



REVIEW ARTICLE

National health systems strengthening as the primary strategy to achieve Universal Health Coverage in African countries

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Abstract

Africa is the second largest continent and has its socioeconomic and health peculiarities. Countries are faced with varying challenges towards its Universal Health Coverage (UHC) achievement and hence the region requires health system reforms to drive equitable and balanced medical services to its populace. The main objectives of the paper were to explore the complexities of the African health systems, subsequently highlighting major challenges to UHC and to provide a framework for strategic approaches to health system strengthening to ensure realization of UHC. Information presented in this paper was collected from published literature and reports on Rwanda, Kenya, Nigeria, Tanzania, Ghana, Tunisia, Democratic Republic of Congo, Zambia, Egypt and South Africa, amidst other African countries. The published literature points to the presence of a somewhat slow progress towards UHC or at least an existent knowledge of it. However, common challenges faced can be grouped into 1) Financial constraints which include low levels of government expenditure on health and increased out-of-pocket percentages, (2) Lack of coverage of key services which includes majorly immunization rates and existence of health insurance for citizens, (3) Input constraints ranging from drug availability to skilled healthcare workforce, information and research and (4) Lack of political support and commitment towards universal health coverage. To overcome the above-stated constraints, two broad groups of interventions were identified; General interventions largely focusing on reprioritization of health budget, quality and improved services, equipped facilities and efficient social protection systems; and Specific interventions which emphasizes the importance of eliminating shortage of health workers, ensuring availability of essential medicines/ products, embracing decentralization at supply chain management, validating data/ information system and advocacy for impactful health education/promotion. Although there will be strength and weakness for whatever reforms adopted, implementation is totally contextual and contingent upon countries' specific health system bottlenecks.

Keywords: Universal Health Coverage, health system strengthening, Africa, framework, health sector reform.

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The authors declare no conflict of interest

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Introduction

The World Health Organization's (WHO) definition of Universal Health Coverage is "all people have access to services and do not suffer financial hardship paying for them" (page ix) (1). The need to build consensus on the definition of UHC is crucial for setting priorities, policies and budgeting changes needed to realize UHC (2). The principle of Universal Health Coverage aims at ensuring equitable and efficient access to health services. Therefore, it has become priority objective and major goal of health reform in many countries (3). Health system reform interventions are complex in nature depending on a country's individual context and system bottlenecks, these interventions take place at different levels in the health system. Achievement of UHC through continued health systems reform in African countries is, therefore, the most promising strategy. The experience of different countries in implementing UHC strategies has revealed successful lessons and pitfalls to avoid in ensuring the progress towards universal health coverage (4). The health system strengthening (HSS) initiatives are usually composed of multiple strategies designed to work at different levels and components of the health system (1). Recognizing complex interconnections and interactions of combined strategies, health planners and policy makers should account for proper coordination between the intervening links and pay more attention in designing specific interventions (4). Many health system frameworks have been developed to focus on strengthening health systems to improve health outcomes. The available frameworks differ in conceptualising health systems' functions, which directly influence strategies and policies (5). This review aims to evaluate progress towards UHC

and introduce holistic approaches to strengthening health systems in 10 African countries (Rwanda, Kenya, Nigeria, Tanzania, Ghana, Tunisia, Democratic Republic of Congo, Zambia, Egypt and South Africa) by using WHO health system framework.

Methods

This is a review study on health systems strengthening strategies and progress towards universal health coverage in 10 African countries (Rwanda, Kenya, Nigeria, Tanzania, Ghana, Tunisia, Democratic Republic of Congo, Zambia, Egypt, and South Africa). Reviews of published articles and official reports were used to gather information on progress toward Universal Health Coverage in studied African countries and key challenges in African health system components. The search was done on 13th to 19th July 2020 using PubMed, Medline, and Scopus electronic databases and public search engines such as Google Scholar and Google. The relevant keywords used in the search consisted of phrases considered by the authors to describe targeted information about service delivery, health workforce density and distribution in African countries, health financing, leadership and governance, health information systems and research, and health systems strengthening strategies and interventions. Search query was adapted to the specific needs of each database. Search phrases used were "Healthcare services delivery in Africa", "health workforce density in Africa", "Health financing in African countries", and "Health information systems in Africa", "Health system strengthening strategies", "Universal Health Coverage in Africa". Additionally, latest published reports of the WHO, World Bank and FMOH on Rwanda, Kenya, Nigeria, Tanzania, Ghana, Tunisia,

Democratic Republic of Congo, Zambia, Egypt and South Africa were also reviewed to provide in depth analysis of health systems problems and impediments to UHC in each country. Finally, the authors provide a framework for health systems strengthening in the

African region, general and specific interventions to overcome the reported health systems bottlenecks and constraints to UHC in the African countries based on evidence-based guidelines and lesson learned from previous countries' experience.

Results

Progress toward UHC in African countries

The UHC monitoring framework developed by the World Bank and the WHO focuses on the coverage of critical services, population coverage, and financial protection (6). Our analysis of the extent of service coverage included maternal health-related indicators, access to essential HIV/AIDS services, and childcare interventions, amongst others. Most of the interventions related to maternal health have improved in the last couple of decades in these selected countries; antenatal care visit (at least 4) has increased by about 40% between 2004 and 2014, and the proportion of birth attended by skilled health personnel has improved by about 10% in the last decade coming up to 2014. The most rapid improvement has been the change in the coverage of insecticide-treated bed nets for children increasing on average by about 15% per year between 2006 and 2014. Prior studies show notable variation in antiretroviral therapy (ART) coverage among people with HIV eligible for ART ranging from 17% in North Africa to 54% in ESA in the year 2016 (7). The coverage of diphtheria-tetanus toxoid (DTP3) vaccination has seen an increase over the period except for five countries (Benin Botswana, Equatorial Guinea, Kenya, and South Africa), among which Equatorial Guinea is the only one with a 35% coverage rate (7).

Health financing

Total health expenditure in the region has grown over the last two decades. (8) shows the trend of total health expenditure for the African Region over a period of 9 years. We see that more countries have been increasing expenditures on health over this period although the rates vary among the countries. For example, information from the 2010 World Health Report (9) indicates that Rwanda more than doubled its per capita expenditure on health over a period of 10 years, with a large part of this increase attributed to external funds (9). However, three countries have remained below the expenditure level of US\$ 20 per capita, with thirty countries persistently spending over US\$ 44 per capita over the same period. In 14 of the 47 countries included in the above analysis, the level of funding for health was below the minimum level of US\$ 44 per capita recommended for 2009 by the High Level Task Force on Innovative International Financing for Health Systems (8).

Information and research

Low investment in data management infrastructure shows that priority is not given to health research and data, which are crucial for sustainable development. Consequently, several functions. Hence, several functions of the health research systems are either non-existent or weak. Furthermore, the research

arena in the African Region is characterized by a multiplicity of externally driven agendas, dispersed efforts, and unclear results in relation to impact on priority health problems. In addition, although publications have increased by 10.3% each year in recent years, this has not translated into the conversion of evidence to policy and calls for more to be done (10).

Health workforce

Statistics as at 2016 show that twenty-five percent of doctors, and five percent of nurses trained in Africa are currently working in developed countries. This brain drain has resulted in a shortfall of over 1.5 million health workers in the region (11). Table 1 shows the health workforce density of ten countries in

the region. “The health sector in Rwanda has pioneered task-shifting by transferring agency for many clinical decisions and activities to nurses and community health workers” (12). However, a persistent shortage of adequately trained health professionals poses a major barrier to scaling up the availability and quality of specialized care. In 2016, nearly 70% of the health workforce was composed of nurses and midwives. The density of doctors, nurses and midwives per 1,000 population is estimated to be 1.01, 108% increase since 2005, Rwanda still falls far below the minimum level recommended by the WHO of 2.3 providers per 1000 population (13). In Nigeria, the health workforce density is estimated at 1.95 per 1000 population (14) as at 2016.

Table 1: Density of Doctors, Nurses and Midwives per 1,000 Population in the 10 African countries

Country	Density of Doctors Per 1,000 Population	Nurses & Midwives Per 1,000 Population
Ghana (2017)	0.18	4.2
Rwanda (2017)	0.13	1.2
Nigeria (2018)	0.38	1.2
Kenya (2018)	0.16	1.2
DRC (2016)	0.07	1.1
Tanzania (2016)	0.01	0.6
Zambia (2018)	1.2	1.3
South Africa (2017)	0.9	1.3
Egypt (2018)	0.5	1.9
Tunisia (2017)	1.3	2.5

Source: World Bank Data.

Lessons learned from previous countries' experience and major barriers to UHC

Despite the great diversity of African countries, many of them are facing common challenges; these can be grouped into financial constraints, coverage of key services and Input's constraints. The key financial constraints are low levels of government expenditure on health and overall expenditure on health. Among ten countries studied in the region, it was shown that seven of which allocated less than 5% of the gross domestic product (GDP) as expenditure on health in 2017. The average government expenditure on health as a percentage of the gross domestic profit (GDP) was 4.75% ranging from 3.2% in Ghana to 8.11% in South Africa. Government spending on health as a percentage of total government spending varied, from a low of 3.3% in DRC to a high of 13.63% in Tunisia. Government spending on health as a percentage of total health spending appears to be decreasing moderately over the past decade for countries, Rwanda and Tanzania, Whereas South Africa maintained a relatively stable share while Egypt and Kenya experienced an increase in 2017 (15). Rwanda appears to be the most advanced country in Africa regarding universal coverage. The country has achieved 96.15% coverage in health insurance as of 2011, with a 95% utilization rate (16). Out of pocket expenditure as a percentage of total health expenditure was as low as 6.25% in 2017 (18). The World Health Organization states that it is very difficult to achieve UHC if out-of-pocket (OOP) as a percentage of total health spending is equal or greater than 30%. The WHO defines households with Catastrophic Health Expenditure (CHE) as a household with a total OOP health payment equal to or exceeding 40% of a household's capacity to pay. A non-poor household is impoverished by health payments when it gets poor below

the poverty line after paying for health services (17, 19) the share of OOP as a percentage of total health spending ranged from a low of 6.25% in Rwanda to a high of 77.22% in Nigeria in 2017. In 2013, South Africa had a rate of 39%, in Zambia it was 11% in 2014, 18% for Tanzania in 2009, DRC was 45% in 2015, Kenya was 22% in 2013, Ghana was 12% in 2006, no data was available for Egypt, Tunisia for recent years (18). Households covered under health insurance, engaged in mutual health organizations, or an informal social safety network have a reduced risk of catastrophic spending (20, 21) as informal financing mechanisms through mutual organizations, “informal groups and merry go rounds unlike formal health insurance is observed to reduce the risk of CHE” (22). In certain cases, health insurance, however, is not a significant determinant, as for instance, in Kenya, where it only covers a small proportion of households and only inpatient services (23). For coverage of key services for UHC, a key indicator is immunization rates. As (8) shows, DTP3 immunization coverage among children ages 12-23 months has decreased roughly in Ghana, Rwanda, Tanzania, South Africa, Egypt, Tunisia, increased sharply in Kenya and steeply in DRC in the most recent years. In General, rates have fluctuated in all these countries in the last decades with a relatively constant rate in Nigeria from (2017-2018). Tanzania consistently has the highest vaccination rates of 98% and above during this period, followed by Ghana, Rwanda and Tunisia at 97%, the countries with working national or community-based insurance schemes in Africa. Governments have used different methods to expand coverage for health services for some vulnerable groups; countries such as Ghana, Rwanda have exemption guidelines within the health financing framework that target poor and vul-

nerable groups. However, many of these targeted services are not within the reach of the poor and, as a result, many are not covered by health insurance schemes. Of the selected countries, Rwanda is the only one with wide coverage of the poor (24). The "Ubudeheprogramme" in Rwanda has been proven effective in identifying those most in need of exemptions under the CBHI. Tanzania and Kenya have no specific exemption guidelines for the poor, but some waivers are given to patients in Tanzania who are assessed to be too poor to pay their bills. In Ghana, after almost twelve years of introducing national health insurance less than 40% of the population is covered by the scheme and less than 2% of them make up the poor.

Input's constraint comprises of the availability of drugs, human resources, data collection, and skilled workforce. Insufficient healthcare providers and unequal distribution of health professionals continue to remain significant problems in the African countries (Table 1). The ratio of doctors ranged from one doctor per 100,000 populations in Tanzania, to 130 doctors per 100,000 populations in Tunisia. In all the African countries, there were more nurses and midwives than doctors in the population. The shortage of health workers in Sub-Saharan Africa (SSA) is due majorly to high attrition rates and the inability to produce and recruit the appropriate cadres of health workers (25–28). In 2015 fifteen countries in SSA had developed the Human Resource for Health (HRH) policy and strategic areas that all the HRH plans included were the scaling up of the education and training process of health worker. Earlier in 2012, Rwanda announced collaboration between the U.S., Rwandan governments and

25 leading U.S. academic institutions in fulfillment of their HRH plans. \$150 million program launched in Kigali. Under the program, each year more than 100 American health care professionals from medicine, nursing and midwifery, dentistry and health management work in Rwanda alongside Rwandan faculty to build residency programs, strengthen instruction quality and substantially increase the output of new health workers. Rwanda's example and the Human Resources for Health Program in particular, have the potential to transform global health by serving as a model for any country that wants to increase the efficiency of foreign aid and improve the health of its people.¹ The major challenges and barriers toward UHC can also be contextualized in each of the African countries included in this study. Ghana was the first country in Africa to finance its national health insurance scheme with revenue from a value-added tax (VAT), this means that revenue can benefit from its economic growth (29). However, Ghana stills struggles with how to attain universal population coverage under this scheme as it currently has active coverage around 40 % of the population (30). From 2010 to 2012, public and external assistance declined, while the share of private expenditure (mostly out-of-pocket payments) tripled, indicating an increased financial strain on its citizens (6). In Rwanda, inadequacy in the health workforce and insufficient funds has hindered access to health services for some 80 per cent of the population thereby hindering progress toward UHC for the population. The ratio of doctors to population in Rwanda is amongst the lowest in Africa (13 doctors for every 100,000 population, 2017). Although this deficit in health workers i.e. doctors, nurses

¹<https://hms.harvard.edu/news/how-rwanda-dramatically-expanding-its-health-workforce>

and midwives “was partly compensated by the large number of CHWs who visit people's houses to monitor health events and suggest early intervention”, improvements are needed for effective and timely access to health care in Rwanda. Furthermore “in addition to the insufficient number of skilled health workers, capacity building is needed for health workers and managers. Distribution of health workers across regions has to be made more equitable, especially between urban and rural areas. CBHI's low contribution rates have resulted in hospitals bearing large debts and patients having to buy drugs themselves from pharmacies without reimbursement”. (31). In Nigeria, one of the main challenges that have affected its attainment of UHC is inadequate government health financing and budgetary allocations to the health sector. The government is yet to commit to adequate health financing and budgetary provisions for the health of Nigerians. Out-of-pocket payments estimated at 77% as at 2017 (6) is said to be the most common source of health-care financing in Nigeria. Similarly, since the NHIS (National Health Insurance Scheme) was launched in 2005, only the contributions from government (employer) are still largely available to fund the contributory social health insurance scheme. In Kenya, the main problem is simply a shortage of government budgetary resources for health care in relation to increasing demand and need for care. The effect of the budgetary shortfall is seen in the deterioration in the quality and effectiveness of publicly provided health services (32). “In addition to an absolute shortage of resources going into the health sector, patterns of spending in most countries cause or reflect an inequitable and inefficient allocation of inputs and services. The clearest example of this is the concentration of government resources in large, urban hospitals. On average,

people who live in urban areas have higher incomes than those in rural areas, yet the urban bias in government health spending means that the costs of gaining access to good quality care are highest for the most remote, and usually poorest, groups of the population” (33). In the DRC, with less than 10% of the urban population covered by formal health insurance programs and even less for the rural population ensures that the national health system heavily relies on households' direct contributions. Thereby, the financial risk incurred by the households in the region increases, which serves as the biggest barrier to achieving UHC (34). In Zambia, although Zambian governments have increased and continue to increase domestic funding for the country's health services, the health system as a whole is subsidized by foreign donor funds and that funding is decreasing since 2010 following the global financial crisis. Also, changes in the composition and concentrations of the national population have also led to an increase in chronic non-communicable diseases (35).

Health system strengthening framework for African countries

It is not acceptable that some members of society should face death, disability, ill health, or impoverishment for reasons that could be addressed at limited cost” (36). The need for a clear health system strengthening guide has recently grown, especially among stakeholders working at the country level. With many available competing frameworks health planners and policy makers often encounter conceptual confusion, which hinders them from properly defining and describing their health system functions; and accordingly designing and implementing the suitable interventions. Efforts have been continuously directed to address this confusion through conversion of

multiple frameworks to revitalize available strengthening approaches (37).

The Access, Bottlenecks, Costs, and Equity (ABCE) project, led by Institute for Health Metrics and Evaluation (IHME) and country collaborators in Ghana, Kenya, Uganda, and Zambia, is an example of the kind of comprehensive and detailed assessment that is a top priority to health policymaking and resource allocation – and which rarely occurs because health system functions worldwide are complex and multidimensional (38). Developing of strong health financing system is a main goal for all African countries. According to the World Bank classifications most of African countries ranked in area of low- and middle-income countries, so shortage of funds for health in these countries and insufficient

investments in the health sector is critical challenges to enhancing health outcomes in Africa. World Health Organization highlights three main policies that aim to strengthen the Financial Health system in Africa; Aligning budget resources and health priorities; closing the gap between health budget allocation and expenditure; maximizing UHC performance with the money available (39). Community-based health planning and service approach one of the best approaches in increasing community commitments towards health system strengthening, enhancing equitable access, delivery of primary health care, and resource mobilizations (40). Table 2 below summarizes main bottlenecks (problems) of health system components in the African region with related strengthening strategies.

Table 2: Health system strengthening framework for African countries

Health system component	Current problems	Strengthening strategies
Health financing	Reliance on out-of-pocket payments. Lack of investment in health sector and overdependence on funds from foreign donors.	Increase social insurance schemes, encourage progressive taxation, reprioritize government budgets to reduce impoverishment and give money to health. Internal assessment of country's revenue modalities/ matched funding. Strengthen domestic mechanisms for prepaid funding.
Workforce	Workforce shortage and unequal distribution at sub-national level.	Increase support and facilitate medical education. Engage informal community health workers. Redistribution of human resources throughout rural areas.
Leadership/governance	Graft and corruption. Politicians appointed as health ministers and not health experts. Populist decision making and not based on science. Poor/lack of evidence-based enacted policies	Appoint professional managers. Train them in good governance, transparency and accountability. Implement properly laws on graft and corruption. Utilization of technical expert in evidence-based policy making.

Service Delivery	Unequal distribution of health facilities between urban and rural areas Unnecessary medical tourism.	Build new facilities, partner with Civil Society Organizations (CSO), properly maximize international collaborations and improve quality of services for underserved populations through effective primary health care. Build infrastructure, equipped to competing standards, expand and ensure sufficient services provision.
Medical Products, Vaccines and Technologies	Medicine, medical supplies and supply chain shortages.	Decrease organizational barriers and introduce more decentralization at supply chain management.
Information system	Lack of surveillance systems, knowledge and expertise of it. Absence of proper data management and transfer systems. No technical knowledge.	Build data accountability systems and provide scientific and technical support. Deliberately work with research institutes to encourage researchers.

Discussion

Selection, implementing and monitoring of health system strengthening strategies
Relative prioritization debate in selecting specific strategies for a particular context has always been evolving among global health stakeholder, health planners and policy makers. Complexity of interconnection in intervening links directly influence relative importance of one strategy over the other (5). However, assessment and proper identification of key bottlenecks in health system ensure selection of the most appropriate strategies. Achieving Universal Health Coverage

despite the diversity of needs and contextual factors in African region requires adopting holistic and combined approaches to guide health system strengthening initiatives. These approaches fall into two recommended strategic domains; general and specific interventions of health system strengthening.

General interventions

As shown in Table 3, these include evidence-based strengthening strategies (41 - 43) to expand dimensions of universal health coverage in terms of cost coverage, service coverage, and population coverage.

Table 3: general strategies for health systems strengthening with major strengths and weaknesses.

UHC dimension	Strategies of HSS	strength	Weakness
Cost coverage	Increasing funds through efficient revenue collection and reprioritization of government budgets to give more money to the health sector. Support public, private and social insurance schemes. Eliminate corruption with healthcare system.	Decrease out of pocket payments and reduce financial hardship.	May impact the overall government budget.

Service coverage	Increase provision of health services in term of number and type of services. Introduce new health technology based on the need of specific population. Monitor quality of services through implementing of quality assurance and quality assessment programs.	Increase the overall patient satisfaction.	May decrease the cost coverage unless additional resources were generated.
Population coverage	Redistribution of health care facilities and health workers. Construction of localized health care facilities.	Reduce geographic barriers to access to health services.	If disadvantaged and underserved population were not identified properly lead to inefficient use of resources.

Specific interventions

Shown in table 4 these strategies are designed mainly to target specific problems that directly impact health system performance, with proper identification and removal of key

bottlenecks in the health system and focus mainly on the quality of service provision to underserved and disadvantaged populations.

Table 4: specific strategies for health systems strengthening with major strengths and weaknesses.

Health System problem/System bottleneck	Specific strategies	Strength	Weakness
Health workers shortage	Increase support and facilitate medical education. Engage informal community health workers. Redistribution of human resources throughout rural areas.	Increased competency and skills of staff. Build engagement with localized communities. Ensure equitable access to good quality health services.	Some system constrains may limit the implementation of these strategies.

Supply chain bottlenecks	Decrease organizational barriers and introduce more decentralization at supply chain management. Design alternative supply chains for specific areas based on the specific need of disadvantaged population.	Increase system responsiveness to supply shortages. Ensure delivery of products.	Unless designed, implemented and monitored properly May lead to inefficient use of resources
Medicines and medical products shortage	Reassessment of national priority to select most appropriate products.	Efficient use of resources and avoid catastrophic impact of life saving health products.	Unless designed, implemented and monitored properly May lead to inefficient use of resources
Data unavailability	Design and implement data accountability system and information-based health centers	Ensure proper identification of disadvantaged population and their needs.	may be limited by environmental constrains.
Insufficient health education	Design national health campaigns about country specific disease burden.	Increase awareness of community and compliance with health advisor.	May deplete available human resources for health.

Implementation of strengthening strategy requires framework that accounts for potential interaction and contextual constrains within the health system. Based on previous experience of African countries, strengthening should be considered a continuous learning process; also, adjustment of contextual factors is crucial to ensure effectiveness of interventions (44). Engagement of the private sector and public-private partnerships when implementing strengthening initiatives through African countries is strongly recommended (45). However, there is need for effective approaches for monitoring quality of health services provided by the private sector (46-48).

Conclusion and Recommendations

UHC is a good economic investment, and we believe the African region has great potential in achieving quality, affordable and equitable healthcare for its populace if the right interventions are made. To stay committed to UHC, it is important that African countries implement country-led strategies/ interventions to better reform their health systems. To overcome the above-stated constraints, two broad groups of interventions are recommended; General interventions largely focused on reprioritization of budget, quality and improved services, equipped facilities and efficient social protection systems; and

Specific interventions which emphasizes the importance of eliminating shortage of health workers, ensuring availability of essential medicines/ products, embracing decentralization at supply chain management, validating data/ information system and advocacy for impactful health education/promotion.

Although there will be strengths and weaknesses of whatever reforms adopted, implementation is totally contextual. In times of emergence/ re-emergence of pandemics, in-

creased communicable and non-communicable diseases, and various epidemiological changes, health services provision has become more vital and valuable. Political commitment to health spending, improved education/ remuneration of workforce, and improved health markets are essential for decreasing rates of impoverishment, alleviating health inequities, increasing economic growth and development. These intertwined commitments are essential for an effective African health system.

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