018; Birn et al., 2019; Olawepo et al., 2022; Pfadenhauer et al., 2021; Sam-Agudu et al., 2017; Sturke et al., 2014) but they are either small programs and are not scalable or they have vestiges of the GHRPs examined in this review (usually a dependence on HICs for operational funds). By empowering Sub-Saharan African researchers through dedicated funding and leadership roles, this continental capacity building for KT can harness local expertise and contextual knowledge, which is important for designing and implementing interventions that are culturally, geographically and logistically appropriate. Moreover, this model helps mitigate some of the traditional challenges faced in GHRPs, such as the dominance of global north partners in setting research agendas and the frequent reports of misalignment with local needs.

The sustainable impact of such an approach is manifold. Firstly, it nurtures a pipeline of skilled researchers who are aligned with the continental KT agenda, deeply familiar with their communities' dynamics, and are therefore better positioned to identify and address the nuances of regional and local health concerns. Secondly, funding research from within Sub-Saharan Africa catalyzes the growth of local scientific communities, encouraging a cycle of continuous learning and improvement that can adapt over time to emerging health trends and crises. This internal funding also reduces dependency on international financial support, which can be unpredictable and misaligned with the most pressing local priorities. Ultimately, by placing Sub-Saharan African researchers and funders at the forefront of KT initiatives, GHRPs stand to achieve a more sustainable, equitable, and effective exchange of knowledge and resources, aligning more closely with the SDGs and fostering a greater sense of ownership and pride among Sub-Saharan African research communities.

5.5.3 Building Bridges: Diasporan and Sub-Saharan African Boundary Spanners in Knowledge Translation Advocacy

With the first two recommendations in place, a platform could be established for Diasporan Boundary Spanners to collaborate with their Sub-Saharan African counterparts, offering the strategic advantage of promoting a uniquely Sub-Saharan African KT agenda within a South-South research partnerships framework. This recommendation stems from the recognition that Diasporan experts can bring unique perspectives, resources, and connections that complement local knowledge and capabilities. By bridging the gap between Sub-Saharan African researchers and the global research community, these boundary spanners can advocate for KT practices that are both innovative and culturally relevant. The results of this review and other research commentaries strongly recommend boundary spanners with KT expertise as drivers of successful research partnerships (Eljiz et al., 2019; Ghilardi et al., 2020; Jessani et al., 2021; Long et al., 2013; Sheikh et al., 2016; Zeigermann & Ettelt, 2023). Such a network of individuals could facilitate the dissemination of best practices, enhance the use of local data in global health decisions, and ensure that research outputs are aligned with the needs of the communities they are meant to serve. Furthermore, this collaboration can directly address the barriers identified in this thesis, such as limited local capacity,

funding challenges, and the need for robust leadership and coordination, thus enhancing the overall effectiveness and impact of research partnerships in Sub-Saharan Africa.

5.6 Limitations, Strengths, and Future Research

5.6.1 Study Limitations and Strengths

Despite extensive consultation on the study design, implementation and results, this critical scoping review was potentially limited by several factors. First, limitations may arise from the search strategy because it was focused on only five databases and articles published within a specific timeframe. There was also the risk of selection bias in this approach. This limitation was mitigated by the extensive library of keywords and controlled vocabulary used in the search, the prioritization of databases noted for publishing research in global health, and the clear justification for the date ranges used. A team of two reviewers conducted the search to minimize selection bias. The inclusion and exclusion criteria for the study were a second possible limitation with the risk of constraining the comprehensiveness of the study, especially with decisions to exclude publications in English despite the multi-lingual landscape in Sub-Saharan Africa.

Additional limitations include the subjectivity in interpretations of the scorecard results and the risk of coming to biased conclusions. Of note is the limitation that while the facilitators and barriers were extracted based on reporting in the selected articles, the interpretation of their impact and their context when examined through the partnership principles lens is subject to the authors' perspectives and may not comprehensively represent all stakeholder views.

Notable strengths in the conduct of this review include the use of research methods with clearly defined procedures and exemplars that increase the reducibility and validity of the study design (Arksey & O'Malley, 2005b; Braun et al., 2019; Davison et al., 2015). In addition, the search strategy for this review was comprehensive and rigorous due to its use of the Joanna Briggs Institute's PCC (population, concept, context) framework (Aromataris & Munn, 2020), mapping keywords from its exploratory literature search, and employing multiple bibliographic databases coupled with citation chaining. The systematic search was further enhanced by the Preferred Reporting Items for Systematic

reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist (Appendix C, page 145) that ensured a comprehensive reporting of the Scoping Review component of the study (Tricco et al., 2018b), the engagement of a second reviewer to minimize bias and the use of the Covidence platform which standardized and documented the procedures for study selection, screening and data extraction. In addition, the data extraction tool and the partnership principles assessment rubric were trialled with the second reviewer before being administered to the selected articles. With specific reference to the assessment rubric, while this review did not validate the tool before use, it was synthesized from robust studies, grounded in evidence synthesis best practices and frequently cited as standard references for partnership principles for global health collaborations.

5.6.2 Future Research Opportunities

Future research should aim to validate the findings of this critical scoping review, particularly the reliability of the partnership principles scorecard, recognizing that its current form, while promising, may not fully capture the complexities of equitable partnerships in varied contexts, even within the global South. Secondly, it would be strategic to conduct in-depth regional Sub-Saharan African studies to ascertain context-specific barriers and facilitators of KT and GHRP practices to enhance their effectiveness and improve program sustainability. Thirdly, gender-specific impacts within GHRPs and KT processes deserve a critical examination into how gender dynamics influence global health participation, leadership, and outcomes, particularly the patriarchal structures limiting the contributions of women in global health research. Finally, research building on the findings of this review could focus on the role of health information technological advancements, including the use of New Media, in bolstering GHRPs and KT. Investigating how these technologies can be leveraged to democratize knowledge dissemination and bridge the digital divide in Sub-Saharan Africa (thereby improving health outcomes and achieve the SDGs without exacerbating inequalities) will essential. By prioritizing these areas, future research can significantly contribute to the optimization of GHRPs and KT, fostering more effective and equitable health interventions in the region.

5.7 Correcting for Uncontrollable Environmental Factors

While this review primarily focused on the dynamics of KT and GHRPs in Sub-Saharan Africa, it is important to acknowledge the broader socio-political and economic environment in which these activities occur. Factors such as corruption, insecurity, policy discontinuity, and under-development significantly affect the feasibility and outcomes of health research initiatives in the region. These elements can hinder the effective implementation of KT practices and the sustainability of GHRPs, posing challenges to achieving equitable and effective health research outcomes. For instance, corruption can lead to misallocation of resources and undermine the trust necessary for effective partnerships, while insecurity and political instability can disrupt research activities and affect the commitment of local and international stakeholders. Policy discontinuity may result in the lack of a consistent framework for health research, affecting long-term planning and the sustainability of interventions. Under-development, characterized by inadequate infrastructure, limited access to technology, and insufficient human capital, can constrain the capacity for local research and KT activities.

The exclusion of these broader socio-political and economic factors from the preceding chapters of this thesis was a deliberate decision to maintain a focused investigation on the specific themes of KT and GHRPs. The study examined partnership dynamics and KT practices within the controlled scope of research partnerships, rather than examining the extensive range of potential external factors that can affect health research in Sub-Saharan Africa. However, it is recognized that these external factors indirectly influence the success and challenges of KT and GHRPs, and their impacts are worth acknowledging and investigating in future research.

5.8 Conclusion

This thesis, in many ways a passion project by someone with lived experience as a global health researcher and implementer in Sub-Saharan Africa, attempted a critical journey through the intertwined realms of KT and GHRPs. Beginning with a comprehensive exploration of the historical, structural, and political underpinnings of GHRPs, the research explored the transformative potential of KT practices to bridge the perennial know-do gap,

highlighting the dynamic interplay between global health aspirations and on-the-ground realities. An analysis of thirteen systematically selected articles through the lens of partnership principles revealed the crucial roles of equity and justice, strong coordination, openness to learning, local content and context, and intrinsic partnership values in facilitating and sometimes hindering, the success of GHRPs and KT initiatives. These findings not only resonated with the overarching themes of global health equity but also unveiled the nuanced challenges and opportunities inherent in these partnerships.

The analysis illuminated the persistent underrepresentation of African researchers in leading roles within the scholarly discourse, highlighting a critical area for change and growth in GHRPs. In synthesizing these insights, this Critical Scoping Review has woven a narrative that transcends the individual elements of GHRPs and KT, portraying a comprehensive picture of the challenges, successes, and transformative potential within this domain.

In conclusion, this review contributes to a deeper understanding of the complexities of GHRPs and KT in Sub-Saharan Africa, offering a platform for future research that is more inclusive, equitable, and reflective of the diverse voices and realities within the region. The journey through this scholarly endeavour has not only shed light on the current state of GHRPs and KT but also paved the way for a future where partnerships are truly collaborative, knowledge is freely exchanged, and health outcomes are improved for all, especially in the dynamic landscape of Sub-Saharan Africa.

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Appendices

Appendix A Countries in Sub-Saharan Africa

1. Angola
2. Benin
3. Botswana
4. Burkina Faso
5. Burundi
6. Cameroon
7. Cape Verde (Cabo Verde)
8. Central African Republic
9. Chad
10. Cote d'Ivoire
11. Comoros
12. Congo (Brazzaville)
13. Democratic Republic of Congo
14. Equatorial Guinea
15. Eritrea
16. Ethiopia
17. Gabon
18. Gambia
19. Ghana
20. Guinea
21. Guinea-Bissau
22. Kenya
23. Lesotho
24. Liberia
25. Madagascar
26. Malawi
27. Mali
28. Mauritania
29. Mauritius
30. Mozambique
31. Namibia
32. Niger
33. Nigeria
34. Rwanda
35. Sao Tome and Principe
36. Senegal
37. Seychelles
38. Sierra Leone
39. Somalia
40. South Africa
41. South Sudan
42. Sudan
43. Swaziland
44. Tanzania
45. Togo
46. Uganda
47. Zambia
48. Zimbabwe

Appendix B Study Team Members and Role in Study

Name	Initials	Roles
Prof. Anita Kothari	A.K.	Supervisor, IKT Subject Matter Expert
Prof Elysee Nouvet	E.N.	Supervisory Committee Member, Global Health Subject Matter Expert
Mary Ndu	M.N.	Search Strategy - Second Reviewer, Reflexivity partner
Olawale Fadare	O.F.	Candidate, Primary Author, Search Strategy - First Reviewer, Data Analysis.

Appendix C Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	i
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	i
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	3
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	5
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	*Graduate Student Thesis
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	51
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	48
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	48, 155
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	48
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	52-53

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	166 - 168
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	Not applicable
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	56
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	59
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	60 - 65
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	Not applicable
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	60 - 65
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	64 - 65
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	74 - 89
Limitations	20	Discuss the limitations of the scoping review process.	115
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	117
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	vi

Appendix D Keyword Mapping from Exploratory Literature

Publication Title	Author (s) (Year of publication)	DOI	Keyword Map
Where is critical analysis of power, and positionality in knowledge translation?	Crosschild et. al. (2021)	10.1186/s12961-021-00726-w	Knowledge translation, Integrated knowledge translation, Power dynamics, Knowledge user, Critical reflexivity, Relationality, Critical theory, Black feminist thought, Indigenous knowledge
Implementation determinants, and mechanisms for the prevention, and treatment of adolescent HIV in sub-Saharan Africa	Gregory et. al. (2021)	10.1186/s43058-021-00156-3	Concept mapping, Implementation science, Sustainment, EPIS framework, Adolescent, HIV, Africa
Global health research partnerships in the context of the Sustainable Development Goals (SDGs)	Addo-Atuah et. al. (2020)	10.1016/j.sapharm.2020.08.015	Sustainable development goals, SDGs, Agenda for sustainable development, Global health research, Research partnerships, Global health research partnerships, Community-based participatory research, CBPR
Funding patterns for biomedical research, and infectious diseases burden in Gabon	Adegnika et. al. (2021)	10.1186/s12889-021-12201-w	Gabon, Research financing, Infectious diseases, Research partnership
Health systems guidance appraisal—a critical interpretive synthesis	Ako-Arrey et. al. (2015)	10.1186/s13012-016-0373-y	Health systems guidance, Guidance development, Guidance appraisal, Guidance reporting, Health systems challenges, Health systems arrangements, AGREE-HS
North-South collaboration, and capacity development in global health research in low-, and middle-income countries the ARCADE projects	Atkins et. al. (2016)	10.3402/gha.v9.30524	Capacity building; Health determinants; Global health
The role of South-North partnerships in promoting shared learning, and knowledge transfer	Basu et. al. (2017)	10.1186/s12992-017-0289-6	Reverse innovation, Partnerships, Patient safety, Learning
Global health partnerships, governance, and sovereign responsibility in Western Kenya	Brown H. (2015)	10.1111/amet.12134	Global health, PEPFAR, HIV/AIDS, Governance, Partnership, Sovereign responsibility, The State, Kenya
SDH-NET: a South–North-South collaboration to build sustainable research capacities on social determinants of health in low-, and middle-income countries	Cash-Gibson, Guerra & Salgado-de-Snyder (2015)	10.1186/s12961-015-0048-1	Capacity building, Health status disparities, International cooperation, Research, Social determinants of health
Gaps, and strategies in developing health research capacity: experience from the Nigeria Implementation Science Alliance	Ezeanolue et. al. (2018)	10.1186/s12961-018-0289-x	Research capacity, Implementation science, Collaborative research, Health

Publication Title	Author (s) (Year of publication)	DOI	Keyword Map
Deconstructing the notion of "global health research partnerships" across Northern, and African contexts	Gautier, Sieleunou & Kalolo (2018)	10.1186/s12910-018-0280-7	Global health, Partnership, Equity, Research ethics, Sub-Saharan Africa
The role of NGOs' service delivery experience in developing relevant research agendas: experience, and challenges among NGOs in Malawi	Gooding K. (2017)	10.1186/s12961-017-0199-3	Non-governmental organisations, Civil society, Research agendas, Research prioritisation, Malawi
African-led health research, and capacity building- is it working?	Kasprowicz et. al. (2020)	10.1186/s12889-020-08875-3	Capacity building, Global health, Africa, Health research
A rapid evidence review on the effectiveness of institutional health partnerships	Kelly et. al. (2015)	10.1186/s12992-015-0133-9	Effectiveness, Monitoring , and evaluation, Development Cooperation, Partnership, Twinning, Institutional strengthening, Capacity development, Institutional Health Partnership, Global Health
Knowledge translation for public health in low-, and middle- income countries: a critical interpretive synthesis	Malla, Aylward & Ward (2018)	10.1186/s41256-018-0084-9	Critical interpretive synthesis, Knowledge translation, Low- , and middle- income countries, Public health
Translating research into action: an international study of the role of research funders	McLean et. al. (2018)	10.1186/s12961-018-0316-y	Knowledge translation, Knowledge mobilisation, Integrated knowledge translation, Research use, Research funding, Research evaluation, Research impact
Leveraging the power of partnerships: spreading the vision for a population health care delivery model in western Kenya	Mercer et. al. (2018)	10.1186/s12992-018-0366-5	Population health, Global Health, Health care delivery system, Vision, Strategy, Partnerships, Kenya, Low- , and middle-income countries (LMICs)
Informing 'good' global health research partnerships: A scoping review of guiding principles	Monette et. al. (2021)	10.1080/16549716.2021.1892308	Equity; Fairness; Transnational; International; Values; Guidelines
What do we mean by critical, and ethical global engagement? Questions from a research partnership between universities in Canada and Rwanda	Canas et. al. (2022)	10.1080/17441692.2021.1931401	Global health; international health research , and practice; global health research , and education; ethics in global health; engagement
Views from the global south: exploring how student volunteers from the global north can achieve sustainable impact in global health	Ouma & Dimaras (2013)	10.1186/1744-8603-9-32	Global health, Study abroad, Student volunteers, Volunteer tourism, Critical engagement, Medical education
The CCGHR Principles for Global Health Research: Centering equity in research, knowledge translation, and practice	Plamondon & Bisung (2019)	10.1016/j.socscimed.2019.112530	Health equity, Research practices, Research policy, Social geographies
Building Sustainable Local Capacity for	Sam-Agudu et.	10.1016/j.aogh.2	Western Africa, capacity-building, financial support,

Publication Title	Author (s) (Year of publication)	DOI	Keyword Map
Global Health Research in West Africa	al. (2017)	016.10.011	global health, research
An ethics-based approach to global health research part 1: Building partnerships in global health	Seo et. al. (2020)	10.1016/j.sapharm.2020.08.022	Global health research Research partnership Ethical dilemmas Research agenda Challenges of global health partnerships Research collaboration Best practice
An Ethics-based approach to Global Health Research Part 3: Emphasis on Partnership Funding	Drame et. al. (2020)	10.1016/j.sapharm.2020.05.004	Global health research Funding Health care ethics Ethical dilemmas Career development grants Program development research
Collaborative health research partnerships: a survey of researcher, and knowledge-user attitudes, and perceptions	Sibbald, Kang, & Graham (2019)	10.1186/s12961-019-0485-3	Integrated knowledge translation, Funded research, Grants, Partnerships
Creating Sustainable Collaborations for Implementation Science: The Case of the NIH-PEPFAR PMTCT Implementation Science Alliance	Sturke et. al. (2016)	10.1097/QAI.0000000000001065	HIV/AIDS, Implementation science, PMTCT, PEPFAR
A synthesis of implementation science frameworks, and application to global health gaps	Dintrans et. al. (2019)	10.1186/s41256-019-0115-1	Implementation science frameworks, Global health gaps

Appendix E Keyword Translation Table for Search Strategy

Ovid Medline	Embase	CINAHL	Scopus	Cochrane
Concept 1: A community of collaborating researchers **Controlled vocabulary:** 1. Research Personnel 2. Academies, and Institutes **Keywords and Phrases:** 1. Communities of practice 2. Research networks 3. Research institutes 4. Research collaboration* 5. Universities 6. Knowledge Exchange 5. Think Tank*	**Concept 1:** A community of collaborating researchers **Controlled vocabulary:** 1. Implementation scientist 2. University **Keywords and Phrases:** 1. Communities of practice 2. Research networks 3. Research institutes 4. Research collaboration* 5. Universities 6. Knowledge Exchange 5. Think Tank*	**Concept 1:** A community of collaborating researchers **Controlled vocabulary:** 1. Research personnel 2. Colleges, and universities **Keywords and Phrases:** 1. Communities of practice 2. Research networks 3. Research institutes 4. Research collaboration* 5. Universities 6. Knowledge Exchange 5. Think Tank*	**Concept 1:** A community of collaborating researchers **Controlled vocabulary:** 1. Research Personnel 2. Academies, and Institutes 4. Implementation scientist 5. University 6. Colleges, and universities **Keywords and Phrases:** 1. Communities of practice 2. Research networks 3. Research institutes 4. Research collaboration* 5. Universities 6. Knowledge Exchange 5. Think Tank*	**Concept 1:** A community of collaborating researchers **Controlled vocabulary:** 1. Research Personnel 2. Academies, and Institutes **Keywords and Phrases:** 1. Communities of practice 2. Research networks 3. Research institutes 4. Research collaboration* 5. Universities 6. Knowledge Exchange 5. Think Tank*
Concept 2: Integrated Knowledge Translation (IKT) **Controlled vocabulary:** 1. Translational science, biomedical 2. Biomedical research 3. Health Services Research 4. Knowledge management 5. Diffusion of Innovation 6. Implementation Science 7. Operations Research 8. Community-Based Participatory Research 9. Evaluation Studies 10. Public Health Systems Research	**Concept 2:** Integrated Knowledge Translation (IKT) **Controlled vocabulary:** 1. translational research 2. translational medicine 3. health services research 4. knowledge management 5. "diffusion of innovation" 6. implementation science 7. evidence-based medicine 8. participatory research 9. evaluation study 10.Public Health Systems Research 11.Evidence-Based	**Concept 2:** Integrated Knowledge Translation (IKT) **Controlled vocabulary:** 1. Translational Medical Research 2. Implementation Science 4. Knowledge management 5. Collaboration 6. Research support 7. Evaluation research 8. Health services research 9. Diffusion of Innovation 10. Implementation Science 11. Action research 12. Medical Practice, Evidence-Based 13. Information systems	**Concept 2:** Integrated Knowledge Translation (IKT) **Controlled vocabulary:** 1. Translational science, biomedical 2. Translational research 3. Translational medicine 4. Health Services Research 3. Knowledge management 4. Diffusion of Innovation 5. Implementation Science 6. Operations Research 7. Participatory research 8. Community-Based Participatory Research 9. Evaluation Studies 10. Public Health Systems	**Concept 2:** Integrated Knowledge Translation (IKT) **Controlled vocabulary:** 1. Translational science, biomedical 2. Biomedical research 3. Health Services Research 4. Knowledge management 5. Diffusion of Innovation 6. Implementation Science 7. Operations Research 8. Community-Based Participatory Research 9. Evaluation Studies 10. Public Health Systems Research 11. Evidence-Based

Ovid Medline	Embase	CINAHL	Scopus	Cochrane
11. Evidence-Based Medicine 12. Decision Making 13. Knowledge 14. Evidence-Based Practice 15. Information Dissemination 16. Information Systems 17. Expert Systems **<u>Keywords, and Phrases:</u>** 1. Integrated Knowledge Translation 2. Knowledge brokers 3. Knowledge brokering 4. Knowledge coproduction 5. Knowledge mobilization 6. Knowledge management 7. Operational research 8. Collaborative research 9. Guideline development 10. Research funding 11. Research evaluation 12. Research impact	Medicine 12.Clinical research 13. Medical research 14. Decision making 15. Evidence based practice 16. information dissemination 17. information system 18. expert system 19. social learning 20. knowledge management 21. funding **<u>Keywords, and Phrases:</u>** 1. Integrated Knowledge Translation 2. Knowledge brokers 2. Knowledge brokering 3. Knowledge coproduction 4. Knowledge mobilization 5. Knowledge management 6. Operational research 7. Collaborative research 8. Guideline development 9. Research funding 10. Research evaluation 11. Research impact	14. Expert systems 15. Decision making **<u>Keywords, and Phrases:</u>** 1. Integrated Knowledge Translation 2. Knowledge brokers 2. Knowledge brokering 3. Knowledge coproduction 4. Knowledge mobilization 5. Knowledge management 6. Operational research 7. Collaborative research 8. Guideline development 9. Research funding 10. Research evaluation 11. Research impact	Research 11. Evidence-Based Medicine 12. Decision Making 13. Knowledge management 14. Evidence-Based Practice 15. Information Dissemination 16. Information Systems 17. Expert Systems 18. Social learning 19. Collaboration 20. Funding 21. Action research **<u>Keywords, and Phrases:</u>** 1. Integrated Knowledge Translation 2. Knowledge brokers 2. Knowledge brokering 3. Knowledge coproduction 4. Knowledge mobilization 5. Knowledge management 6. Operational research 7. Collaborative research 8. Guideline development 9. Research funding 10. Research evaluation 11. Research impact	Medicine 12. Decision Making 13. Knowledge 14. Evidence-Based Practice 15. Information Dissemination 16. Information Systems 17. Expert Systems **<u>Keywords, and Phrases:</u>** 1. Integrated Knowledge Translation 2. Knowledge brokers 2. Knowledge brokering 3. Knowledge coproduction 4. Knowledge mobilization 5. Knowledge management 6. Operational research 7. Collaborative research 8. Guideline development 9. Research funding 10. Research evaluation 11. Research impact
Concept 3: Global health research **<u>Controlled vocabulary:</u>** 1. Translational science, biomedical 2. Biomedical research 3. Health Services Research	**Concept 3:** Global health research **<u>Controlled vocabulary:</u>** 1. Global Health 2. Health equity 3. social justice 4. research ethics 5. population health	**Concept 3:** Global health research **<u>Controlled vocabulary:</u>** 1. World Health 2. Research ethics 3. Racial equality 4. Power 5. social justice	**Concept 3:** Global health research **<u>Controlled vocabulary:</u>** 1. Global Health 2. World Health 3. Health Equity 4. Social Justice 5. research W/3 ethics	**Concept 3:** Global health research **<u>Controlled vocabulary:</u>** 1. Global Health 2. Health Equity 3. Social Justice 4. Ethics 5. Population Health

Ovid Medline	**Embase**	**CINAHL**	**Scopus**	**Cochrane**
4. Knowledge management 5. Diffusion of Innovation 6. Implementation Science 7. Operations Research 8. Community-Based Participatory Research 9. Evaluation Studies 10. Public Health Systems Research 11. Evidence-Based Medicine 12. Decision Making 13. Knowledge 14. Evidence-Based Practice 15. Information Dissemination 16. Information Systems 17. Expert Systems 18. Global Health 19. Health Equity 20. Social Justice 21. Ethics 22. Population Health 23. Public-Private Sector Partnerships 24. International Educational Exchange 25. International Cooperation 26. Sustainable Development 27. HIV Infections 28. COVID-19	6. public private partnerships 7. international cooperation 8. sustainable development 10. Human immunodeficiency virus infection 11. coronavirus disease 2019 12. development aid 13. capacity building 14. sustainable development goal	6. population health 7. human immunodeficiency virus 8. COVID-19	6. Population Health 7. Public-Private Sector Partnerships 8. International Educational Exchange 9. International Cooperation 10. Sustainable Development 11. HIV Infections 12. COVID-19 13. development aid 14. capacity building 15. Racial equality 16. Power	6. Public-Private Sector Partnerships 7. International Educational Exchange 8. International Cooperation 9. Sustainable Development 10. HIV Infections 11. COVID-19
Keywords and Phrases: 1. Global Health Research 2. Global Health Research	**Keywords and Phrases:** 1. Global Health Research 2. Global Health Research	**Keywords and Phrases:** 1. Global Health Research 2. Global Health Research	**Keywords and Phrases:** 1. Global Health Research 2. Global Health Research	**Keywords and Phrases:** 1. Global Health Research 2. Global Health Research

Ovid Medline	Embase	CINAHL	Scopus	Cochrane
Partner(ships) 3. Global Health Equity 4. Global Health Ethics 5. Power Dynamics 6. Research Partnership Principles 7. Development cooperation 8. Institutional capacity strengthening 9. Sustainable Development Goals 10. Public Private Partnerships 11. North-South Collaborations 12. South-South Collaborations	Partner(ships) 3. Global Health Equity 4. Global Health Ethics 5. Power Dynamics 6. Research Partnership Principles 7. Development cooperation 8. Institutional capacity strengthening 9. Sustainable Development Goals 10. Public Private Partnerships 11. North-South Collaborations 12. South-South Collaborations	Partner(ships) 3. Global Health Equity 4. Global Health Ethics 5. Power Dynamics 6. Research Partnership Principles 7. Development cooperation 8. Institutional capacity strengthening 9. Sustainable Development Goals 10. Public Private Partnerships 11. North-South Collaborations 12. South-South Collaborations	Partner(ships) 3. Global Health Equity 4. Global Health Ethics 5. Power Dynamics 6. Research Partnership Principles 7. Development cooperation 8. Institutional capacity strengthening 9. Sustainable Development Goals 10. Public Private Partnerships 11. North-South Collaborations 12. South-South Collaborations	Partner(ships) 3. Global Health Equity 4. Global Health Ethics 5. Power Dynamics 6. Research Partnership Principles 7. Development cooperation 8. Institutional capacity strengthening 9. Sustainable Development Goals 10. Public Private Partnerships 11. North-South Collaborations 12. South-South Collaborations
Concept 4: Geographical focus (Sub-Saharan African) **<u>Controlled vocabulary:</u>** 1. Africa South of the Sahara 2. Africa 3. South Africa 4. Africa, Western 5. Africa, Southern 6. Africa, Eastern 7. Africa, Central 8. Developing Countries 9. Resource-Limited Settings **<u>Keywords and Phrases:</u>** 1. Low Income Countries	**Concept 4:** Geographical focus (Sub-Saharan African) **<u>Controlled vocabulary:</u>** 1. Africa 2. Africa South of the Sahara 3. South Africa 4. Central Africa 5. developing country 6. low-income country **<u>Keywords and Phrases:</u>** 1. Low Income Countries	**Concept 4:** Geographical focus (Sub-Saharan African) **<u>Controlled vocabulary:</u>** 1. Low and Middle-Income Countries 2. Africa 3. Africa South of the Sahara 4. Africa, Western 5. Africa, Central 6. Africa, Southern 7. Africa, Eastern 8. South Africa **<u>Keywords and Phrases:</u>** 1. Low Income Countries	**Concept 4:** Geographical focus (Sub-Saharan African) **<u>Controlled vocabulary:</u>** 1. Low- and middle-income countries 2. Africa 3. Africa South of the Sahara 4. South Africa 5. Africa, Western 6. Africa, Southern 7. Africa, Eastern 8. Africa, Central 9. Developing Countries 10. Resource-Limited Settings **<u>Keywords and Phrases:</u>** 1. Low Income Countries	**Concept 4:** Geographical focus (Sub-Saharan African) **<u>Controlled vocabulary:</u>** 1. Africa South of the Sahara 2. Africa 3. South Africa 4. Africa, Western 5. Africa, Southern 6. Africa, Eastern 7. Africa, Central 8. Developing Countries 9. Resource-Limited Settings **<u>Keywords and Phrases:</u>** 1. Low Income Countries

Ovid Medline	**Embase**	**CINAHL**	**Scopus**	**Cochrane**
2. Low Income Country 3. LMIC(s) 4. Global South	2. Low Income Country 3. LMIC(s) 4. Global South	2. Low Income Country 3. LMIC(s) 4. Global South	2. Low Income Country 3. LMIC(s) 4. Global South	2. Low Income Country 3. LMIC(s) 4. Global South

Appendix F Database Search Strategy Tracker

Database Provider	Database name	Search String	Date of most recent search	Number of publications found
Ovid	Medline	1 Integrated Knowledge Translation.mp. 37 2 Knowledge brokering.mp. 120 3 Knowledge Co-production.mp. 79 4 Knowledge Mobilization.mp. 181 5 Knowledge management.mp. 1763 6 Implementation Science.mp. 5826 7 Operational research.mp. 1556 8 Collaborative research.mp. 4026 9 Guid* development.mp. 5628 10 (Research adj3 funding).mp. [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word] 198 11 (Research adj3 evaluation).mp. [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word] 20221 12 (Research adj3 impact).mp. [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word] 8122 13 Health Services Research.mp. or exp Health Services Research/ 192892 14 Knowledge Management/ec, st [Economics, Standards] 33 15 exp Translational Science, Biomedical/ 276 16 Diffusion of Innovation.mp. or exp "Diffusion of Innovation"/ 21969 17 exp Implementation Science/ 1276 18 Operations Research.mp. or Operations Research/ 2250 19 Community-Based Participatory Research.mp. or Community-Based Participatory Research/ 7626 20 Evaluation Studies.mp. or exp Evaluation Study/ 386411 21 Public Health Systems Research.mp. or Public Health Systems Research/ 123	2023/08/17	87

Database Provider	Database name	Search String	Date of most recent search	Number of publications found
		22 Evidence-Based Medicine.mp. or exp Evidence-Based Medicine/ 88175 23 Information Dissemination.mp. or exp Information Dissemination/ 20544 24 exp Decision Making/ or Decision Making.mp. 395522 25 Information Systems.mp. or exp Information Systems/ 294410 26 exp Expert Systems/ or Expert Systems.mp. 4230 27 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 1365530 28 Global Health Research.mp. 577 29 Global Health Research Partner*.mp. 27 30 Research Partner*.mp. 1722 31 Global Health Equity.mp. 155 32 Global Health Ethic*.mp. 55 33 Population Health.mp. 17284 34 Power Dynamics.mp. 990 35 (Partnership adj3 Principles).mp. [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word] 72 36 International cooperation.mp. 48347 37 Development cooperation.mp. 178 38 Institutional capacity strengthening.mp. 9 39 Sustainable Development Goals.mp. 5290 40 Global Health.mp. or exp Global Health/ 85714 41 Health Equity.mp. or exp Health Equity/ 10085 42 Social Justice.mp. or exp Social Justice/ 16512 43 Health Status Disparities.mp. or exp Health Status Disparities/ 20074 44 Socioeconomic Factors.mp. or exp Socioeconomic Factors/ 516840 45 exp Ethics/ 155770 46 exp Population Health/ 40772 47 exp Public-Private Sector Partnerships/ or Public-Private Sector Partnerships.mp. 2510 48 International Educational Exchange.mp. or exp International Educational Exchange/ 3597 49 exp International Cooperation/ 157684 50 exp Sustainable Development/ 2913 51 HIV Infections.mp. or exp HIV Infections/ 317087		

Database Provider	Database name	Search String	Date of most recent search	Number of publications found
		52 COVID-19.mp. or exp COVID-19/ 351895 53 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 1547966 54 Communities of practice.mp. 921 55 (Research adj3 institutes).mp. [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word] 2998 56 (Research adj3 networks).mp. [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word] 2653 57 Research collaboratives.mp. 51 58 Universit*.mp. 500383 59 (Knowledge adj3 Exchange).mp. [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word] 1753 60 "Think Tank*".mp. 772 61 Research Personnel.mp. or exp Research Personnel/ 20488 62 exp Universities/ 52306 63 (Academies and Institutes).mp. [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word] 17772 64 exp Biomedical Research/ 297284 65 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63 or 64 818321 66 exp "Africa South of the Sahara"/ or Africa South of the Saharan.mp. 258289 67 africa.mp. or exp Africa, Western/ or exp Africa, Central/ or exp Africa/ or exp South Africa/ or exp Africa, Eastern/ or exp Africa, Southern/ 383092 68 Developing Countries.mp. or exp Developing Countries/ 139668 69 Resource-Limited Settings.mp. or exp Resource-Limited Settings/ 7156 70 Low Income countries.mp. 8846		

Database Provider	Database name	Search String	Date of most recent search	Number of publications found
		71 low income country.mp. 1250 72 LMIC*.mp. 10465 73 66 or 67 or 68 or 69 or 70 or 71 or 72 503398 74 27 and 53 and 65 and 73 3474 75 limit 74 to yr="2015 -Current" 963 76 limit 75 to english language 87		
Ovid	Embase	1.Exp 'implementation scientist'/ or 'implementation scientist':ti,ab,de or Exp 'medical research'/ or 'medical research':ti,ab,de or Exp 'university'/ or 'universit*':ti,ab,de or 'Communit* of practice':ti,ab,de or 'research network*':ti,ab,de or 'Research institute*':ti,ab,de or 'Research collaborat*':ti,ab,de or 'Knowledge Exchange':ti,ab,de or 'think tank*':ti,ab,de 2.Exp 'translational research'/ or 'translational research':ti,ab,de or Exp 'translational medicine'/ or 'translational medicine':ti,ab,de or Exp 'health services research'/ or 'health services research':ti,ab,de or Exp 'knowledge management'/ or 'knowledge management':ti,ab,de or Exp 'diffusion of innovation'/ or 'diffusion of innovation':ti,ab,de or Exp 'implementation science'/ or 'implementation science':ti,ab,de or Exp 'evidence based medicine'/ or 'exp evidence based medicine':ti,ab,de or Exp 'participatory research'/ or 'participatory research':ti,ab,de or Exp 'evaluation study'/ or 'evaluation study':ti,ab,de or Exp 'public health systems research'/ or 'Public Health Systems Research':ti,ab,de or Exp 'Evidence-Based Medicine'/ or 'evidence based medicine':ti,ab,de or Exp 'Clinical research'/ or 'clinical research':ti,ab,de or Exp 'Decision making'/ or 'decision making':ti,ab,de or 'knowledge'/ or 'Knowledge':ti,ab,de or Exp 'evidence based practice'/ or 'evidence based practice':ti,ab,de or Exp 'information dissemination'/ or 'information dissemination':ti,ab,de or Exp 'information system'/ or 'information system':ti,ab,de or Exp 'expert system'/ or 'expert system':ti,ab,de or Exp 'social learning'/ or 'social learning':ti,ab,de or Exp 'knowledge management'/ or 'knowledge management':ti,ab,de or 'funding'/ or 'funding':ti,ab,de or 'Knowledge broker' or 'Knowledge brokers' or 'Knowledge brokering' or 'brokering of Knowledge' or 'Knowledge Coproduction' or 'Coproduction of Knowledge' or 'Knowledge Mobilization' or ' Mobilization of Knowledge' or 'Knowledge management' or 'management of Knowledge' or 'Operations research' or 'Operational research' or 'Collaborative research' or 'research Collaboration' or 'Research funding' or 'funding of Research' or 'funding for Research' or 'Research evaluation' or 'evaluation of Research' or 'Research impact' or 'impact of Research' or 'Integrated Knowledge Translation' 3.'global health'/ or 'Global Health':ti,ab,de or 'health equity'/ or 'Health equity':ti,ab,de or 'social justice'/ or 'social justice':ti,ab,de or 'research ethics'/ or 'research ethics':ti,ab,de or	2023/08/23	389

Database Provider	Database name	Search String	Date of most recent search	Number of publications found
		'population health'/ or 'population health':ti,ab,de or 'public-private partnership'/ or 'public private partnerships':ti,ab,de or 'international cooperation'/ or 'international cooperation':ti,ab,de or 'sustainable development'/ or 'sustainable development':ti,ab,de or 'Human immunodeficiency virus infection'/ or 'Human immunodeficiency virus infection':ti,ab,de or 'coronavirus disease 2019'/ or 'coronavirus disease 2019':ti,ab,de or 'development aid'/ or 'development aid':ti,ab,de or 'capacity building':ti,ab,de or 'capacity building'/ or 'sustainable development goal'/ or 'sustainable development goal':ti,ab,de or 'partner for Research' or 'partners for Research' or 'partnerships for Research' or 'partnership for Research' or 'Research Partner' or 'Research Partners' or 'Research Partnership' or 'Research Partnerships' or 'Global Health Research' or 'global Health Research Partnership' or 'global Health Research Partnerships' or 'Global Health Equity' or 'Global Health Ethics' or 'Power Dynamics' or 'Partnership Principle' or 'Partnership Principles' or 'Principle of Partnership' or 'Principles of Partnership' or 'Development cooperation' or 'Institutional capacity strengthening' or 'sustainable Development Goal' or 'sustainable Development Goal' or 'international Educational Exchange' 4.'Africa'/ or 'Africa south of the Sahara'/ or 'Africa South of the Sahara':ti,ab,de or 'South Africa'/ or 'South Africa':ti,ab,de or 'Central Africa'/ or 'Central Africa':ti,ab,de or 'developing country'/ or 'developing country':ti,ab,de or 'low income country'/ or 'low income country':ti,ab,de 'Low Income Countries':ti,ab,de or 'lmic':ti,ab,de or 'global south':ti.ab,de		
EBSCOHost	CINAHL	S137 S79 AND S102 AND S126 AND S136 S136 (S127 OR S128 OR S129 OR S130 OR S131 OR S132 OR S133 OR S134 OR S135) S135 developing countries S134 "global south" S133 (MH "Africa, Eastern+") OR "Africa, Eastern" S132 (MH "Africa, Southern+") OR "Africa, Southern" OR (MH "South Africa") S131 (MH "Africa, Central+") OR "Africa, Central" S130 (MH "Africa, Western+") OR "Africa, Western" S129 (MH "Africa South of the Sahara+") OR "Africa South of the Sahara" S128 (MH "Africa+") OR "Africa" S127 (MH "Low and Middle Income Countries") OR "Low and Middle Income Countries" S126 S103 OR S104 OR S105 OR S106 OR S107 OR S108 OR S109 OR S110 OR S111 OR S112 OR S113 OR S114 OR S115 OR S116 OR S117 OR S118 OR S119 OR S120 OR S121 OR S122 OR S123 OR S124 OR S125 S125 "capacity building" S124 "sustainable development"	2023/08/20	289

Database Provider	Database name	Search String	Date of most recent search	Number of publications found
		S123 "international cooperation" S122 "international education exchange" S121 international education exchange S120 public private partnership* or ppp S119 sustainable development goals or sdg or sdgs or agenda S118 "institutional capacity strengthening" S117 "development cooperation" S116 partnership N2 principles S115 power N2 dynamics S114 "Global Health ethics" S113 "Global Health equity" S112 "Global Health Research partner*" S111 "Global Health Research" S110 research partner* S109 (MH "COVID-19") OR "COVID-19" S108 "human immunodeficiency virus" S107 (MH "Population Health") OR "population health" S106 (MH "Power+") OR "power" S105 (MH "Racial Equality") OR "racial equality" S104 (MH "Research Ethics+") OR "research ethics" S103 (MM "World Health") OR "world health" S102 S80 OR S81 OR S82 OR S83 OR S84 OR S85 OR S86 OR S87 OR S88 OR S89 OR S90 OR S91 OR S92 OR S93 OR S94 OR S95 OR S96 OR S97 OR S98 OR S99 OR S100 OR S101 S101 Information N2 Dissemination S100 Research N2 impact S99 Research N2 evaluation S98 Research N2 funding S97 "guideline development" S96 "Knowledge n2 Coproduction" S95 ""Knowledge broker*"" S94 (MH "Translational Medical Research") OR "Integrated Knowledge Translation" S93 (MH "Decision Making+") OR "Decision making" S92 (MH "Expert Systems") OR "Expert systems" S91 (MH "Information Systems+") OR "Information systems" S90 (MH "Medical Practice, Evidence-Based") OR "Medical Practice, Evidence-Based" S89 (MH "Action Research") OR "Action research"		

Database Provider	Database name	Search String	Date of most recent search	Number of publications found
		S88 (MM "Implementation Science") OR "Implementation Science" S87 (MH "Diffusion of Innovation+") OR "Diffusion of Innovation" S86 (MH "Health Services Research+") OR "Health services research" S85 (MH "Evaluation Research+") OR "evaluation research" S84 (MH "Research Support+") OR "research support" S83 (MH "Collaboration") OR "collaboration" S82 (MH "Knowledge Management+") OR "Knowledge management" S81 (MM "Implementation Science") OR "Implementation Science" S80 (MM "Translational Medical Research") OR "Translational Medical Research" S79 S71 OR S72 OR S73 OR S74 OR S75 OR S76 OR S77 OR S78 S78 (MH "Colleges and Universities+") S77 "knowledge exchange" S76 "universities" S75 "Research collaboration*" S74 "Research institutes" S73 "Research networks" S72 ""Communities of practice"" S71 (MH "Research Personnel+") OR "Research personnel" S70 s69 Limiters - Clinical Queries: Review - Best Balance, Qualitative - Best Balance S69 s68 Limiters - English Language S68 S67 Limiters - Published Date: 20150101-20231231 S67 S9 AND S32 AND S56 AND S66 S66 (S57 OR S58 OR S59 OR S60 OR S61 OR S62 OR S63 OR S64 OR S65) 141,955 S65 developing countries 32,773 S64 "global south" 6,832 S63 (MH "Africa, Eastern+") OR "Africa, Eastern" 26,553 S62 (MH "Africa, Southern+") OR "Africa, Southern" OR (MH "South Africa") 31,209 S61 (MH "Africa, Central+") OR "Africa, Central" 3,533 S60 (MH "Africa, Western+") OR "Africa, Western" 20,417 S59 (MH "Africa South of the Sahara+") OR "Africa South of the Sahara" 82,560 S58 (MH "Africa+") OR "Africa" 109,100 S57 (MH "Low and Middle Income Countries") OR "Low and Middle Income Countries" 17,033 S56 S33 OR S34 OR S35 OR S36 OR S37 OR S38 OR S39 OR S40 OR S41 OR S42 OR S43 OR S44 OR S45 OR S46 OR S47 OR S48 OR S49 OR S50 OR S51 OR S52 OR S53 OR S54 OR S55		

Database Provider	Database name	Search String	Date of most recent search	Number of publications found
		376,723 S55 "capacity building" 3,165 S54 "sustainable development" 3,085 S53 "international cooperation" 7,242 S52 "international education exchange" 4,724 S51 international education exchange 23 S50 public private partnership* or ppp 1,853 S49 sustainable development goals or sdg or sdgs or agenda 2030 2,561 S48 "institutional capacity strengthening" 3 S47 "development cooperation" 59 S46 partnership N2 principles 81 S45 power N2 dynamics 1,020 S44 "Global Health ethics" 26 S43 "Global Health equity" 71 S42 "Global Health Research partner*" 23 S41 "Global Health Research" 320 S40 research partner* 4,566 S39 (MH "COVID-19") OR "COVID-19" 129,395 S38 "human immunodeficiency virus" 21,850 S37 (MH "Population Health") OR "population health" 10,520 S36 (MH "Power+") OR "power" 113,946 S35 (MH "Racial Equality") OR "racial equality" 457 S34 (MH "Research Ethics+") OR "research ethics" 26,159 S33 (MM "World Health") OR "world health" 69,697 S32 S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21 OR S22 OR S23 OR S24 OR S25 OR S26 OR S27 OR S28 OR S29 OR S30 OR S31 1,355,464 S31 Information N2 Dissemination 1,475 S30 Research N2 impact 3,921 S29 Research N2 evaluation 357,521 S28 Research N2 funding 3,058 S27 "guideline development" 1,860 S26 "Knowledge n2 Coproduction" 79 S25 ""Knowledge broker*"" 269 S24 (MH "Translational Medical Research") OR "Integrated Knowledge Translation"		

Database Provider	Database name	Search String	Date of most recent search	Number of publications found
		S23 (MH "Decision Making+") OR "Decision making" S22 (MH "Expert Systems") OR "Expert systems" S21 (MH "Information Systems+") OR "Information systems" S20 (MH "Medical Practice, Evidence-Based") OR "Medical Practice, Evidence-Based" S19 (MH "Action Research") OR "Action research" S18 (MM "Implementation Science") OR "Implementation Science" S17 (MH "Diffusion of Innovation+") OR "Diffusion of Innovation" S16 (MH "Health Services Research+") OR "Health services research" S15 (MH "Evaluation Research+") OR "evaluation research" S14 (MH "Research Support+") OR "research support" S13 (MH "Collaboration") OR "collaboration" S12 (MH "Knowledge Management+") OR "Knowledge management" S11 (MM "Implementation Science") OR "Implementation Science" S10 (MM "Translational Medical Research") OR "Translational Medical Research" S9 S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 S8 (MH "Colleges and Universities+") S7 "knowledge exchange" S6 "universities" S5 "Research collaboration*" S4 "Research institutes" S3 "Research networks" S2 ""Communities of practice"" S1 (MH "Research Personnel+") OR "Research personnel"		
Elsevier	Scopus	(TITLE-ABS-KEY({low , and middle income countries} OR {resource limited settings} OR {africa south of the sahara} OR "africa" OR "south africa" OR "southern africa" OR "west africa" OR "east africa" OR "central africa" OR "developing country" OR "global south")) , AND ({Research Personnel} OR {Knowledge Exchange} OR {Academies , and Institutes} OR {Colleges , and universities} OR {Implementation scientist} OR {Implementation scientists} OR {Community of practice} or {Community of practice} or {Think Tank} or {Think Tanks} or {Research networks} OR {Research institutes} or {Research network} OR {Research institute} OR {Research collaborative} or {Research collaboratives}) , AND ({integrated knowledge translation} OR {ikt} OR {participatory research} OR {community-based participatory research} OR {research evaluation} OR {evaluation studies} OR {translational research} OR {translational medicine} OR {health services research} OR {information systems} OR {expert systems} OR {social learning} OR {knowledge management} OR {diffusion of innovation} OR {implementation science} OR {evidence-based medicine} OR {decision making} OR {knowledge	2023/08/23	226

Database Provider	Database name	Search String	Date of most recent search	Number of publications found
		management} OR {evidence-based practice} OR {guideline development} OR {biomedical translational science} OR {public health systems research} OR {information dissemination} OR {action research} OR "operation* research" OR "knowledge w/2 broker*" OR "knowledge w/2 co?production" OR "knowledge w/2 mobilization" OR "operation* research" OR "collaborati* w/2 research" OR "research w/2 funding" OR "research w/2 evaluation" OR "research w/2 impact") , AND ({global health} OR {world health} OR {health equity} OR {social justice} OR {population health} OR {public private partnerships} OR {development cooperation} OR {institutional capacity strengthening} OR {institutional capacity development} OR {sustainable development goals} OR {international cooperation} OR {sustainable development} OR {development aid} OR {capacity building} OR {racial equality} OR {global health research} OR {global health equity} OR {international educational exchange} OR {malaria} or {hiv} OR {covid-19} OR {power dynamic} OR {public private partnership} OR "public private sector partnership*" OR "research partner*" OR "global health ethic*" OR "research w/2 ethics") , AND (LIMIT-TO (PUBYEAR,2023) OR LIMIT-TO (PUBYEAR,2022) OR LIMIT-TO (PUBYEAR,2021) OR LIMIT-TO (PUBYEAR,2020) OR LIMIT-TO (PUBYEAR,2019) OR LIMIT-TO (PUBYEAR,2018) OR LIMIT-TO (PUBYEAR,2017) OR LIMIT-TO (PUBYEAR,2016) OR LIMIT-TO (PUBYEAR,2015)) , AND (LIMIT-TO (EXACTKEYWORD,"Systematic Review") OR LIMIT-TO (EXACTKEYWORD,"Practice Guideline") OR LIMIT-TO (EXACTKEYWORD,"Qualitative Research") OR LIMIT-TO (EXACTKEYWORD,"Interview")) , AND (LIMIT-TO (EXACTKEYWORD,"Africa") OR LIMIT-TO (EXACTKEYWORD,"Africa South Of The Sahara") OR LIMIT-TO (EXACTKEYWORD,"Sub-Saharan Africa"))		
Cochrane	Cochrane Library	#1 [mh "Research Personnel"] or [mh "Academies , and Institutes"] or [mh "Implementation scientist"] or [mh "Implementation scientists"] or [mh University] or [mh "Colleges , and universities"] 2119 #2 ((Communit* NEXT ("of practice")) OR (Research NEXT (network* OR institut* OR collaborat*)) OR (Universit*) OR (Knowledge Exchange) OR (Think NEXT (Tank*))):ti,ab,kw (Word variations have been searched) 69380 #3 #1 OR #2 70010 #4 [mh "Biomedical research"] OR [mh "Health Services Research"] OR [mh "Knowledge management"] or [mh "Health Services Research"] or [mh "Diffusion of Innovation"] OR [mh "Implementation Science"] OR [mh "Operations Research"] or [mh "Community-Based Participatory Research"] or [mh "Evaluation Studies"] or [mh "Public Health Systems Research"] OR [mh "Evidence-Based Medicine"] OR [mh "Decision Making"] or [mh Knowledge] or [mh "Evidence-Based Practice"] or [mh "Information	2023/08/20	7

Database Provider	Database name	Search String	Date of most recent search	Number of publications found
		Dissemination"] OR [mh "Information Systems"] OR [mh "Expert Systems"] 32352 #5 ((Integrated Knowledge Translation) or (Knowledge NEAR (broke* or Coproduction or co-production or Mobilization or management)) or ((Operation* OR Collaborating or collaboration) NEXT research) or ((Guidelin*) NEXT/2 (development)) or (Research NEXT/3 (funding or evaluation or impact))):ti,ab,kw 4271 #6 #4 or #5 36396 #7 [mh "Global Health"] or [mh "Health Equity"] or [mh "Social Justice"] or [mh Ethics] or [mh "Population Health"] or [mh "Public-Private Sector Partnerships"] or [mh "International Educational Exchange"] or [mh "International Cooperation"] or [mh "Sustainable Development"] or [mh "HIV Infections"] or [mh "COVID-19"] 24821 #8 ((Global Health) NEAR (Research or Equity or Ethics)) or (Power Dynamics) or ((Partnership) NEAR Principle*) or (Development cooperation) or (Institutional capacity strengthening) or ((Sustainable Development) NEXT (Goal*)) or ((Public Private) NEXT (Partnership*)) or ((North-South) NEXT (Collaborat* or Partnership*)) or ((South-South) or (Collaborat* or Partnership*)) 65216 #9 #7 or #8 87489 #10 [mh " Low , and middle income countries"] OR [mh Africa] OR [mh " Africa South of the Sahara"] or [mh "Africa, Southern"] or [mh "Africa, Western"] or [mh "Africa, Eastern"] OR [mh "Africa, Central"] OR [mh "Developing countries"] or [mh " Resource-Limited Settings"] 12121 #11 #3 , AND #6 , AND 11 , AND #10 with Cochrane Library publication date Between Jan 2015 , and Jan 2023 7		
			TOTAL	1011

Appendix G Data Extraction Form

S/No	Extraction Headers	Sample/Guidance
	Study Characteristics	
1	What is the title of the study/paper?	Enter the title of the publication
2	When was the study/paper published?	Enter the year of publication.
3	How many authors contributed to the paper?	This will help estimate the overall geographic affiliations/influences of the study team's host institutions (when responses to the subsequent questions are assessed).
4	With which country is the lead author affiliated (by primary institution)?	Enter the country with which the first author is affiliated through their primary institution. In the case of multiple affiliations, enter the first institution.
5	Based on the frequency of its occurrence, which geographic affiliations are most prominent among the different affiliations of the authors' host institutions?	This will also be calculated after all the affiliations have been recorded and estimated per paper and for the entire pool of papers. If the primary affiliation is a multi-lateral or regional agency (e.g. WHO or AU), enter name of multi-lateral agency as country affiliation. NB: only the first affiliation will be reported in cases where the author has multiple affiliations. Report using the schema below. TABLE, three columns: S/No, Geographic affiliation of authors' host institution, Frequency
6	The study/paper was conducted in which country(ies)?	Multiple choices allowed; use other if there were sites from outside LMICs (NB: non-African but within LMIC sites goes against exclusion criteria)
7	What type of funder supported the study/paper if funding sources were stated?	A single selection is expected. The focus is on the level of operation and geographic affiliation of the primary funder; therefore, skip any funders apart from the first name and report using the schema below. If the funder is affiliated with a country, the country's name can be entered under "other." 1. No funding source or funding sources not reported 2. Global multi-lateral agency (WHO, UN, etc.) 3. Regional multi-lateral agency - non-African (WHO Afro, AU, etc.) 4. Regional multi-lateral agency - African (SADC, WAHO, etc.) 5. Government (Country) affiliated 6. Academic 7. Non-profit organization 8. Private foundation/individual 9. Other
	Methods	
8	What was the research method used in this study/paper?	A single selection is expected. 1. Quantitative 2. Qualitative 3. Mixed method
9	What was(were) the research question(s) for the study?	Enter "Not stated" if the research question(s) was/were not explicitly stated in the paper.

S/No	Extraction Headers	Sample/Guidance
10	What were the research objectives for the study?	Enter "Not stated" if the research objective(s) was/were not explicitly stated in the paper.
11	What was the research topic of interest or the subject area of the study/paper?	Enter a phrase or description to indicate the aspect of global health research that was the paper's primary focus.
	Thematic Analysis	
	Evidence of KT application and impact in the study/paper	
12	What was the specific knowledge translation (KT) approach or strategy examined by this study/paper?	State name or briefly describe the specific knowledge translation (KT) approach or strategy that was the focal point of the study
	Study Outcomes or Findings	
13	What factors were reported to have influenced the study outcomes or findings? Note if they were facilitators or barriers.	If no facilitators or "positive driving factors") Skip this entry, or barriers ("negative driving factors") were reported. Report using the schema below: TABLE, three columns: S/No, factors that influenced KT outcomes, factor rating (facilitator/barrier)
14	If the study reported on the involvement of the Sub-Saharan African researchers/partners, state their participation in each of the following by entering Yes/No/Not Reported:	If no knowledge co-creation activities were reported, skip this entry. Report using the schema below: TABLE, 2 columns: Type of knowledge co-creation activity, Sub-Saharan African researcher participated (Yes/No/Not Reported) 1. Conceptualization & planning (including research question formulation) 2. Recruitment (of facilities, enumerators, or participants) 3. Data collection, analysis and interpretation of results 4. Reporting, dissemination and utilization of results
15	Was a KT evaluation conducted in this study (Yes/No)	Enter Yes or No in response

Appendix H Definition Table for Major Study Characteristics Extracted from Systematically Selected Articles

S/No	Study Characteristics	Definition
1	Study Title	Refers to the official title of the study as published
2	Year of Publication	The year the study was published, indicating the time frame of the research findings
3	Type of Study	Categorization of the study's methodological approach: qualitative, mixed methods, or quantitative.
4	Country of Affiliation – First Authors	The home country of the institution with which the first authors are affiliated.
5	Countries in which the Study was Implemented	Countries where the research was conducted, indicating the study's geographical focus.
6	Organizations Funding Studies - Types of organization	Types of organizations that funded the studies, indicating whether the funders were government institutions, academic institutions, regional global health coordinating agencies or non-profit/non-governmental organizations
7	Organizations Funding Studies – country of affiliation of organization	Locations of operational headquarters of the funding organizations, indicating, geographically, the source of financial support.
8	Subject of the Study	The main global health topics addressed in the studies, such as malaria, non-communicable diseases, etc.
9	KT Theory, Model or Framework Investigated	The specific knowledge translation frameworks or models explored in the studies.

Curriculum Vitae

Olawale Fadare

EDUCATION

- Masters in Health Information Science (MHIS). 2021 – 2024.

Faculty of Information & Media Studies/Health Sciences,
Western University, Canada.

- Bachelor of Medicine, Bachelor of Surgery (MB; BS). 1996 – 2005.

College of Medicine, University College Hospital Ibadan.
University of Ibadan, Nigeria.

AWARDS, GRANTS, AND SCHOLARSHIPS

- Eugenia Canas Award for Health Equity, University of Western Ontario, $1000. 2023.
- Community Development Commendation, National Youth Service Corps. 2008.
- Shell Petroleum Development Company Undergraduate Scholar. 1996 – 2002.

RESEARCH CONTRIBUTIONS

1. PUBLICATIONS

Referred Papers

- Fadare, O, Yakubu, T, Emerenini, F; Dare, B; Ijaiya, M, Ogundare, Y; Atuma, E; Brickson, K; Strachan, M; Curran, K; Fayorsey, R Sustaining Early Infant Diagnosis of HIV During Coronavirus Disease 2019 Pandemic, The Pediatric Infectious Disease Journal: December 2021 - Volume 40 - Issue 12 - p e529-e530 doi: 10.1097/INF.0000000000003306.
- Fadare, O., Menson, W., Olu-Badejo, O., Nta, I., Ilozumba, J., Busari O., Sam-Agudu, N., Oko, J.O., Ezeanolue, E.E. (Apr 2019). Characteristics of a nationwide cohort of Nigerian adolescents living with HIV on Antiretroviral therapy. JAIDS Journal of Acquired Immuno-Deficiency.

Book Chapters

- Bassey, E., Fadare, O., Olayiwola, O. & Effiong, A. (2018). Creating demand for HIV testing and treatment services for children through faith-based organizations: The Caritas Nigeria Experience. Caritas In Veritate Foundation Report http://fciv.org/downloads/wp11-book-web.pdf

Conference Abstracts

- Emerenini F., Fadare O., Fayorsey R., Momoh C. (2021) Optimizing antiretroviral treatment and viral suppression for adolescents and young people living with HIV by implementing Operation Triple Zero (OTZ) in four states in Nigeria. Abstract presentation at International Workshop on HIV Pediatrics 2020.
- Traub A., Grabbe K., Obanubi C., Fayorsey R., Adebanjo A., Fadare O., Firth J. (2020) Expanded index testing and community-based testing modalities in Nigeria are effective in identifying children living with HIV. Abstract presentation at International Workshop on HIV Pediatrics 2020 (virtual conference).
- Oliveras E., Strachan M., Ijaiya M., Dare B., Emerenini F., Fadare O., Yakubu T., Immanuel T., Makadi S., Anyanwu P., Olowu A., Ogundare Y., Atuma E., Obanubi C., Curran K., Fayorsey R. (Nov 2020) Antiretroviral Drug Optimization and Viral Suppression Amongst Children and Adolescents Living with HIV in four States in Nigeria. Oral presentation at International Workshop on HIV Pediatrics 2020 (virtual conference).
- Tony-Monye I., Fadare O., Esin S., Odo J., Terwase J., Nwosu D., Olayiwola O., Enegela J., Effiong A., Oko J. (May, 2020) Mortality Reviews and Verbal Autopsies – Love To Have Or Need To Have For Better Patient Outcomes? Abstract presentation at 14th INTEREST Conference. May, 2020. (virtual conference).
- Tony-Monye I., Fadare O., Balogun K., Esin S., Olayiwola O., Enegela J., Effiong A., Oko J. (Dec, 2019) Are the Patients Happy? Findings from A Patient Satisfaction Survey of Psycho-Social Influencers in A Large HIV Program in Nigeria, Abstract presentation at 20th ICASA NTEREST Conference. Kigali, Rwanda.
- Tony-Monye I, Fadare O, Esin S, Odo J, Terwase J, Nwosu D, Olayiwola O, Enegela J, Effiong A, Oko J (May, 2020) Effects of Dissatisfaction on Patient Retention – A 12 Month Cohort Analysis of Respondents from A Patient Satisfaction Survey, Abstract presentation at 14th INTEREST Conference. May, 2020. (virtual conference).

- Fadare O., Okonkwo O., Enejoh V., Olanrewaju O., Ilozumba J., Effiong A., Oko. J. (2019). Are Integrated Approaches for Delivering Reproductive Health Services to Key Populations Feasible in Settings of Stigma and Criminalization? Lessons from A HIV Project in Nigeria. Abstract presentation at 13th INTEREST Conference. May, 2019. Accra, Ghana.
- Akpu, M., Fadare, O., & Mamudu R. (2011). Sustainable Economic Empowerment of PLHIVs - The Success of Support Groups in North Central Nigeria. Abstract Presentation at 6th IAS Conference on HIV Pathogenesis, Treatment and Prevention. July, 2011. Rome, Italy.

2. PRESENTATIONS (INVITED SPEAKER/PANELIST)

- To present on Differentiated Service Delivery for People Displaced by Violence & Emergencies in Northern Nigeria at 4th Annual Meeting for advancing Coverage, Quality, and Impact of HIV services (CQUIN) Program, December 2020.
- To present Caritas global experience with community innovation, technical and HIV epidemic control at 20th ICASA, December 2019. Kigali, Rwanda.
- To present the Nigeria experience at the Review Meeting for the Galvanizing Religious Leaders for Accelerated Identification & Linkage to Pediatric ART (GRAIL) Project for Nigeria and Democratic Republic of Congo. February 2019. Kinshasa, Democratic Republic of Congo.
- To present "Can Faith-Based Organizations Boost Demand Creation for HIV Testing in Children? The Experience of Caritas Nigeria & Caritas Congo" at the High-level Dialogue to Assess Progress and Intensify Commitment to Scaling Up Diagnosis and Treatment of Pediatric HIV. December 2018. Rome, Italy.
- To present "Congregational Approach to PMTCT (The Baby Shower Framework): The Caritas Nigeria Experience" at the International Conference on AIDS & STIs in Africa (ICASA). December 2017. Abidjan, Cote D'Ivoire.

KNOWLEDGE TRANSLATION

Curriculum Development

- Western University and University of Manitoba - Global Skills Opportunity (GSO) Equity Diversity and Inclusion Decolonization and Indigeneity (EDIDI) Online Certificate Program; 2023/2023.
- Adaptation of LINGOS/HUMENTUM Project Management for Development Professionals (PMD Pro) Training Curriculum for development (NGO) workers, health workers and government officials in Nigeria.
- Development of Training Curriculum for HIV Anti-Stigma Messaging and HIV Risk Profiling for Clergy and Religious Leaders for the Galvanizing Religious Leaders for Accelerated Identification and Linkage to Pediatric ART (GRAIL) project.

Guidelines and Policy Development

- Operational Manual for Differentiated Service Delivery Models for HIV Care and Treatment in Nigeria. December 2020.
- Integrated National Guidelines for HIV Prevention, Treatment and Care. Contributor. May 2020.
- Caritas Nigeria Organizational Monitoring & Evaluation Policy and Monitoring & Evaluation Strategic Documents for HIV Programs. August 2018.
- 2017 Mentorship Guide for PMTCT Option B+ Service Delivery in Nigeria. July 2017.
- Country Brief & Strategic Planning Document for Nigeria on Early Diagnosis & Treatment for HIV-Positive Children: Strengthening Engagement of Faith-Based Organizations. June 2017.
- 2014 Integrated National Guidelines for HIV Prevention, Treatment and Care. Contributor. May 2014.
- Development of the National Patient Management and Monitoring Tools for the Nigeria HIV Response. Participant. May 2010.

PROFESSIONAL EXPERIENCE

- Project Manager (EHR). Health & Wellness, Western University, Canada. Aug. 2022 – Present.
- Technical Director. ICAP Global Health (Nigeria). Nov. 2019 – Aug. 2021.
- Senior Technical Advisor -Outcomes & Evaluation Caritas Nigeria. Sep. 2017 – Nov. 2019.
- Caritas Nigeria. Senior Technical Advisor (Clinical Services). Oct. 2013 – Sep. 2017.
- Caritas Nigeria. Senior Clinical Specialist. Jul. 2013 – Oct. 2013.

- Family Health International (FHI360). Senior Program Officer. Jan. 2012 – Jun. 2013.
- Clinical Services Specialist. Management Sciences for Health (MSH). Aug. 2009 – Dec. 2011.
- Site Coordinator. Managament Sciences for Health (MSH). May 2009 – Aug. 2009.
- Facility Focal Person. ICAP Columbia University (Nigeria). Mar. 2008 – May 2009.
- Medical Officer. Enugu State Health Management Board. Mar. 2007 – Feb. 2008.
- House Officer. Jos University Teaching Hospital, Nigeria. Oct. 2005 – Sep. 2006.

ACADEMIC SERVICE AND COMMITTEE WORK

Peer Reviewer for Journal manuscripts

- FACETS - ScholarOne Manuscripts. 2017- present

COMMUNITY SERVICE

- CANADA: Centre for Research on Health Equity & Social Inclusion. Aug. 2024 – Present).
- CANADA: Global Health Equity Hub, Western University: 2022/2023.
- CANADA: Africa Institute, Western University: EDIDI Certificate Program. 2022/2023.
- CANADA: Nigeria Assoc. of London and Area (NALA): 2021/2022.
- CANADA: Learning it Together (LiT), London, Ontario. 2021/2022.
- NIGERIA: CARITAS/GRAIL Free Medical Outreach for Children. 2018 - 20199.
- NIGERIA: Caritas Nigeria Cerebro-Spinal Meningitis Outreach Team. 2017.
- NIGERIA: Volunteer Improvement Project (VIP), Vandeikya, Benue State. 2008/2009.
- NIGERIA: Action Group on Adolescent Health, Ibadan, Oyo State. 2004/2005.

SKILLS

- Language Skills: English (Fluent - Band 8 – IELTS General); French (Basic, non-certified).
- Information Technology: advanced skills in MS Office suite (Word, Excel, PowerPoint and Outlook); proficient in STATA, QGIS Geo-Spatial mapping and visualization software, DHIS 2.0, Open MRS Electronic Medical Records (EMR); basic skills in SQL and Python; proficient in employee scheduling software.