

Leveraging evidence for effective pandemic preparedness and response: Insights from the east African community

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ABSTRACT

This paper examines lessons learned from the COVID-19 pandemic and suggests ways to improve the utilization of evidence for pandemic preparedness and response. By facilitating collaboration between policymakers, experts from the East African Community Partner States, and conducting rapid evidence synthesis, a co-creation process known as 'EAC policy labs' was employed. The initial response to the pandemic primarily relied on epidemiological evidence, which overlooked broader vulnerabilities and social inequalities. Social science research, while abundant, often confined to academic discussions, lacked a clear connection to policy decisions due to a lack of well-defined social metrics. Evidence platforms emerged to consolidate multidisciplinary evidence, but their impact on policy decisions was limited to academic discussions. To enhance evidence uptake during future pandemics, options should include understanding policymakers' specific evidence needs, strengthening evidence hubs' functionality, and reducing risks associated with incorporating evidence into policymaking.

Keywords:

COVID-19, pandemic, evidence use, vulnerabilities, preparedness, response, policy, platforms, EAC Community.

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1. INTRODUCTION

The COVID-19 pandemic has had a devastating impact on people worldwide, ranking among the most severe pandemics in recent history. Its effects have been particularly challenging for Africa, a continent already grappling with numerous societal issues, including climate change. The pandemic not only acted as a global shock but also exacerbated existing societal challenges in Africa. Two key factors contributed to the heightened socio-economic implications of COVID-19: the compounding effects of existing shocks such as climate change and the limited understanding of the virus and its interaction within vulnerable African systems (Atela et al., 2022). Africa is considered highly vulnerable to climate change due to its strong economic dependence on climate-sensitive activities and products (UNECA, 2013). For instance, rain-fed agriculture, which makes up 95% of the continent's agriculture, highlights this vulnerability (AFDB, 2019). Despite contributing minimally to climate change itself, Africa faces a disproportionate burden of its consequences. This is because of the continent's low levels of preparedness for both climate change and pandemics, with weak systems that may struggle to withstand emerging shocks that threaten public health, health infrastructure, and economies (AFDB, 2019). In the East African Community (EAC), COVID-19 came on the backdrop of historical experiences with other disease outbreaks like Marburg, Ebola, and Rift Valley Fever (RVF), highlighting the need for better pandemic preparedness in the region (Gesami, 2022). These outbreaks have occurred either within the EAC partner countries or in close proximity to them, adding to the burden of existing diseases such as HIV/AIDS, malaria, tuberculosis, as well as other non-infectious illnesses such as cancer, diabetes, and cardiovascular conditions. For example, 40% of all the mortalities in the EAC are attributed to non-infectious diseases (Kraef et al., 2020). While the partner countries have faced significant disease burdens with high mortality rates due to weak and under-resourced health systems, the scale and elusiveness of COVID-19 presented a unique and unprecedented challenge. To protect their citizens from the pandemic, most countries within the EAC region took extraordinary measures, leveraging their regional partnerships to mitigate the spread of the virus (Gesami, 2022). However, this response was further complicated by the presence of vulnerable populations, widespread poverty, and existing inequalities within these countries. Inadequate resources and mechanisms for a coordinated response, along with limited preparedness for such complex public health events, added to the already heavy burden (Gesami, 2022). Evidence-informed decision-making is the use of technical knowledge produced by researchers to inform policy or practice

(USAID, 2021). It goes beyond the generated data to address how the information can best be communicated for use. In the complex socio-economic context of East Africa, evidence is vital for understanding the connection between emerging shocks, such as climate change and social inequalities, and existing vulnerabilities. This understanding enables the development of integrated and synergistic response mechanisms, leading to a more resilient, equitable, and sustainable future (United Nations, 2020). However, many East African countries had inadequate data on the characterization and manifestation of COVID-19 that would create an opportunity for various scientific interventions. Given the uncertain nature and far-reaching impacts of the pandemic, there was an urgent need for evidence and its use to manage the crisis and plan for recovery. This situation presented an opportunity to learn and identify ways to effectively harness evidence/knowledge to address emerging challenges, including unforeseen ones.

The COVID-19 pandemic has taught us a lot about how to share and use knowledge effectively. (Taylor et al., 2022). According to El-Jardaliet al., (2020), in emergency situations like COVID-19, the impact of knowledge of people's behaviors and reactions which shapes outcomes of pandemic response has to be recognized. For countries in East Africa and across Africa, building strong systems to share and use information is key to being prepared for future outbreaks. This shift would help the region move from reactive knowledge systems during emergencies to more integrated evidence-informed risk preparedness. This study explores how knowledge or evidence was shared and used in East African countries. It uses workshops, interviews, and research summaries to find different ways knowledge was transferred, what worked well, and what could be improved. This paper suggests ways to create a system for sharing knowledge that can help address different development issues in East Africa. The paper focuses on East Africa because of the region's ongoing struggles with infectious diseases, even though COVID-19 affected health and economies worldwide.

2. CONCEPTUAL LITERATURE REVIEW

Data is essential for effectively preparing for and responding to pandemics. It offers valuable insights that inform current and future actions, while also promoting collaboration among various groups involved in managing health crises (World Health Organization, 2022). At present, a significant challenge persists: the imperative to bridge the gap between educational research and policy implementation to enhance efficacy. However, a structured framework delineating the process for addressing this challenge is conspicuously absent. This was apparent

during the COVID-19 crisis that exacerbated the gendered impacts of climate change given that women were already struggling with issues such as land rights and access to other natural resources like water and energy (Yeboah and Yaya, 2023). Moreover, the decisions that were made by governments to contain the virus further aggravated the already hostile environment (Chiweshe and Hove 2023). Recent academic literature has explored various ways to link research, policy, and practice (Alazmi and Alazmi 2023; McKee, 2019; Haas and Kwaak, 2017). This is particularly important given that the global healthcare community is advocating for ambitious universal health coverage goals, leading to a surge of evidence-informed health policymaking to ensure improved performance of health systems (Damba et al., 2022).

Sub-Saharan Africa has made significant efforts to promote evidence-informed health policymaking. However, the translation of research findings into policy remains a formidable challenge, marked by several barriers (Damba et al., 2022). To achieve evidence-based decision-making, the barriers have to be overcome. According to Straus et al. (2009), decision-makers commonly face challenges related to inadequate knowledge management skills and infrastructure. These challenges include limited access to research findings, insufficient time to review and understand the many published articles, and difficulties in applying evidence. Other barriers to effectively converting knowledge into action, as highlighted by Alazmi and Alazmi (2023), include low-quality research, research not tailored to specific contexts, and limited practitioner access to research ideas, among others. Further, McKee (2019) emphasizes the significance of inaccessible research evidence. This inaccessibility often leads to policies and practices being implemented without consideration of existing evidence or even in direct opposition to it. Epidemiological evidence equally played a pivotal role following the outbreak of COVID-19, particularly in situations requiring urgent decisions due to limited available data (Iranzo and Perez-Gonzalez, 2021; Zeka et al., 2020). This evidence was used to predict the virus's pathogenesis, estimate the impact of health interventions, and assess potential side effects. Models served as the primary framework for guiding political decisions, especially during the initial stages of the pandemic. However, despite their significant role, inaccurate information also spread through social media, leading to what the World Health Organization (WHO) referred to as an 'infodemic' (Hammes et al., 2021).

In the context of pandemic preparedness, evidence-informed decision-making involves the process of actively acquiring and understanding the information and data available, and then applying it to address specific societal challenges. This includes conducting research to generate the necessary evidence, as well as translating research findings to make them understandable and applicable in practical situations (Shankar et al., 2019). In many efforts to support the use of evidence, the primary focus has been on translating existing research to inform policy, a process often referred to as Knowledge Translation (KT). In simple terms, knowledge translation is a dynamic and iterative process that involves synthesizing, disseminating, exchanging, and ethically applying knowledge to improve various aspects of people's lives, including the improvement of healthcare services (Murunga et al., 2020). Initially, knowledge translation was predominantly applied in the healthcare sector to collaborate with health communities and enhance healthcare systems (Ward et al., 2009). Over time, its scope has expanded to other domains, including social, ecological, and economic systems. Various authors have developed distinct knowledge translation concepts based on their project experiences, each focusing on specific components using information. For instance, the Social Cognitive Theory of Bandura and the Normalization Process Theory are useful in explaining how knowledge is generated (Striffler et al., 2018). Conversely, frameworks like Graham's Knowledge-to-Action Framework, Meyers Quality Implementation Framework, and Damschroder's Consolidated Framework for Implementation Research are designed to address the implementation efforts required to apply the generated knowledge (see annex 1 for an analysis of various knowledge translation frameworks). Some existing frameworks for sharing knowledge assume people will use it to change behavior in a specific way, based on past research. But new ideas are emerging, like the Knowledge-to-Action framework by Graham et al, which involves people in both creating and sharing the knowledge, making it more adaptable to different situations. These frameworks anticipate that implementing research findings will result in behavioral change without fully considering the underlying context in which this change is expected to occur.

Recent reviews of the knowledge translation process have highlighted significant challenges especially in the application of certain frameworks in the Global South. Experts such Georgalakis and Siregar (2023) and Atela et al. (2022) have argued that there is a limited understanding and application of knowledge translation in these regions. Many frameworks tend to oversimplify the process, assuming it to be

straightforward and detached from complexities, interests, and local realities of the context. One concern raised in studies by Atela et al. (2022) and others is that the application of knowledge translation often overlooks the vital process of knowledge generation. In many cases, the primary focus is on translating and "pushing" existing evidence into the policy space. This approach reinforces top-down mechanisms and may not effectively address the real evidence needs on the ground (Combaz et al., 2023). For knowledge to be truly helpful, it needs to be easy to understand and used by many people. This means turning research findings into practical steps that can make a difference. However, as pointed out by McKee (2019), in many countries, the structure of academic careers results in individuals who have obtained advanced degrees not pursuing academic paths. Instead, they often transition into careers entirely unrelated to their years of study. Consequently, the skills and knowledge they acquire are often applied in different ways, whether or not they become scientists (McKee, 2019). This situation results in a considerable group of individuals who possess the capacity to comprehend complex research but do not currently apply those skills, even though they coexist with policymakers and practitioners whose work could greatly benefit from the wealth of research being published, provided it is effectively translated. Simultaneously, the challenge of ensuring that the evidence we rely on is reliable and relevant for diverse contexts and populations persists (Ward et al., 2009; McKee, 2019).

Traditionally, knowledge translation models have placed significant emphasis on scientific evidence as the primary source of information (Grimshaw et al., 2012; Sudsawad, 2007; Rushmer et al., 2018). However, an ongoing discussion surrounds the importance of participatory design and empowering community voices in decision-making and interventions (Hadane et al., 2019; Brunton et al., 2017). This debate raises questions about what should be considered as evidence in the intersection of science and policy. Gluckman (2016) has argued that although scientific evidence is undoubtedly vital for policymaking, it should not be the sole form of knowledge considered. In African communities, for example, a wide array of valuable forms of knowledge informs people's actions. Recognizing and understanding this diversity of knowledge is essential when working to enhance the science-policy interface in Africa. How we explain and share research findings (knowledge translation) can influence how evidence is used in policy and action. A study by Atela et al. (2020) explored different ways to connect science and policy, offering options for different situations.

One approach is the "science and power" pathway, where individuals from the scientific and research community act as intermediaries between science, technology, innovation, and policymaking (Wyborn et al., 2017). This approach views knowledge as a form of power, but it carries the risk of bias, as scientists may lean towards either policy or pure science perspectives. Nevertheless, this approach can be effective in designing targeted solutions for specific societal issues (Doubleday and Wilsdon, 2013). The "expert" approach, where researchers present scientific solutions for policymakers, has limitations. Employed in the East African region during the pandemic, it risks overlooking crucial factors like intervention consequences and the value of indigenous knowledge. As COVID-19 demonstrated, its impact transcended healthcare (Gluckman et al., 2021; Koetz, 2011). It rippled through education, the labor market, environment, and even housing (Schnitzler et al., 2021), highlighting the need to assess interventions beyond their immediate health effects. The "pragmatic approach" to using research suggests that scientists and policymakers should work together, especially during emergencies, to find solutions that work. This model places value on input from both sectors and concentrates on developing practical interventions (UNESCO, 2011). It is considered a pluralistic approach that acknowledges the significance of local and tacit knowledge, enabling communities to contribute to the development of effective interventions (Soomai, 2017). A contextual framework should be developed for the EAC to enhance future pandemics preparedness. Such a contextual framework should build on a strategic participatory process to account for the perspectives of vulnerable groups, like those already experiencing the effects of climate change and further impacted by the pandemic measures (Striffler et al., 2018). Consequently, Georgalakis and Siregar (2023) recommend the need to adopt a holistic approach to develop knowledge translation frameworks in the global south that can be institutionalized.

3. MATERIALS AND METHODS

This paper draws on the findings of a two-year project, 'Re-addressing equity through evidence-driven response to COVID-19 in East Africa,' funded by the Canadian International Development Research Centre (IDRC) and implemented by the Africa Research and Impact Network (ARIN). The data collection process was conducted through:

- i. An in-depth desktop systematic literature and evidence synthesis review, which was built upon a collaborative process.

- ii. Two policy labs which involved collaboration between policymakers and experts from the East African Community Partner States to identify challenges and experiences in using data and evidence for informing the response to COVID-19.
- iii. Six key informant interviews with EAC Personnel.

The initial workshop was a policy lab focusing on how to use evidence to make better decisions in COVID-19 recovery (ARIN, 2022a). This workshop brought together the EAC Technical Working Group (TWG) on Infectious Diseases along with experts from various fields, including gender, climate change and public policy in Nairobi, Kenya. The primary aim of the workshop was to identify what kind of evidence was most needed to help with the recovery efforts and how to quickly gather that information. The Technical Working Group was composed of 15 health directorate representatives from various East African countries, including Kenya (n=2), South Sudan (n=3), Uganda (n=2), Rwanda (n=1), Tanzania (n=1), Burundi (n=2), EAC Secretariat (n=4). During the workshop experiences related to COVID-19 from different Partner States were reviewed, and this led to the identification of five evidence priority areas, which were later consolidated into three areas through expert review as follows:

- i. Evidence on the efficacy of policy, institutional and social strategies in the pandemic response and recovery.
- ii. Evidence on COVID -19 implications on aggravating supervening factors such as social inequalities and climate change.
- iii. Evidence on the degree and mechanisms of research uptake in pandemic response and recovery.

After determining which evidence was the most important, they swiftly gathered and analyzed information on those priority areas. This meant reviewing published materials, such as journal articles, and also checked out other types of documents like policy papers, reports, and strategies. Research documents were sourced from various databases, such as the IDRC Website project publications, PubMed, Google Scholar, and Web of Science, covering a wide range of disciplines. Non-academic literature, including policy documents and strategies, were obtained from various government archives, and key points were extracted for analysis. To ensure transparency in our review process, we adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. A final workshop/policy lab was held in February 2023 to review the findings and ensured they matched what policymakers were looking for (ARIN 2023a). They also discussed ways to work together on future research to make it more useful and relevant. To get more details and confirm the information, they interviewed 10 people from East African countries and research groups. Combining interviews and document analysis provided a richer picture of how factors like climate change and equity impacted COVID-19 management. They also explored pathways through which the adoption of evidence bridges the divide between COVID-19 and climate action while pinpointing best practices. The data collected from these diverse sources was analyzed using a method called "grounded theory." This approach helps researchers develop new ideas and theories based on the collected data itself, rather than starting with a preconceived notion. Grounded theory is useful for understanding complex social situations, such as how groups interact during a crisis (Strauss A. et al 1994). It is important to acknowledge that this study primarily focused on collaborating with policymakers from East African countries. This means the perspectives of other important groups, like civil society organizations and researchers, might not have been fully captured.

4. RESULTS

4.1 The Role of Knowledge Translation in COVID-19 Response

Key Informant Interviews revealed that policymakers had limited awareness of existing frameworks to guide in effectively using evidence for the COVID-19 response (KII 2, KII5), despite the availability of several such frameworks in the academic literature (Ward et al., 2009; Sudsawad, 2007). While various translation models are available, their application in the COVID-19 emergency was relatively minimal. There were several reasons behind this observation:

Firstly, it is important to note that many policymakers who took part in this research have not come across these frameworks for applying research findings. Even though policymakers play a vital role in turning research into real policies, they often do not have the skills or knowledge to do it effectively (Damba et al., 2022). This can cause delays in using research to make decisions. None of the countries in the study used specific guidelines for turning research into action, but they depended on advice from the World Health Organization and their own usual practices. As KII 4 from the EAC Partner States aptly put it during the key informant interviews, "We are not guided by any specific approach in making

decisions. We mainly depend on guidance from our institutions based on the needs at a particular time." (KII 4)

Furthermore, two of our informants revealed that some of the knowledge translation frameworks have been introduced to policymakers through various platforms, such as evidence workshops and conferences (KII1, KII4). However, in many instances, these discussions do not lead to follow-up actions that ensure policymakers receive the necessary support to comprehend and implement the provided guidelines (KII1, KII4). Compounding this challenge is the fact that policymakers are often not actively engaged in the development of these frameworks. Supporting these observations, Alazmi and Alazmi (2023) found in their study that there are limited systematic guidelines available that clarify how researchers and policymakers can effectively collaborate.

As KII5 and KII6 pointed out, "Knowledge Translation Frameworks are primarily research-oriented. They are typically designed to cater to academic interests and objectives, which is why they often find their place in publications and conferences. Policymakers are not inherently part of these frameworks, which makes them difficult to understand and apply."

The sentiments align with the concerns raised by Suswadam (2007), who highlighted that most existing frameworks are ill-suited to the specific context at hand and frequently fail to adequately address its complexities. These frameworks primarily driven by researchers with limited participatory design tend to lack institutionalization and can sometimes yield negative outcomes for users, including a sense of disempowerment. In the light of these challenges, Georgalakis and Siregar (2023) recommend that researchers from the Global South should develop their own knowledge translation approaches and strategies tailored to their unique contexts. The experiences within the EAC underscores the significance of context-specific knowledge translation frameworks and collaborative approaches to ensure effective translation of knowledge into actionable outcomes. With the absence of clear knowledge guidelines to steer decision-making, the EAC Partner States promptly implemented top-down models of evidence use, resulting into relatively adverse social outcomes. However, this experience has provided valuable lessons for developing appropriate knowledge translation frameworks, equipping us to better prepare for future pandemics.

A study by Gluckman et al. (2021) found that most East African countries relied heavily on the expert model to decide how to use research findings. This model centered on flattening the infection curve in alignment with the guidance of the WHO. Its primary objective was to reinforce national health systems while awaiting the approved vaccines (Thiong'o et al., 2022). Although this approach was deemed necessary and valid during the initial stages of the COVID-19 outbreak, its limitations and adverse consequences became apparent as the pandemic unfolded. These measures, on their own, did not offer a comprehensive perspective on the full scope of COVID-19's impact particularly within the context of pre-existing vulnerabilities stemming from climate change and various social inequalities, including gender imbalances. A significant problem with the expert model was that expert opinions did not always match with the needs of communities. This often led to ineffective implementation and in some cases exacerbated existing vulnerabilities. Policymakers came to recognize the importance of involving communities in process of collaboratively developing research and evidence allowing for a more accurate assessment of their requirements. This approach has potential to yield pro-poor and integrated solutions that consider other factors like underlying vulnerabilities, poverty, and inequalities as emphasized in the ARIN-EAC Validation Report (2023). For many people who were already struggling, the economic and social effects of the virus were worse than the immediate health risks. In fact, research by Atela et al. (2022) showed that relying on experts only created a double problem for communities. Not only were they left out of decisions, but these decisions sometimes made things harder for them, especially when they were already facing challenges like climate change, poverty, and inequality. Top of Form

4.2 Types of Evidence Used to Inform COVID-19 Response

In accordance with Article 118 of the East African Community Treaty, partner states are required to take collective action to control and prevent the spread of communicable diseases that may jeopardize the well-being of residents within the region. However, due to the emergency of the COVID-19 pandemic, many African nations, including members of the EAC, struggled to get all the information they needed about the virus (Olufadewa et al., 2021). During the validation workshop, various types of evidence that was used in response to the COVID-19 pandemic were highlighted. As part of the policy response, the EAC region implemented a COVID-19 Response Plan, developed under the guidance of the EAC ad hoc Regional Coordination Committee (EARCC) (as detailed in ARIN 2023 Report). This comprehensive plan covered all key sectors, such as health, productivity, customs and trade, migration, and security. Its primary

objective was to coordinate efforts in response to the pandemic, with the aim of curbing infection rates, and reducing risks to health systems, including healthcare workforce and institutions responsible for managing the virus. Moreover, the policy took steps to identify and initiate several studies, including a regional survey aimed at managing infections across EAC borders, a Rapid Assessment of Point of Entry Capacity (RAPC), and an Assessment of Designated COVID-19 Testing in the EAC Partner States. The purpose of these assessments was to gain a comprehensive understanding of the prevailing circumstances and pinpoint opportunities for proactive measures and policy decisions.

Drawing from the WHO guidelines, EAC Partner States, much like many other countries, heavily depended on scientific evidence, including data and statistics, to acquire better understanding of the epidemiological situation of the virus (Harrington & Ngira, 2021). This evidence influenced various measures, such as implementing lockdowns, testing, contact tracing, and vaccination campaigns (WHO, 2022; see Table 1 for a summary of policy actions). Epidemiological evidence played a pivotal role in informing decisions related to clinical understanding, drug development, vaccine trials, and surveillance. An analysis of COVID-19 policies in East Africa revealed that more than 77% of these policies were strongly influenced by infection rates (Thiong'o et al., 2022). Governments made substantial investments in their national health laboratories and government-backed testing centers guided by the recommendations from the WHO. For example, as of November 21, 2021, Kenya had reported 255,088 COVID-19 cases, while Uganda had reported 127,589 cases (Thiong'o et al., 2022). Furthermore, countries relied on global infection rate trends provided by the WHO's COVID-19 tracker to benchmark their performance in managing infection rates across different levels. The common assumption associated with this epidemiological evidence was that countries experiencing a decrease in infection rates were likely implementing more effective containment measures. This was often reinforced by pointing to improved clinical outcomes, as exemplified by Rwanda's lower infection rates when compared to Kenya and Uganda (Thiong'o et al., 2022). However, it is important to recognize that these epidemiological metrics did not offer a comprehensive view of COVID-19's impact. They primarily centered on reported cases and mortality, without accounting for the broader effects of underlying vulnerabilities, such as those associated with climate-related factors and social inequalities, including gender disparities.

Table 1: Policy Actions Taken to Control COVID-19 in the EAC and Associated Sources of Evidence

Policy directives	Countries	Rationale/Evidence claim	Reference
Lockdowns	Kenya, Uganda	Lower infection rates	Harrington & Ngira, 2021
Travel bans	Kenya, Uganda, Rwanda, Burundi	Minimize infection rates	EAC, 2020
Vaccination	Kenya, Uganda, Tanzania, Burundi, Rwanda, South Sudan	Control infection rates	Thiong'o et al., 2022
Social distancing	Kenya, Uganda, Rwanda, Burundi, Tanzania	Minimize transmission	EAC, 2020
Closure of social gatherings	Kenya, Uganda, Rwanda, Burundi, Tanzania	Minimize person-to-person contact	Wangari et al., 2021
Dusk to dawn curfews	Kenya, Uganda, Rwanda, Burundi, Tanzania	High infection rates	Wangari et al., 2021
Personal protective equipment	Kenya, Uganda, Rwanda, Burundi, Tanzania	Restrict infection rates	Wangari et al 2021
Comprehensive surveillance and detection systems	Kenya, Uganda, Rwanda, Burundi, Tanzania	To aid in data collection, analysis, and reporting	EAC, 2020
Information sharing	Kenya, Uganda, Rwanda, Burundi, Tanzania	To facilitate a quick response	EAC, 2020

Social science evidence, sponsored by various institutions, donors, and civil society organizations, played a critical role in understanding the societal context in which pandemics like COVID-19 unfold (Clift and Court, 2020). Social science research empowered communities by generating fresh insights for adaptation and progress. For instance, the International

Development Research Centre (IDRC) funded studies analyzing the impact of COVID-19 on female-led enterprises and gender inequalities, culminating in published articles and reports (Makate & Makate, 2022). However, translating these valuable findings into actionable policy changes proved less straightforward. While raising awareness of critical social issues was commendable, questions arose regarding the most effective methods for presenting evidence to policymakers and ensuring its seamless integration into concrete policies and programs (Damba et al., 2022). Based on interviews with informants and representatives of the East African Community Partner States, it has become evident that there is an urgent need to establish clear guidelines on how to measure success. This would help make social science research significant in decision-making. Policymakers often have trouble understanding social science research because it can be complex and involve many different areas of study (ARIN-EAC Validation Report, 2023). The development of social metrics and the identification of best practices can significantly contribute to mitigating uncertainties in the application of social science evidence in responses to pandemics and climate change adaptation initiatives (Chowdhury and Jomo, 2020; Olufadewa et al., 2022). Although various studies underscored the significance of safeguarding vulnerable groups and implementing social safety nets (Clift and Court, 2022; Chowdhury and Jomo, 2020), there remains scarce evidence concerning the most effective methods for delivering social protection to various groups and in different circumstances.

4.3 Evidence Platforms

Various models of science-policy interface were employed by countries in their responses to COVID-19, as highlighted by Atela et al. (2022). Some of these models included components aimed at facilitating the use of relevant and timely evidence in policymaking. To expedite the COVID-19 response, several knowledge transfer platforms were established, including initiatives, networks, knowledge products, and organizations (with specific examples available in Table 2). Numerous evidence platforms and knowledge hubs were established during the pandemic (El-Jardali et al., 2020; Alazmi and Alazmi, 2023), but unfortunately, they were not effectively linked to policymakers (Damba et al., 2022; Zeka et al., 2020). This disconnection significantly limited the potential impact of these platforms in influencing policy decisions and responses. These platforms had a common goal: to serve as intermediaries between science, practical application, policy, and political considerations, with a key mission of ensuring that evidence took center stage in shaping decision-making processes. Their significance was particularly pronounced in low- and middle-income nations, where they provided valuable opportunities for sourcing knowledge and best practices from a range of diverse contexts (El-Jardali et al., 2020). These evidence platforms are typically operated by networks and global entities, with the overarching aim of fostering robust interactions between COVID-19 research and its end-users. Within this paper, we examined several of these platforms and endeavored to identify how they helped countries use research findings.

As much as these platforms hosted a wealth of publications and knowledge products, their primary role seemed to revolve around fostering research dialogues rather than establishing direct links to policy decisions (Straus et al., 2009; McKee, 2019; Zeka et al., 2020). In this study, we observed that while some policymakers were familiar with specific existing platforms, such as the WHO Global Outbreak Alert and Response system, the majority remained unaware of other evidence platforms. Even for familiar platforms, policymakers were not really involved in discussions or working together to develop solutions. They mostly just presented their own plans for fighting COVID-19, rather than having deeper conversations. According to KII 3, some research platforms did attempt to involve policy makers in identifying evidence needs and conducting synthesis as part of knowledge translation efforts (ARIN, 2021). However, this was not always very successful, and usually just led to workshops where they decided which research evidence was a priority. The "Science Engagement to support Evidence Informed Policy Responses to COVID-19 in Africa" project, created by the Africa Academy of Sciences and the Africa Research and Impact Network, is a good example of the challenges faced when trying to connect research and policymaking. In this initiative, researchers collaborated with policymakers from across the continent to identify evidence requirements and subsequently undertook evidence synthesis using the established Cochrane methodology (Pan et al., 2021). However, the process became quite intricate, with some early career researchers encountering difficulties in effectively implementing the Cochrane

¹<https://www.arin-africa.org/2021/04/28/science-engagement-to-support-evidence-informed-policy-responses-to-covid-19-in-africa/> accessed 15/12/2023

methodology (Biesty et al., 2020). The project ended up focusing more on controlling the research process than on true collaboration and engagement between researchers and policymakers.

Table 2: Examples of Platforms Supporting Evidence-Based COVID-19 Responses

Platform	Focus Area	Activities	Achievements
IDS	Social Sciences	Research reviews	Builds knowledge on using research to influence decision-making.
UKCDR	Policy Strategies	Funding tracker	Helped coordinate research funding for COVID-19 and future outbreaks.
AAS/ARIN	Social Sciences	Knowledge sharing	Improved regional collaboration and policymaking based on research and local needs.
IDRC	Social Sciences	Research support	Provides information on COVID-19's impact and response efforts in developing countries.
AfricaRXIV	Mixed (Social & Epidemiological)	Online archive	Stores and shares African research on various topics, including COVID-19.
The Global Health Network	Mixed (Epidemiological & Policy)	Reports	Shares knowledge on COVID-19 diagnosis, outreach, vaccination, and policies.
WHO Global Outbreak Alert and Response Network	Mixed (Epidemiological & Policy)	Guidance & reports	Provides guidance and updates on the pandemic, helping countries control the spread.
Infection Control Africa Network	Epidemiology	Online platform & webinars	Supports healthcare workers in Africa with infection prevention practices for COVID-19.

4.4 Reflecting on some Best Practices on Evidence Uptake in COVID-19

Due to the constraints of project-driven schedules and limited resources, there was insufficient time for continuous engagement with policymakers to thoroughly review and effectively apply the synthesized evidence. This study highlights two critical issues concerning evidence platforms. Firstly, they often operate within methodological boundaries that may not be clearly understood by researchers from the Global South (McKee, 2019). Secondly, they tend to be project-driven and face difficulties in maintaining continuous engagement, which is essential for ensuring substantial collaborative development and a deeper understanding of the evidence and its associated opportunities (Zeka et al., 2020). While many of these platforms had broader regional, continental, or global reach, their connection to the specific country context often remained weak (El-Jardali et al., 2020; McKee, 2019; Alazmi and Alazmi, 2023). This issue was further compounded by ineffective coordination among Partner States. A key informant highlighted the challenges faced by the East African Community countries when it came to aligning their responses to COVID-19, emphasizing, "the EAC was addressing the same issue but responding differently." This lack of coordination posed a significant obstacle to aligning evidence platforms designed at the regional or global level with regionally coordinated actions, ultimately hindering the exchange of knowledge and efforts toward regional integration (Olufadewa et al., 2021).

The EAC Partner States also encountered challenges in accessing accurate information about COVID-19 and disseminating it to the public. This situation created mistrust and hindered efforts to achieve the necessary behavioral changes among the population to combat the virus. A representative from one of the EAC Partner States stated, "initially, there was significant mistrust regarding COVID-19 vaccinations, which significantly influenced people's willingness to get vaccinated. Therefore, there is an urgent need for accurate information and reliable channels of dissemination to convey the importance and effectiveness of vaccines." In evaluating the best practices during the pandemic, EAC policymakers emphasized the importance of recognizing COVID-19 as a multidimensional issue. They stressed the need for a situational analysis to understand existing measures, actions taken by different countries, necessary interventions, and the best data and practices (ARIN-EAC Validation Report, 2023). This analysis led to the development of a comprehensive multi-pandemic response strategy for the region. The approach to addressing COVID-19 has evolved since 2020, and it is no longer solely fixated on numerical figures. Policymakers now recognize it as a complex challenge that requires a systems-oriented perspective. They

emphasize the importance of developing a robust strategy that aligns with the unique context of the EAC region. This strategy should adopt a bottom-up approach in its development, ensuring the support and involvement of all stakeholders in its implementation (ARIN-EAC Validation Report, 2023). Investing in COVID-19 response efforts can generate positive ripple effects, such as promoting gender responsiveness and addressing climate change-related issues, among other benefits (UN Women, 2020). This is particularly significant considering that climate change disproportionately impacts women, disrupting agriculture and food security which are their primary sources of livelihood (WHO, 2014). The pandemic thus has to be viewed beyond its immediate impact while considering its interconnectedness with other societal challenges (AU, 2021). Though some institutional innovations were implemented to tackle the pandemic, some countries eventually reverted to their initial institutional frameworks. Further, the connection between COVID-19 and other issues like climate change has not received adequate attention in policymaking, leading to uncertainty in addressing these interconnected challenges (AU, 2021).

Moreover, while both epidemiological and social science evidence on the impacts of COVID-19 were commissioned, there tended to be a bias toward prioritizing epidemiological evidence with numerical data and metrics (Zeka et al., 2020; Iranzo and Perez-Gonzalez, 2021). The urgency to comprehend and characterize the virus led to rapid research methods and article reviews. However, the swift pace at which these studies were conducted left little room for addressing the drivers, complexity, and consequences of the pandemic (Zeka et al., 2020; Aoko et al., 2023). This emphasis on quantitative data might have overshadowed the significance of incorporating more comprehensive social science evidence to obtain a holistic understanding of the pandemic's effects on communities. Several best practices have emerged regarding the use of evidence throughout the COVID-19 pandemic, particularly in the domains of information coordination and an integrated systems approach. Effective information coordination entails the timely dissemination of evidence, contextualizing that evidence, and nurturing a conducive learning environment (OECD, 2022). Information coordination also encompasses the sharing of lessons learned. These shared lessons are valuable in understanding what strategies were effective, what has the potential to work, and for whom. Despite the constraints in terms of time and resources, governments recognized the importance of drawing insights from successful best practices to effectively respond to the pandemic.

In emergencies like COVID-19, timely and coordinated sharing of evidence is vital for swift decision-making. During the discussions in the second policy lab, participants emphasized the importance of timely and applicable epidemiological evidence, which played a significant role in informing decision-making processes (Aoko et al., 2023). Furthermore, the ability to coordinate and align global evidence with local contextual realities is vital. For example, Rwanda proactively adapted its approaches based on global scientific expertise and the WHO guidelines even before reporting the first cases of COVID-19. This proactive approach contributed significantly in curbing the spread of the virus. However, it is worth noting that certain interventions, such as lockdowns, may have overlooked social implications such as economic disruptions and impacts on the education sector. Thus, there is a need to consider these factors for COVID-19 recovery and building back better (OECD, 2022). Integrated systems play a key role in achieving complementary societal outcomes. They acknowledge that COVID-19 coexists within the backdrop of prevailing challenges and systems, thus necessitating a responsive approach (AFDB, 2022). Rwanda is a good example of a country that was able to fight COVID-19 well because it already had systems in place to deal with other diseases like HIV, malaria, tuberculosis, and Ebola (Nsanziimana et al., 2022). From 2012 to 2014 and again since 2018, Rwanda had faced threats from Ebola outbreaks in neighboring Uganda and the Democratic Republic of Congo. The epidemic revealed the deficiencies that existed in the established institutions that were meant to safeguard the general public. Consequently, Rwanda enacted precautionary measures to inhibit the emergence of the virus. With the adopted strategies, the country exhibited its preparedness to respond to future outbreaks (Louis et al., 2022).

Rwanda learned a lot from dealing with Ebola outbreaks, which helped them fight COVID-19. Regulations and best practices that were implemented guided the responses that were made within the healthcare system during COVID-19 (Louis et al., 2021). By adapting and building upon the preparedness measures initially implemented for Ebola, including temperature screening, sanitation protocols, and robust surveillance systems, Rwanda was able to swiftly adopt evidence-based interventions, including early airport screenings even before detecting the first COVID-19 case. These practices continued after Rwanda confirmed its initial COVID-19 cases, with the implementation of national lockdowns and systematic contact tracing in line with the guidelines provided by the

World Health Organization (WHO) (Nsanzimana et al., 2022; Karim et al., 2021)). Furthermore, Rwanda leveraged its pre-existing mental health system. Its decentralized mental health system was developed in response to the 1994 genocide that led to mental health distress and continues to be used to address the current mental health needs of the population (Louis et al., 2021). While COVID-19 undoubtedly aggravated the mental health of the Rwandese, their past exposure to adversities made them resilient. This resilience is, in part, attributed to the protective factors instilled by their robust mental health system.

Similarly, Uganda's experience in employing the pillar-model incident management system (IMS) to respond to previous disease outbreaks like Ebola, Marburg virus, cholera, and yellow fever among others provided the nation with significant advantage in dealing with COVID-19 (EAC, 2023). The country has been extremely vulnerable to communicable illnesses with epidemic potential. This has further been compounded by its proximity to the Congo basin, pressure on ecosystems due to climate change, and the influx of refugees. Uganda is among the leading recipients of refugees globally. As of 2020, the nation had a refugee population of 1.4 million with a monthly influx of approximately 30,000 refugees (Margini et al., 2020). To address the problems, Uganda employed different approaches to effectively manage and contain cross-border public health crisis. For example, the Public Health Emergency Operations Centre (PHEOC) was instituted in 2013 to assist in the organization, coordination, and management of every evidence-based emergency response efforts in public health (Exemplars, 2023). In the wake of COVID-19, the country officials began to coordinate the pandemic response even before it reported its first case in March 21, 2020 (Sarki et al., 2020). The Uganda's Ministry of Health (MoH) activated its PHEOC as soon as the COVID-19 situation was declared as a global public health emergency by the World Health Organization (WHO) towards the end of January 2020 (Exemplars, 2023; Doyle et al., 2021). Their health system therefore had an emergency response plan (IMS) and a command center (PHEOC) that they had used before. By reviewing past outbreaks and their response to COVID-19, Uganda learned how to use these tools even better to be prepared for future health threats (EAC, 2023). This helped Uganda build a stronger health system that can handle emerging and re-emerging infections. These examples highlight the significance of an integrated, coordinated, and evidence-based approach to managing pandemics like COVID-19. As pandemics grow increasingly complex, multifaceted, and variably perceived, well-coordinated and shared multidisciplinary evidence becomes essential to empower communities to take action that prioritizes collective responses to protect vulnerable populations.

5. DISCUSSION: KEY CONSIDERATIONS IN ENHANCING EVIDENCE UPTAKE

From the experience of managing the COVID-19 pandemic, there is a need to learn from the lessons and improve the use of evidence in response to complex pandemics like COVID-19. Specifically, it is essential to go beyond the mere integration of evidence into policy decisions and instead, reflect on the outcomes resulting from application of this evidence. The COVID-19 experience pinpointed that although epidemiological evidence was instrumental in pandemic management, the resulting outcomes were not inclusive and exacerbated vulnerabilities, especially among marginalized groups. This underscores the importance of considering the broader impacts and ensuring that all sections of society are taken into account in pandemic responses. Therefore, to enhance pandemic preparedness and response, both research and policy communities should reevaluate how they use and apply knowledge. This entails progressing beyond the mere production and packaging of knowledge toward meaningful exchanges and actual implementation of evidence in decision-making and practice. Here are some key considerations:

5.1 Type of Evidence

Policymakers often gravitate towards quantitative data, but it is essential to acknowledge that vulnerable groups affected by COVID-19 and other shocks often reside in informal settlements. These settings lack proper structures and institutional arrangements to provide clear data for decision-making, (Weible et al. 2020). The social contexts in which vulnerable communities live are complex, characterized by multiple stressors and underlying vulnerabilities such as inequality, poverty, and inadequate healthcare systems. Simply relying on numbers to capture the impact of the pandemic fails to account for these complexities (El-Jardali et al., 2020). Consequently, policy decisions based solely on narrow quantitative dimensions may face implementation challenges and can potentially reinforce vulnerabilities, particularly in complex community settings. To make more effective and inclusive decisions, policymakers need multidisciplinary and intersectional evidence that delves into the underlying vulnerabilities and supports socially inclusive decision-making.

5.2 Participatory Design to Support Evidence Prioritization and Demand

This synthesis emphasizes the importance of diverse types of evidence serving various purposes. However, research evidence, both during COVID-19 pandemic and in a broader sense, frequently falls short of aligning with the genuine requirements of policymakers right from the start. Research projects and studies might cater to various interests and might not specifically address high-priority policy needs (McKee, 2019). Consequently, the resulting evidence may not adequately address urgent demands (Chowdhury & Jomo, 2020). Our synthesis also reveals that many studies primarily serve academic purposes in terms of contributing to knowledge but often fall short in influencing policy decisions (McKee, 2019). Even when priority setting is undertaken, it often involves general stakeholder engagement without a comprehensive understanding of the diverse needs of different groups (Zeka et al., 2020; El-Jardali et al., 2020). In the context of COVID-19 response, it is essential to harmonize the priority needs of governments with those of communities, including women and children, to inform targeted scientific interventions. Most existing frameworks often neglect prioritizing research needs and fostering inclusive stakeholder engagement. These limitations impede achieving equitable outcomes and hinder research from addressing the most pressing challenges (Straus et al., 2009)

5.3 The Functionality of Evidence Platforms

Many online platforms have been created to gather evidence from various sources to support in decision-making (El-Jardali et al., 2020; Alazmi and Alazmi, 2023; Damba et al., 2022; Zeka et al., 2020). These platforms make it easier to find information and connect researchers with policymakers. However, the information does not always reach the people who can make decisions. This is because there are few "knowledge brokers" who can explain the research to policymakers in a way they can understand. The current platforms primarily serve as repositories of technical research materials such as journal papers, reports, and blogs, which are often not translated into policy-friendly language (Arnautu and Dagenais, 2021; McKee, 2019). This limitation results in restricted interactions with the policymaking process. While these platforms provide valuable spaces for scientific discussions and identification of knowledge gaps, they are not effectively integrated into the decision-making process. Policymakers should be informed about the presence and accessibility of evidence through these platforms. Establishing connections between these platforms and policy agendas or programs could prove beneficial in exploring their potential and functionality on a larger scale. Moreover, the process of translating evidence from these platforms should be closely linked to policy processes by raising policymakers' awareness about their existence and utility.

5.4 De-risking Evidence and Reducing Uncertainty

Policymakers often prefer clear solutions and might be hesitant to use research that do not guarantee success. However, many research reports assume policymakers will trust them just because they used robust methods (Arnautu and Dagenais, 2021). Our interviews showed that methods rarely guarantee successful outcome in practice. In reality, complexity can sometimes hinder practical implementation. The scope of evidence has to be broadened by identifying situations or case studies where research ideas have been practically successful, while also acknowledging their limitations and strengths if the confidence of policymakers is to be established. As emphasized by the EAC Director General, (KII4) research and evidence generation should ultimately revolve around the communities affected by the issues and flow upward to inform policy implementation.

5.5 Institutionalize Context Specific Knowledge Translation Framework

The study has shown that the EAC currently has inadequate context-specific knowledge translation that can serve as a guiding tool for incorporating evidence into their policy decisions. As a next step in this work, there is a need to continue work with the EAC Secretariat and Partner States and other stakeholders to develop knowledge translation framework that accounts for the needs, priorities, and institutional settings of the region. Such a framework can be institutionalized as part of national pandemic response systems or strategies.

6. CONCLUSION

This paper has shed light on the experiences and opportunities for enhancing the incorporation of evidence in response to unforeseen events in a comprehensive and inclusive manner. It underscores the intricacies of the knowledge integration process and underscores the importance of accounting for various interactions and socioeconomic contexts in which knowledge operates. While there is no universally applicable approach to integrating evidence into decision-making, it necessitates a collaborative effort between policymakers and researchers to discover common ground

through which emerging evidence can inform planning and decision-making. This involves enhancing the collaborative generation of evidence and aligning it with the pertinent requirements of both policy and practice, all while ensuring that marginalized groups do not face further disadvantages in the policy response.

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- <https://www.arin-africa.org/2021/04/28/science-engagement-to-support-evidence-informed-policy-responses-to-covid-19-in-africa/> accessed 15/12/2023
- <https://www.arin-africa.org/wp-content/uploads/2022/02/2nd-EAC-Signed-Report-of-the-TWG-on-Communicable-and-Non-Communicable-Diseases.pdf> accessed 15/12/2023;
- <https://www.arin-africa.org/2023/07/28/re-addressing-equity-through-evidence-driven-covid-19-recovery-planning/> accessed 17/12/2023

ANNEX I.

Interplay between COVID-19, Evidence Use, and Knowledge

Translation Frameworks

Knowledge Translation framework	Strengths	Weaknesses
Bandura's Social Cognitive Theory	This theory describes the flexibility of human behavior. It posits that whenever there is a change in a person's environment it may also lead to change in social behavior. For example, when there was a lockdown during the pandemic fewer people flew because they were not allowed to fly. International travel was largely banned. This theory also provides insights into how people can learn from other contexts to improve their actions.	This model does not predict how everyone might behave during a pandemic crisis but simply provides a predictive guideline for behavioral change. Moreover, there is now consensus that one's environment may not solely be the reason for individual change as there are several other factors that may occur such as instances of mere imitation. It, therefore, underestimated the complexity of human behavior.
Prochaska and DiClemente's Transtheoretical Model of Behavior Change	This model is simple to understand, is backed by extensive research, and can be applied in many situations. The major strength of the Transtheoretical Model is the potential to tailor its constructs to appropriately fit an individual's readiness to begin changing behavior, making individually based interventions applicable at the population level.	The theory ignores the social context in which change occurs. It has no set criteria of how to determine a person's stage of change and assumes that an individual makes logical and coherent plans which is not always the case.
Rosenstock's Health Belief Model	This model borrows from the psychological and behavioral theory with the foundation that the two components of health-related behavior are the desire to avoid illness, or conversely get well if already ill; and, the belief that a specific health action will prevent, or cure, illness. (Hochbaum & Rosenstock, 1952). If a person perceives a threat to their health, is consecutively cued to action, and their perceived benefits outweigh the perceived barriers, then they are likely to undertake the recommended preventive health action.	It does not take into account behaviors that are habitual and thus may inform the decision-making process to accept a recommended action. It does not take into account behaviors that are performed for non-health-related reasons such as social acceptability.
Knowledge-to-Action (KTA) (Graham et al.)	One of the things that makes the Knowledge-to-Action unique is that it begins with research evidence and the need to synthesize and translate that evidence into decision-making processes. It facilitates the use of research knowledge by several stakeholders, such as practitioners, policymakers, patients, and the public.	It does not necessarily take into account the plight of vulnerable and marginalized groups in decision-making and implementation.
Integrated Knowledge Translation	Similar to the Knowledge to action model, the Integrated knowledge translation (IKT) is a model of research co-production, whereby researchers partner with knowledge users throughout the research process and who can use the research recommendations in practice or policy. This Integrated approach is used to improve the relevance and impact of research.	Again, this approach remains limited in ensuring that the voices of marginalized and vulnerable groups are incorporated into decision-making processes.
Community-Based Knowledge Translation Framework	This Knowledge Translation framework allows for the innovative adaptation of existing resources; explores local knowledge and perceptions; empowers people by considering them agents who can investigate their situations. As a result, the community input makes the interventions credible, enhancing their usefulness and implementation.	This model gives the community a voice and ownership of solutions in the case of crises. Whereas it has the potential of giving vulnerable groups a say in what interventions should be put in place, care has to be taken that the interventions taken are backed by credible evidence for decision-making by policymakers.
Meyers Quality Implementation Framework	This involves progressive implementation science and is growing in importance among funders, researchers, and practitioners as an approach to bridging the gap between science and practice.	This framework does not necessarily take into account the plight of vulnerable communities.
Damschroder's Consolidated Framework for Implementation Research	This Consolidated Framework for Implementation Research (CFIR) guides systematic assessment of multilevel implementation contexts to identify factors that might influence intervention implementation and effectiveness.	This framework has the potential of addressing health emergencies that transcend other social sectors as was experienced during the pandemic. However, care needs to be taken to ensure the multilevel implementation involves marginalized communities.

Annex II

Key Informant Interview Participants.

- KII 1- EAC Principal of Health
- KII 2- EAC Principal Environment and Natural Resource Officer
- KII 3- East Africa Health and Research Commission Officer
- KII 4- EAC Director General, Social sectors
- KII 5- Medical Officer- Zanzibar
- KII 6- Medical Clinician Burundi