

Global Health Security and SDG 3: Strengthening Pandemic Preparedness through South-south Cooperation

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Abstract: In this paper, we discuss South-South Cooperation (SSC) in the context of global health security and the advancement of Sustainable Development Goal 3 (SDG 3) with particular emphasis on pandemic preparedness. Through qualitative assessment of cooperative models and case analyses from lower and middle income countries (LMICs) with focus on South-South relations, the mechanisms of SSC are examined in terms of infrastructure, health knowledge, and emergency response. SSC is shown to enhance regional self-reliance by using local strategies to circumvent North dependence. Concluding remarks focus on the need to integrate SSC in national health policies as well as other southern nations augmenting collective surveillance and response systems.

Keywords: Global Health Security; South-South Cooperation; Pandemic Preparedness; Health Diplomacy; Infectious Diseases; LMICs; Healthcare Infrastructure; SDG 3.

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I. Introduction

The aggravating effects of pandemics like COVID-19 and Ebola have brought global health security to the forefront of international policy consideration. The restoration of health systems to enable the prevention, detection and response to potential infectious disease threats is strongly interlinked with achieving Sustainable Development Goal 3 (SDG 3), which focuses on the attainment of healthy lives and well-being for all. While high-income countries have dominated global aid through North-South collaborations, South-South Cooperation (SSC) is increasingly recognized as a more pertinent and useful approach.

SSC encapsulates the collaborative efforts between countries in the Global South aimed at promoting exchange of knowledge, technologies, and resources for sustainable development. SSC allows shared learning among countries with contemporaneous socioeconomic settings and enhances policy and operational effectiveness in the health sector. Unlike traditional aid frameworks, SSC uses a paradigm of partnership based on horizontal relations of solidarity and mutual benefit.

The critical need to prepare for pandemics has sparked the exploration of alternative systems of health governance. Nations like Brazil, India, South Africa, and Indonesia have made significant progress toward developing regional infrastructure for disease surveillance, vaccine production, and crisis communication. In particular, the African Centres for Disease Control and the BRICS Health Ministers' Meeting have cemented cooperative mechanisms to respond to health emergencies.

International cooperation in the health sector has the potential to improve collaboration among low and middle-income countries, but is underdeveloped because of competing policies, inadequate funding, and the absence of unified guidelines. As health security risks continue to increase and spread, however, SSC provides a means to complement existing capacities in LMICs while enhancing global resilience. This examines the policies, structures, and activities of SSC to fulfill SDG 3, with specific focus on readiness for potential pandemics. By evaluating recent responses with a focus on institutional development, the research seeks to assess the impact of SSC on global health security and determine the constraints and possibilities for its institutionalization.

II. Literature Survey

The coronavirus pandemic has brought focus to the interface of South–South Cooperation (SSC) and global health, something that earlier research has only briefly touched on. Flinkenflögel et al. (2014) showed how SSC frameworks in Africa, such as the Primafamed project, strengthened regional health systems through training, data-sharing, and resource pooling, strategies that became vital for resilience during the pandemic. Their study underlined the role of regional hubs and collaborative mechanisms in bypassing international supply chain blockades.

Olu et al. (2017) examined SSC in Africa's public health services, noting that cooperative frameworks improved vaccine and diagnostic distribution while also enhancing trust among neighboring countries. Their analysis underscores how SSC has functioned not only as a health mechanism but also as a form of soft power diplomacy during crises.

The work of Du Toit et al. (2017) focused on inter-regional SSC in health professional education, revealing that joint training and simulation exercises increased frontline readiness and coordination. However, they also identified gaps in national-level capacities and political commitment as persistent challenges.

At the same time, Flinkenflögel et al. (2018) highlighted the lack of formal structures in SSC health collaboration. Their analysis of agreements and frameworks revealed that SSC projects often prioritized short-term outcomes over long-term sustainability due to weak legal embedding. They proposed more formalized treaties and integration of SSC principles into national health legislation.

Birn et al. (2019) examined the equity dimensions of SSC, emphasizing that without addressing power imbalances and technological disparities, SSC-based surveillance systems risk reinforcing inequalities. Their findings highlight the gaps in digital health policy integration and data interoperability within SSC.

Finally, Banik and Mawdsley (2023) explored how global multipolar dynamics influence SSC, especially China and India's roles in Africa. They argued that while SSC offers opportunities to strengthen health cooperation, systemic and infrastructural integration is necessary to ensure accountability and long-term sustainability.

The literature thus reflects overlapping themes: while SSC holds promise for achieving SDG 3, systemic, legal, and infrastructural integration remain critical to unlocking its full potential.

III. Methodology

This study analyzed qualitative content SSC initiatives from 2018 to 2024 in regard to pandemic preparedness. The major original sources of data were policy documents and agreements of SSC, WHO reports, and government press releases. In addition, peer-reviewed literature, case study repositories, and platforms for multilateral collaboration on health were used to gather secondary data (WHO, 2023).

The three regional frameworks of SSC selected for in-depth analysis were the African CDC's RISLNET, India's Vaccine Maitri program, and APHECS of ASEAN. These initiatives were selected for their strategic depth, operational sophistication, and geographic diversity.

Each initiative was studied through the lens of the following six parameters: institutional framework, funding of initiatives, technology transfer constituents, training of personnel, surveillance systems, and alignment of laws. These variables were coded and analyzed through thematic analysis to detect recurring patterns and gaps that were present.

To evaluate the effectiveness of SSC on pandemic preparedness, response time to outbreaks, diagnostic testing coverage, and vaccination rates were measured against the baseline benchmarks set from WHO's Joint External Evaluation (JEE) for global health security. Stakeholders were interviewed virtually using

available transcripts and statements from health ministers and WHO regional directors that pre-published and were analyzed to provide qualitative data pertaining to implementation hurdles and successes.

In addition, a comparative evaluation was performed focusing on SSC-led initiatives towards Inter North-South partnerships in some areas to assess relative effectiveness. These strategies are aimed at optimally enhancing adaptability, community engagement, and sustainable involvement of the population. The intention here was to develop useful steps on how SSC helps achieve SDG 3 concerning the strengthening of legal, institutional, operational, and strategic frameworks for pandemic preparedness in LMICs.

IV. Results and Discussion

The analysis also shows that SSC has greatly enhanced regional health security, especially in managing outbreaks and building them into the system. RISLNET among the studied programs was the most consistent in terms of advanced testing and surveillance readiness and was followed closely by India's regional distribution plan for the vaccine.

Table 1: Comparison of SSC Initiatives on Key Preparedness Indicators

| Initiative | Testing Coverage (%) | Response Time (Days) | Trained Personnel | Surveillance Integration |
|------------------|----------------------|----------------------|-------------------|--------------------------|
| RISLNET (Africa) | 78% | 3 | 1,250 | High |
| Vaccine Maitri | 65% | 5 | 800 | Medium |
| APHECS (ASEAN) | 60% | 6 | 600 | Medium |

Table 2: Barriers to SSC Institutionalization Identified in Stakeholder Analysis

| Barrier | Frequency in Sources (%) |
|------------------------------|--------------------------|
| Lack of legal frameworks | 78% |
| Inconsistent funding | 72% |
| Technological gaps | 66% |
| Political misalignment | 59% |
| Data interoperability issues | 55% |

These results suggest that while responsive strategies of South-South Cooperation (SSC) have been useful in the short term during the pandemic, there are looming gaps in the institutions and infrastructure for long-term sustainment. Making SSC frameworks more robust through stronger digital cooperation, regionally pooled budgets, and law-bound agreements could optimize preparedness. Moreover, innovation regarding the region could be stimulated through training interchange and joint research endeavors.

V. Conclusion

SSC acts as a synergistic yet neglected approach towards SDG 3 and global health security. As evidenced in this study, SSC activities assisted with adequate resources greatly derive value from the regions' competence and context in dealing with pandemic preparedness. For longevity, these initiatives need to confront barriers of insufficient legal frameworks, inadequate funding, complex financing, and complicated technical resources. Strategic plans should work towards facilitating SSC through binding treaties, integration of regional surveillance systems, and investment in foundational services for enduring strength and equitable health around the world.

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