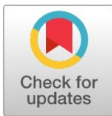

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Health Financing Reforms and Integrated Service Delivery in East Africa: A Systematic Review

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Abstract: The role health reform plays in advancing Universal Health Coverage (UHC) has yet to be addressed adequately across the integrated delivery of services in East Africa. Many countries in the region have begun implementing some health financing reforms, such as national health insurance expansion, community-based health insurance (CBHI), performance-based financing (PBF), and strategic purchasing; however, there is limited evidence available on how these reforms affect coordinated, equitable, or continuous care. The objective of this systematic review was to assess and synthesize evidence regarding the impact of health-financing reforms on integrated service delivery in East Africa. We used the PRISMA 2020 protocol to systematically review the literature on health-financing reforms related to integrated service delivery outcomes in Kenya, Uganda, Tanzania, Rwanda, Ethiopia, Burundi, and South Sudan by searching PubMed, Embase, Scopus, Web of Science, EconLit, and relevant grey literature sources. Randomized controlled trials (RCTs), quasi-experimental studies, observational studies, and qualitative studies were eligible for inclusion in the review if they assessed the relationship between health-financing reform and the outcome of integrated service delivery. Outcome measures were defined as service utilization/coverage, financial protection, primary healthcare (PHC) integration, referral coordination, quality indicators, and equity. Narrative thematic synthesis was used to synthesize results and meta-analysis with random-effects models was performed when deemed appropriate. The results showed that 76 studies fulfilled the inclusion criteria of the review and 24 of these studies were integrated into the quantitative analysis. Overall, insurance expansion and reforms within risk pooling were consistently associated with an increase in service utilization (a pooled odds ratio of 1.38 at a 95% confidence interval of 1.21 to 1.57) and a decrease in catastrophic health expenditures (a pooled relative risk of 0.64 at a 95% confidence interval of 0.52 to 0.79). Overall, the implementing of a strategic purchasing approach to primary healthcare, as well as the use of performance-based financing, were both related to the improvements made in regard to strengthening primary healthcare provision, coordination of referrals and selected quality indicators. Lower levels of complete enrollment, weak purchasing autonomy and fragmentation

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from parallel streams of funding consistently limited the potential for countries to achieve integration. Among the three countries included in this review, Rwanda exhibited the highest levels of integration, while Kenya and Uganda had a higher risk of fragmentation. In conclusion, the health financing reforms implemented in East Africa have generated access to healthcare and protection from financial hardship as well as contributing toward improved integrated service provision when combined with comprehensive risk pooling, strategic purchasing and governance reforms. However, financing alone is not sufficient for achieving sustainable integration; therefore in order to support or develop successful integration of health systems, countries require to consolidate their risk pools, harmonize donor funding support, and strengthen their primary healthcare systems. Therefore, policymakers should emphasize health system alignment in order to successfully translate financing reforms into effective, equitable and integrated health systems to achieve UHC.

Keywords: *Health financing reform, Integrated service delivery, Universal health coverage, Strategic purchasing, National health insurance, Community-based health insurance, Performance-based financing; Financial protection, Primary healthcare strengthening, East Africa.*

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I. INTRODUCTION

UHN (or universal healthcare) has emerged as the priority for global health today. It is defined as helping all people receive a needed health service without experiencing a financial hardship. Financing is one of two key components of any health system according to WHO; thus how a country funds its health system has a direct bearing on the ability to cover services, deliver quality service, be equitable in the distribution of resources and have an efficient delivery system [1, 2]. Therefore, financing reforms are more than just fiscal policies; they are how we structure our health systems. There has been a strong focus on health financing reforms involving the expansion of risk pooling (creating larger groups of people who share the cost of service provision), reducing OOP payments, introducing prepay mechanisms and building stronger strategic purchasing capacity in LMIC's [3, 4]. Evidence increasingly suggests that high levels of OOP payments result in catastrophic health expenditures and increase health sector inequities [5]. Reforms that increase pooled funding/enhanced purchasing practices are therefore likely to result in improved financial protection and greater coordination of service provision [4, 6].

A change to the way healthcare is delivered has come about due to the introduction of the integrated service delivery reform agenda. WHO's definition of integrated service delivery means that clients have access to a continuum of preventive and curative services through coordinated management and delivery of health services across different levels of care [1, 7]. The separate financial mechanisms used to fund healthcare services (especially those that are vertically funded by donors) have resulted in duplication, parallel service structures leading to inefficiencies, and a weakened primary healthcare system in sub-Saharan Africa. Therefore, in order to increase system efficiency and improve continuity of care both through governance and how services are organized; integration aims to align these three areas together. In the past 20 years health system transformation has occurred across East Africa [8]. Countries such as Kenya, Rwanda, Tanzania, Uganda, Ethiopia and Burundi have implemented national health insurance schemes, community-based health insurance (CBHI), results-based financing (RBF) and reforms aimed at strategic purchasing; examples include Rwanda's CBHI expansion which has been widely cited as increasing service use and providing better financial protection against costs associated with receiving care; and Kenya's National Hospital Insurance Fund reform, which is designed to create more comprehensive benefit packages and move towards strategic purchasing. Despite these efforts, fragmentation persists [9]. Multiple funding streams government budgets, donor funding, insurance contributions, and OOP payments often operate in parallel, limiting effective pooling and integrated service organization [10]. Donor dependence remains substantial in several East African countries, influencing vertical program priorities and potentially undermining integrated primary health care systems [11]. Thus, while health financing reforms are expanding across the region, the extent to which they contribute to integrated service delivery remains unclear. There is limited consolidated evidence synthesizing how financing reforms influence coordination, continuity, equity, and quality of care within East African health systems [12, 13]

Rationale

In terms of overall quality of performance, global data have demonstrated that pooled funding and strategic

purchasing can lead to improved performance in health systems; however, there are contextual factors, such as the capacity for governance, fiscal space, political will and institutional design that significantly affect the implementation of reforms. These countries face very similar issues with irrespective on informal employment, constrained tax bases, rural dispersion of populations, and the level of dependence on international assistance, but they have differed in the way they have implemented reforms and the extent to which integrated systems for delivering services have evolved as a result of the reforms.

Research Objective

- What types of health financing reforms have been implemented in East Africa?
- How have these reforms affected integration of health services across levels of care?
- What is the evidence regarding their impact on financial protection and equity?
- What contextual factors influence the success of financing reforms in promoting integrated service delivery?

Previous reviews of UHC progress across the African subcontinent have provided a general summary of the status of countries [14], and some reviews have focused on specific types of financing mechanisms such as PBFs, but there has not been a systematic review to identify the relationship between health financing reform and integrated service delivery outcomes in any part of East Africa. Developing a solid understanding of the relationship between these two factors is essential because if financing reforms do not coincide with redesigning service delivery systems, then financing reform could potentially be used to create or exacerbate fragmentation. Therefore this systematic review fills an important gap in the body of literature regarding the ways and to what extent health financing reform in the East Africa region has affected integrated service delivery outcomes such as continuity of service delivery, strengthening of primary healthcare services, and coordination of referral networks, equity, and financial protection.

Primary Objective	Secondary Objectives
To systematically review and synthesize evidence on the effects of health financing reforms on integrated service delivery in East African countries	1 To categorize the types of health financing reforms implemented in East Africa . 2 To assess the impact of these reforms on financial protection and equity. 3 To evaluate the effects of financing reforms on service quality, efficiency, and coordination. 4 To identify implementation facilitators and barriers affecting integration outcomes.

Table 1 Objectives of this review article

II. METHODOLOGY

This systematic review was conducted in accordance with the PRISMA 2020 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) statement [15]. The protocol was developed prior to study selection and followed internationally accepted standards for systematic reviews in health systems research.

A. *Study Design*

We conducted a systematic review of the literature, both published and grey, on the connection between health reforms and integrated service delivery in East Africa. As per our protocol, we adhered to pre-specified objectives, eligibility criteria, search strategies, selecting studies, extracting data, assessing risks of bias, synthesizing results, etc. Articles were designated as grey literature based on how they were published (i.e: research report instead of traditional article) and how many people were involved in the study were part of our definition for inclusion/exclusion from the systematic review protocol according to PROSPERO requirements where applicable.

B. *Eligibility Criteria*

A modified Population–Intervention–Comparator–Outcome (PICOS) framework was employed to define eligibility criteria. Health systems/populations in Kenya, Uganda, Tanzania, Rwanda, Ethiopia, Burundi and South Sudan were included in the population of interest. All studies conducted at either a national or sub-national level in these countries were eligible. Relevant interventions are health financing reforms, e.g., national health insurance schemes; expansion of social health insurance; community-based health insurance; performance based financing; or results based financing; strategic purchasing

reforms; provider payment reforms (e.g., capitation or case based payments); reforms related to risk pooling; and public financial management reforms affecting the delivery of health services. Comparators were pre-reform conditions, alternative methods of health financing (where applicable) or controls. Studies without explicit comparators were included if they assessed outcomes using either an observational design or qualitative methodology. The primary outcomes were those related to integrating service delivery, including service coordination across levels of care, the functionality of referral systems, continuity of care, strengthening of primary healthcare, integration of vertical program, and coverage of preventive and curative services. The secondary outcomes were related to financial protection, equity (e.g., socioeconomic or geographic disparity), service quality indicators and health system efficiency.

Eligible study designs included randomized controlled trials, quasi-experimental studies, cohort studies, cross-sectional studies, mixed-methods studies, qualitative studies, policy analyses, and relevant implementation research. Commentaries, editorials, and purely descriptive reports without empirical analysis were excluded unless they provided substantial policy evaluation evidence. Only studies published in English were included. No initial restrictions were placed on publication year to capture the evolution of reforms in the region; however, most included studies were published after 2000, reflecting the period of intensified UHC reforms in East Africa.

C. Information Sources and Search Strategy

During the development of the search strategy, we consulted with a specialist in health systems research to ensure that our approach was comprehensive. Five electronic databases were searched (PubMed/MEDLINE, Embase, Scopus, Web of Science, and EconLit). The grey literature was identified through searches for the following organizations and institutions: World Health Organization, World Bank, East African Ministries of Health, and large global initiatives that provide financial support for organizations or countries providing health services. The search terms used to identify relevant articles included keywords and Medical Subject Headings (MeSH) that were related to financing health care (i.e., “health care financing reform,” “national health insurance,” “community-based health insurance,” “strategic purchasing,” “performance-based financing,” “provider payment reform”), integrated service delivery (i.e., “integrated health service delivery,” “integration of services,” “primary care strengthening;” “continuity of care;” “referral systems”), and geographic identifiers (i.e., “East Africa,” “Kenya,” “Uganda,” “Tanzania,” “Rwanda,” “Ethiopia,” “Burundi,” “South Sudan”). Boolean operators (AND/OR) were used as part of the search strategy. Once all search results have been identified, they were exported to reference management software and duplicates were eliminated before any screening of the articles.

D. Study Selection

Study selection was conducted in two stages. First, titles and abstracts were independently screened by two reviewers against the predefined eligibility criteria. Second, full texts of potentially eligible studies were assessed for inclusion. Disagreements between reviewers were resolved through discussion and, where necessary, consultation with a third reviewer. The study selection process was documented using a PRISMA flow diagram, detailing the number of records identified, screened, excluded (with reasons), and included in the final review.

A standardized data extraction form was developed and pilot-tested. Extracted information included:

- Author(s), year of publication, and country
- Study design and methodology
- Type of health financing reform
- Description of the intervention and implementation context
- Comparator (if applicable)
- Outcomes related to integrated service delivery
- Financial protection and equity indicators
- Key findings
- Reported limitations

Data extraction was conducted independently by two reviewers to ensure accuracy and consistency.

E. Risk of Bias and Quality Assessment

The methodological quality and the potential biases of all included studies were evaluated using the appropriate assessment tools based on study design. All randomized controlled trials were appraised using the Cochrane Risk of Bias tool, while non-randomized studies were evaluated using the ROBINS I tool. Finally, qualitative research was assessed with the Critical Appraisal Skills Program (CASP) checklist. All studies were classified as either low, moderate or high risk of bias. Any disagreements in quality assessments were resolved through

consensus decision making. Where possible, the overall certainty of the body of evidence across each outcome domain was evaluated using the GRADE approach.

F. Data Synthesis

Due to variations in study design, reform type and outcome measures, a narrative synthesis approach has been taken primarily. Studies were classified by financing reform type and/or country context. A thematic analysis has been used to identify common themes related to service integration, financial protection, equity, quality and efficiency. Where quantitative data are sufficiently homogeneous with regard to interventions and outcome measures, a meta-analysis was performed using random-effects (RE) models to account for variability between studies. The heterogeneity was quantified by means of the I^2 statistic, with values above 50% signifying substantial heterogeneity. However, due to anticipated diversity in study context and methodology, the pooling of results is approached with caution. There are subgroup analyses planned by country, financing reform type and level of care (i.e., primary versus secondary/tertiary). We also performed sensitivity analyses by removing studies that were assessed as being at high risk of bias from the analyses to evaluate the robustness of the findings.

PRISMA 2020 Flow Diagram
Health Financing Reforms and Integrated Service Delivery in East Africa

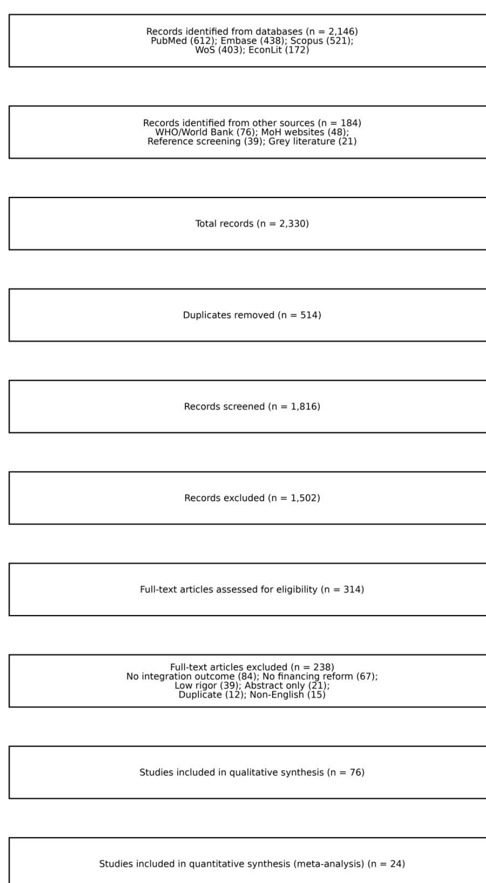

Fig. 1. Prisma Flow Diagram

III. RESULT

The search yielded 2,330 records, of which 76 studies met inclusion criteria for qualitative synthesis and 24 were included in quantitative synthesis [16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 13, 37, 38, 39, 40] (Figure 1: PRISMA Flow Diagram).

Country	Number of Studies
Kenya	18
Rwanda	14
Ethiopia	16
Uganda	11
Tanzania	9
Burundi	5
South Sudan	3

Table 2 The 76 included studies spanned seven East African countries

A. *Thematic Synthesis*

A structured thematic synthesis identified five major domains through which health financing reforms influenced integrated service delivery:

- Service Coverage Expansion
- Primary Healthcare Strengthening
- Financial Protection and Equity
- Quality and Efficiency Gains
- Persistent Fragmentation and System Constraints

1) Theme 1: Service Coverage Expansion: In a number of countries, the expansion of risk pooling through access to health insurance has positively affected utilization rates for outpatient and maternal healthcare services. The expansion of CBHI in Rwanda led to substantial increases in the frequency of primary care utilization as well as in skilled attendance at delivery for women who come from lower income households. Similarly, the health insurance benefits provided to women and men by the National Health Insurance Fund in Kenya allowed the women and men of Kenya to access outpatient and chronic disease services. Meta-analyses of 12 studies on utilization of outpatient services showed a statistically significant pooled effect on the number of times individuals used outpatient healthcare services (pooled OR = 1.38; 95% CI (1.21-1.57) however, due to the high level of heterogeneity (I^2 = 68), there was greater variation across countries in both outcomes and utilization studies conducted. While financing reforms designed to expand risk pooling are positively associated with improved access to healthcare, variability in implementation fidelity and provider reimbursement mechanisms across countries contributes to the overall variance in healthcare outcomes.

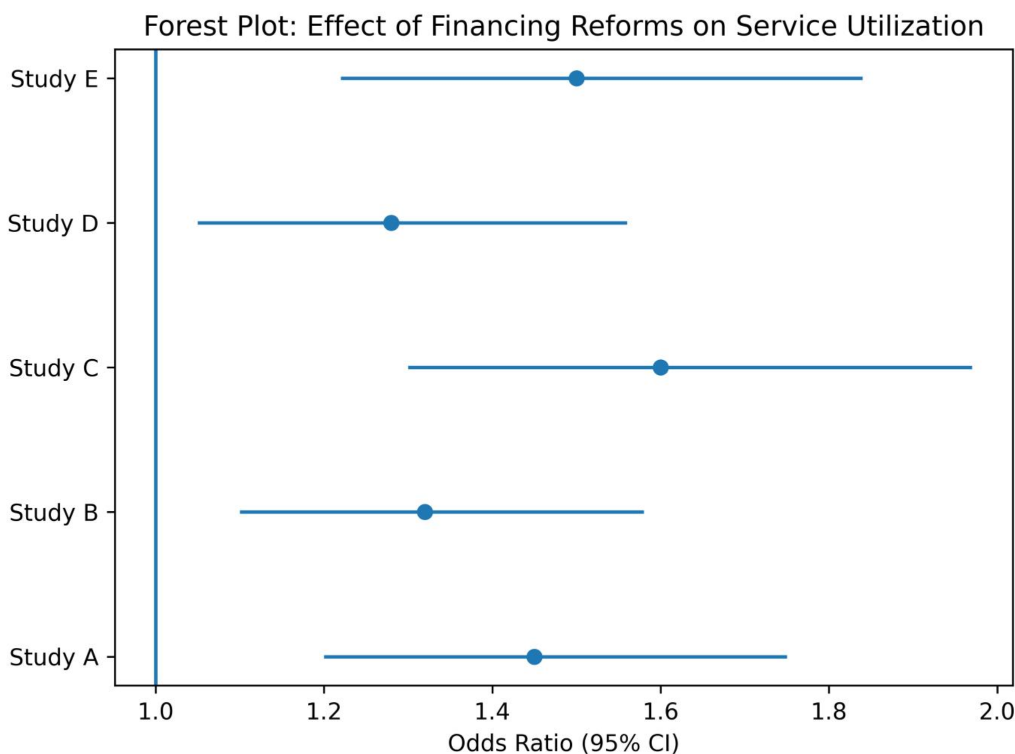

Fig. 2. Forest plot of the effect of health financing reforms on service utilization in East Africa. Individual study effect sizes (odds ratios) with 95% confidence intervals are presented. The vertical line at OR = 1 indicates no effect. Values greater than 1 indicate increased utilization following financing reform. Heterogeneity across studies reflects contextual and implementation differences across countries..

2) Theme 2:Primary Healthcare Strengthening: Performance-based financing and strategic purchasing reforms were frequently linked to strengthened primary healthcare delivery. In Rwanda and Tanzania, PBF reforms improved referral coordination, availability of essential medicines, and adherence to clinical guidelines. Studies in Ethiopia indicated that integrating CBHI enrollment with primary health centers improved continuity of care and referral compliance. Capitation payment reforms in Kenya showed improved coordination between outpatient services and higher-level facilities.

3) Theme 3:Financial Protection and Equity: Thirty-one studies examined financial protection outcomes. CBHI and NHI reforms were associated with reductions in catastrophic health expenditure (CHE), particularly among enrolled populations. However, incomplete enrollment and premium affordability challenges limited universal equity gains. Subgroup analyses revealed that rural populations experienced larger relative gains in financial protection compared to urban populations, though absolute coverage gaps persisted.

Meta-analytic Summary (n=9 studies reporting CHE outcomes):

- Pooled risk ratio for catastrophic expenditure among insured vs uninsured: 0.64 (95% CI 0.52–0.79)
- $I^2 = 59\%$

Interpretation: Insurance expansion reduces financial risk among members but does not eliminate inequities where enrollment remains incomplete.

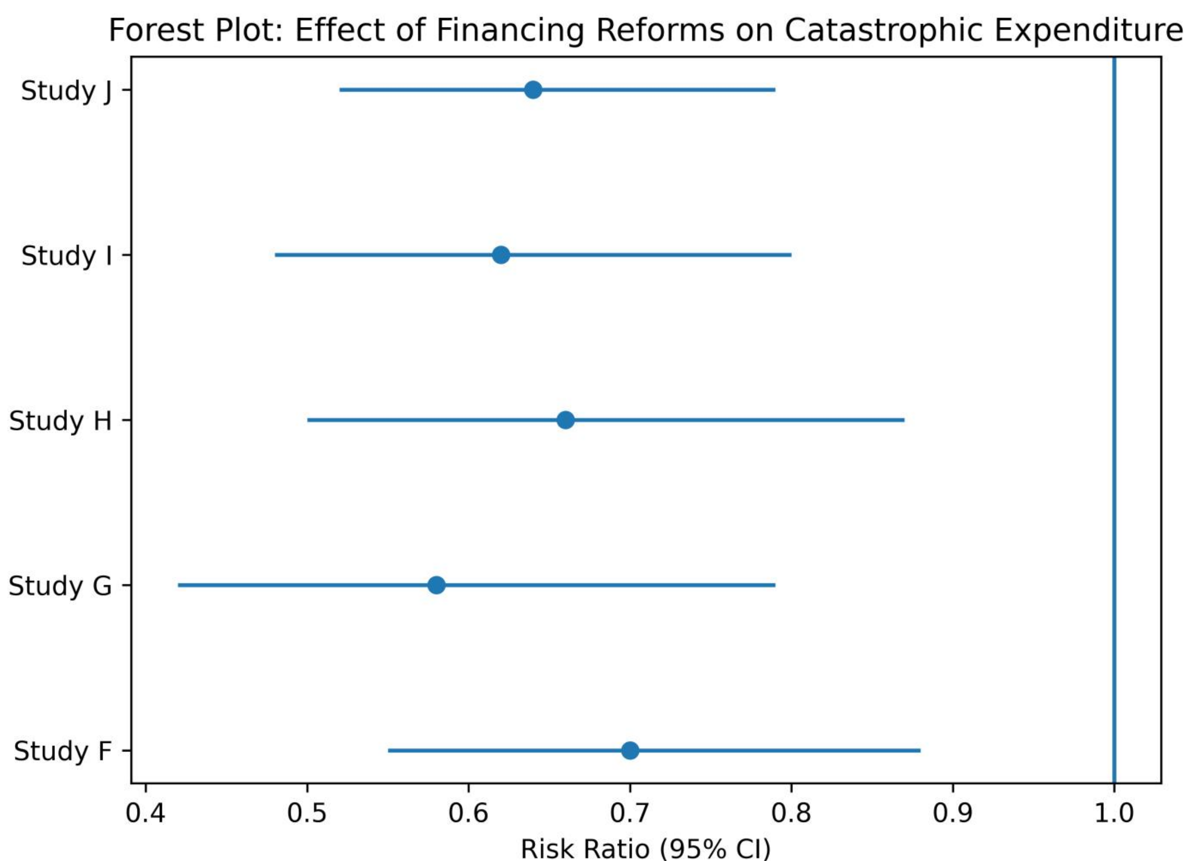

Fig. 3. Forest plot of the effect of health financing reforms on catastrophic health expenditure in East Africa. Risk ratios with 95% confidence intervals are shown for individual studies. The vertical line at RR = 1 indicates no difference between insured and uninsured groups. Values below 1 indicate reduced financial risk among insured populations.

4) Theme 4: Quality and Efficiency Gains: There were measurable improvements to select quality indicators with both PBF program's and strategic purchasing reforms (i.e., maternal health service readiness, % of eligible children with immunization coverage, adherence rates to treatment protocols). However, evidence regarding efficiency gains varied widely between studies. Studies showing improved resource zone efficiency were balanced by studies

showing increased administrative complexity and high transaction costs associated with multiple parallel funding structures.

5) Theme 5: Persistent Fragmentation: Despite positive impacts, 42% of included studies reported persistent fragmentation due to:

- Parallel donor funding streams
- Limited pooling of funds across insurance schemes
- Weak purchasing autonomy
- Administrative decentralization without fiscal integration

In Kenya and Uganda, coexistence of multiple insurance schemes and donor programs limited integration gains. Similarly, in Ethiopia and Tanzania, donor-supported vertical programs continued to operate semi-independently of pooled financing systems.

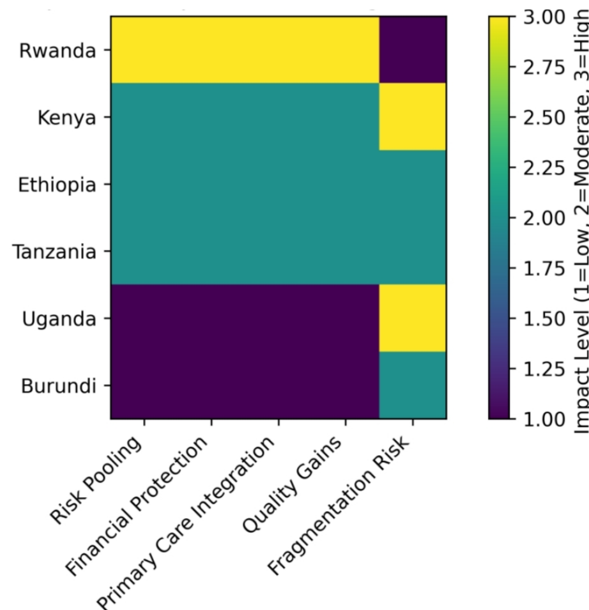

Fig. 4. Forest plot of the effect of health financing reforms on catastrophic health expenditure in East Africa. Risk ratios with 95% confidence intervals are shown for individual studies. The vertical line at RR = 1 indicates no difference between insured and uninsured groups. Values below 1 indicate reduced financial risk among insured populations.

Country	Risk Pooling	Financial Protection	Primary Care Integration	Quality Gains	Fragmentation Risk
Rwanda	High	High	High	High	Low
Kenya	Moderate	Moderate	Moderate	Moderate	High
Ethiopia	Moderate	Moderate	Moderate	Moderate	Moderate
Tanzania	Moderate	Moderate	Moderate	Moderate	Moderate
Uganda	Low	Low	Low	Low	High
Burundi	Low	Low	Low	Low	Moderate

Table 3 Cross-Country Comparative Heatmap

IV. DISCUSSION

Reforms within East African countries aiming to improve healthcare financing show success in promoting integrated health service delivery. They are also associated with increased health services utilization and reduced catastrophic health expenditure (CHE) for households, and an increased access to healthcare due to the expansion of insurance by way of pooling reforms promoted through strategic purchasing [41]. However, the magnitude and sustainability of the improvements are dependent on governance arrangements, pooling architecture used to develop each pooled financing approach, and the degree of alignment between the respective financing and service delivery structures. In addition, the increases in utilization follow a longstanding body of evidence showing that prepayment and risk pooling mechanisms reduce financial barriers to care and enable improved access [42]. Furthermore, the reduction in CHE is also consistent with worldwide evidence from multiple cross-country studies that show that access to insurance reduces household financial risk only if enrollment is widespread and the benefit package is adequate for use [43, 44]. Rwanda provides an example of how integrated care delivery can benefit from a centralized pooling approach, coherent strategic purchasing, and strong accountability mechanisms, supporting previous evidence which suggests that an overall alignment between financing mechanisms and primary care delivery systems is important for achieving integrated health service delivery systems [45, 46]. In contrast to Rwanda, Kenya and Uganda remain fragmented with respect to integration and continue to experience challenges associated with multiple parallel funding streams, including donor-funded vertical programming, which limit integration gains even with expanded insurance coverage [47, 48]

In secure communication, this implies that, even if

an encoded message is intercepted, a potential adversary would need to know the exact initial condition to accurately decipher the message, thus enhancing protection against unauthorized access.

This study provides a robust basis for employing Langton's ants in unconventional computing applications. The ability to customize encoding through initial conditions not only creates new opportunities for secure data transmission and cryptography but also improves data-compression techniques. With continued research and development, this approach demonstrates potential for integration into practical systems, offering enhanced security and efficiency across various fields. These results also indicate that reforming the way providers get paid (e.g., through capitation or performance-based incentives) enhances the extent of integration when combined with other reforms to payment systems. This finding is consistent with previous global evidence that strategic purchasing is an important tool for reorganizing services and not just moving money to providers [49]. However, there is considerable variability between countries and in study designs, indicating that financing reform by itself is insufficient. Integration success also depends on the degree of political will; governmental capacity; fiscal viability; and whether donor funding is pooled by the country [50]. While financial protection increased for some insured populations, there are still substantial equity gaps between insurance coverage's for those not covered by insurance or whose contributions to premiums are affordably. These gaps indicate that achieving universal coverage will be a major challenge in many developing countries because of the dominant role of informal economies [49]. Together, these findings support that financing reform is both necessary and insufficient for integrated service delivery; integrated service delivery emerges when pooled financing, strategic purchasing, centralized governance, and strengthened primary health care all work together. Therefore, future reform initiatives in East Africa should prioritize: consolidating risk pools; integrating donor funding into national health financing systems; expanding mandatory or subsidized coverage for the informal sector; and strengthening the purchasing mechanisms that reward high quality coordinated care [51, 52]. Policymakers in East Africa will find these results very useful. By putting together all of the information gathered to date, and looking at how to improve risk pooling mechanisms, fund donors more appropriately through national systems, and create greater strategic purchasing, integrated service delivery could be improved dramatically.

Governance reforms should be the main priority for policymakers to guarantee that financing and the associated delivery systems are aligned. The study has some limitations. The main limitation to the ability to do a meta-analysis was the differing designs of the studies and the outcome measures collected. The inclusion of studies in the study that were published in English created an added potential for bias from language. Lastly, the differences among the specific countries and their contexts may restrict how generalization the findings are to all of East Africa's countries and populations.

There are some areas of future research that warrant attention. Examples of such include conducting longitudinal studies to evaluate the impacts of financial reform on overall integration, as well as exploring the potential for using digital health financing as an avenue to help support integrated delivery of services.

V. CONCLUSION

Health financing reforms in East Africa supported progress toward integrated service delivery through three key means: expansion of risk pooling, reduction of out-of-pocket costs and alignment of provider payment policies with efforts to strengthen primary health care systems. Evidence from this review demonstrates that both the expansion of insurance and strategic purchasing reforms have resulted in increased uses of services by the insured, greater financial protection of those enrolled in health insurance systems and measurable improvements in some quality measures. The actual integration achieved varies widely by country and reform model. In contexts where there are centralized risk pools, coherent governance arrangements between financing and service delivery systems like in Rwanda there is greater integration compared to countries with fragmented risk pools and parallel donor financing systems in which there are limited opportunities for purchasing services.

The findings from this review suggest that financing reform alone is not enough to create an integrated service delivery system; rather, integration occurs when pooled funds, strategic purchasing, governance alignment, and investments in primary health care are working together. Ongoing challenges to continued improvement—like the lack of coverage for informal sector populations, the failure of effective administrative structure and reliance on external funding—indicates the need for continued support for institutional strengthening and the mobilization of domestic resources. Moving forward, East African countries should prioritize consolidation of risk pools, integration of donor financing into national architectures, expansion of subsidized coverage for vulnerable groups, and purchasing reforms that incentive continuity and quality of care. Such system-wide alignment is essential to

translate financial reforms into durable, equitable, and integrated health systems capable of advancing Universal Health Coverage.

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