REVIEW ARTICLE

The role of health service delivery networks in achieving universal health coverage in Africa

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ABSTRACT

Most countries in Africa are faced with health system problems that vary from one to the next. Countries with a low Human Development Index (HDI) seem to be more prone to challenges in health service delivery. To mark its 70th anniversary on World Health Day, the World Health Organization (WHO) selected the theme "Universal Health Coverage (UHC): Everyone, Everywhere" and the slogan "Health for All. "UHC refers to ensuring that all people have access to needed health services (including prevention, promotion, treatment, rehabilitation, and palliation) of sufficient quality to be effective while also ensuring that the use of these services does not expose the user to financial hardship. UHC is a WHO's priority objective. Most governments have made it their major goal.

This paper provides a perspective on the challenges of achieving UHC in Sub-Saharan Africa (SSA). It also endeavors to spotlight the successful models of Health Service Delivery Networks (HSDNs) that make significant strides in making progress towards achieving UHC. HSDNs propose models that facilitate the attainment of affordability and accessibility while maintaining quality in delivering health services. Additionally, it brings up to speed the challenges associated with setting up HSDNs in health systems in SSA. It then makes propositions of what measures and strategic approaches should be implemented to strengthen HSDNs in SSA. This paper further argues that UHC is not only technically feasible but it is also attainable if countries embrace HSDNs in SSA.

Keywords: Health Systems, Human Development Index, Universal Health Coverage, Sub-Saharan Africa, Health Service Delivery Networks, World Health Organization.

Introduction

Achieving universal health coverage (UHC) is a core target of the Sustainable Development Goals (SDGs) (1). The World Health Organization (WHO) defined UHC as ensuring that all people have access to needed health services of "sufficient quality to be effective while also ensuring that the use of these services does not expose the user to financial hardship." (2). In low and middle-income countries (LMICs), UHC has become an integral aspect of health reforms (3). Unfortunately, many people in developing countries do not have access to quality health services, especially those living in poor and marginalized communities (4). In most countries, challenges towards achieving this target range from reaching all population groups (coverage and accessibility) to the accommodation of all needed services (readiness) and achievement of a reasonable proportion of health service delivery covered (health financial security) (2). Health outcomes in African countries remain poor despite commitments and efforts towards achieving UHC. There are expansive shortcomings across all building blocks of health, and progress has been slow in LMICs. This is complicated by inadequate resources, inequitable access to health services, and weak health system governance. Other challenges such as poverty, unemployment, climate change, conflict, insecurity, among others, have created distractions that make prioritizing health difficult (5). Thus, health outcomes tend to correlate with donor support. Strengthened preventable maternal and child deaths, strong resilience to public health emergencies, reduced financial insecurity and strengthened the foundation of long-term economic growth will be discerning attributes of countries that achieve UHC by 2030 (11). Unfortunately, the increasing population growth rates of countries in Africa pose a significant threat to long-term inclusive growth (6). This is further complicated by the double burden of communicable and non-communicable diseases (7). Population distribution and geography constitutes substantial challenges to delivering quality health services in Africa (8), and accessibility, as well as coverage of essential health services, are very low in Africa. There is a lack of a sufficient health workforce to meet the demand of the growing population (13), with a health workforce density of 2.3 healthcare workers per 1000 population (9). Other studies from Africa have also confirmed that wealth is also closely related to the place of delivery, i.e., the poorest women are least likely to use facility delivery services. Out of pocket expenditure on health has been attributed to limited access to health care in the under-served population (11). Concerning the shortage of skilled health workers, insufficient resource expenditure on training, poor working environment, difficult living expenses, and poor career path (12) are implicating factors. Therefore, there is need to secure greater access to skilled health workers that meet population demands, especially in underserved communities. Momentum for UHC in Africa is building, and many African countries have already integrated UHC into their national health strategies. But with about 11 million Africans pushed into extreme poverty each year because of out-of-pocket health expenses, how can Africa achieve UHC, which delivers a quality package of care for people living in Africa? To answer this question of significant importance, global health think-tanks and relevant stakeholders such as World Bank, WHO, etc., are not looking any further from Health Service Delivery Networks (HSDNs) as the prime solution. UHC requires well-functioning health systems that provide high-quality, affordable, accessible, and efficient health services. As such, HSDNs provide these strategies aimed at achieving UHC.
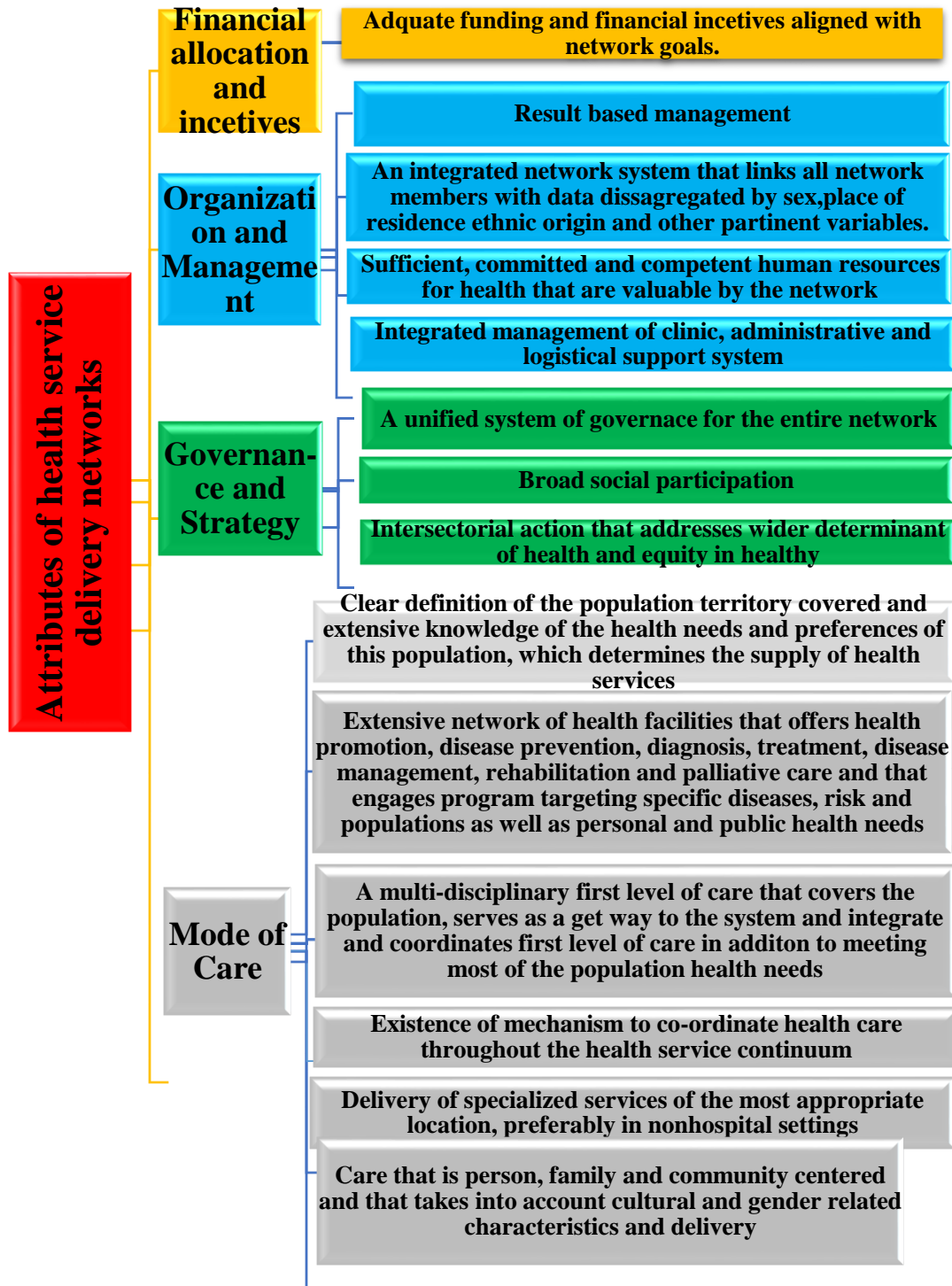
What are health service delivery networks?

It has become obvious to note that networks of collaborating organizations have become critical mechanisms for the effective delivery of healthcare (13). "The rise in network popularity has come largely from the recognition that money alone cannot sufficiently improve the quality of health systems, and that the major health problems facing societies are unlikely to be successfully addressed by individual organizations acting in isolation." (14, 15). Population health may improve only if resources, talents, and strategies are pooled from across a range of actors and organizations (16). Networks are defined 'as a set of nodes and the set of ties representing some relationship, or lack of relationship, between the nodes' (16). Relationships between nodes are typically non-hierarchical and may be founded on many and varied factors, including formal or informal flows of resources, information, people, or ideas (17). The Pan American Health Organization (PAHO) defines Health Service Delivery Networks (HSDNs) or Organized Health Services Systems, or Clinically Integrated Systems, or Integrated Health Organizations, "As a network of organizations that provides, or makes arrangements to provide, equitable, comprehensive, integrated, and continuous health services to a defined population and is willing to be held accountable for its clinical and economic outcomes and the health status of the population served" (14). This would include referrals between services and is based on the need to provide comprehensive services (18). The final aim is to improve health outcomes, and health services are the most proximate to that end. Additionally, health services include infrastructure, human resources, and supplies and technologies necessary to provide care to patients (19). HSDNs can be characterized as vertical, i.e., between different levels of service delivery from the community level to the clinic and hospital level, or horizontal, i.e., with providers or organizations working at the same level of service delivery (20). Considering the wide range of health system contexts, it's extremely difficult to prescribe a single organizational model for HSDNs in Africa. Each country's policymakers must design a model that meets each system's specific organizational needs. Below is an illustration outlining the four domains of the attributes of HSDNs.

Figure 1: Pan American Health Organization. *Integrated Health Services Delivery Networks Concepts, Policy Options and a Road Map for Implementation in the Americas. (Series: Renewing Primary Health Care in the Americas No.4) Washington, DC, 2010, pp. 32-33)*

Attributes of health service delivery networks

Financial allocation and incetives
- Adquate funding and financial incetives aligned with network goals.

Organization and Management
- Result based management
- An integrated network system that links all network members with data dissagregated by sex, place of residence ethnic origin and other partinent variables.
- Sufficient, committed and competent human resources for health that are valuable by the network
- Integrated management of clinic, administrative and logistical support system

Governance and Strategy
- A unified system of governace for the entire network
- Broad social participation
- Intersectorial action that addresses wider determinant of health and equity in healthy

Mode of Care
- Clear definition of the population territory covered and extensive knowledge of the health needs and preferences of this population, which determines the supply of health services
- Extensive network of health facilities that offers health promotion, disease prevention, diagnosis, treatment, disease management, rehabilitation and palliative care and that engages program targeting specific diseases, risk and populations as well as personal and public health needs
- A multi-disciplinary first level of care that covers the population, serves as a get way to the system and integrate and coordinates first level of care in additon to meeting most of the population health needs
- Existence of mechanism to co-ordinate health care throughout the health service continuum
- Delivery of specialized services of the most appropriate location, preferably in nonhospital settings
- Care that is person, family and community centered and that takes into account cultural and gender related characteristics and delivery

Methods

Eligibility Criteria for Studies Included in the Review

We considered studies on UHC with or without SSA. In this paper, We considered HSDNs as the exposure variable and UHC as the outcome variable. Only published articles in peered reviewed journals were considered. Articles in languages other than English weren't considered. In duplicate publications, the article with more complete data was included. Pubmed, Medline, Google scholar, and google search served as sources for these articles. Other articles we identified from reference lists of related studies from the included study. Dates of coverage were specified. Search terms that were used employed the use of Boolean operators "AND," "OR," and "NOT" to refine searches by limiting or combining terms. The key terms to search for articles were "universal health coverage," "health service delivery networks," "health systems," and "Sub-Saharan Africa". Abstract information served was the screening basis and the Cochrane Risk of bias tool was used to assess the risk of bias.

Results

Challenges of Setting up Health Service Delivery Networks in Africa

HSDNs are distinct from a conventional organizational structure that is devoid of shared commitments to meet the health care needs of the population (21). Therefore, organizations establishing HSDNs must be aware of potential challenges (22). These challenges form foundations of disadvantages that potentially undermine the establishment of health system models that are compatible with HSDNs in Africa: the model of hospital care and management, personnel training, governance, financing strategies, and use of technologies.

Health care processes in Africa are fragmented and are not integrated with other levels of care which generates a lack of quality and consistency in health (23). Although there is a wide distribution of public health sectors in Africa, patients prefer to seek health care in the private sector predominantly due to the perception of confidentiality and quality service delivery in private health establishments compared to the public health sector. Private healthcare provision at the primary health care (PHC) level has been an independent set of service providers varying significantly in quality of health services with few linkages with a structured health system (24). The implication of this is that it establishes a negative perception of incompetency and mistrust in public health hospitals among users of health care, thereby promoting health-seeking behavior in private establishments and contributing to high out-of-pocket spending.

Figure 2: Health Systems in Africa

Perceptions and Perspectives (WHO, 2012. WHO Regional Office for Africa, 2012).
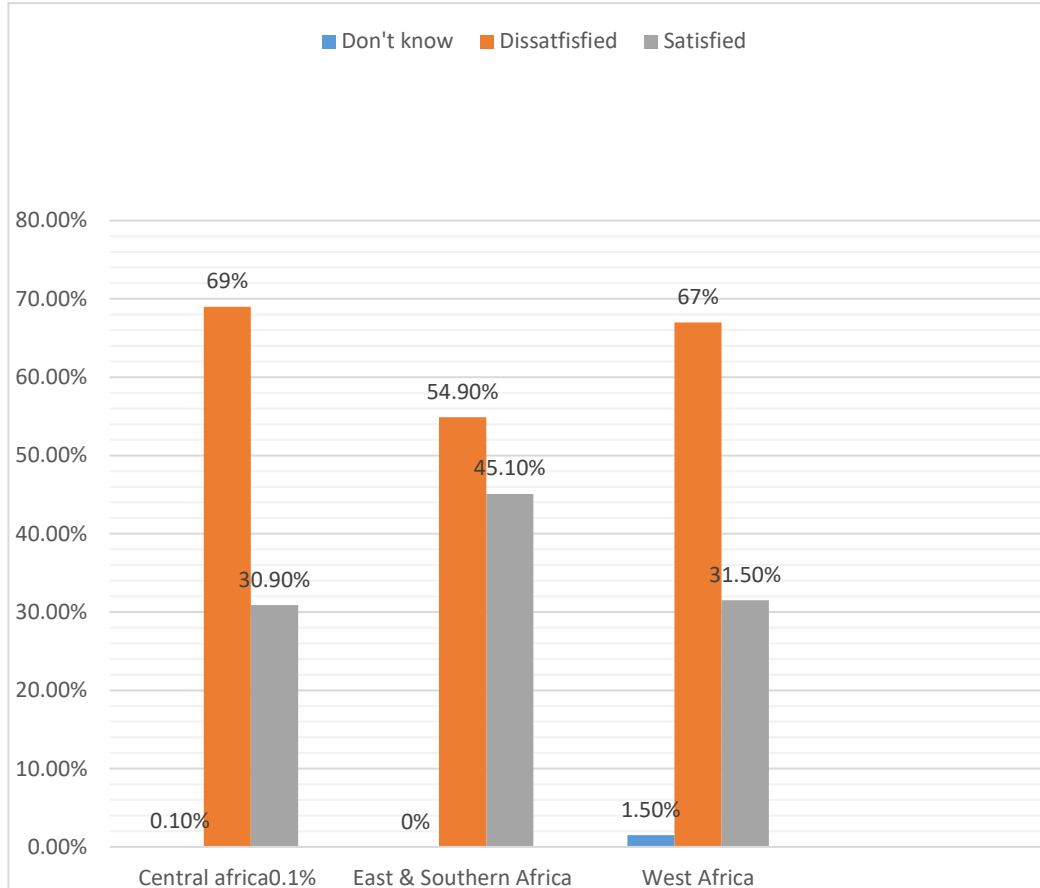
The imbalance between health service needs and health service utilization also constitutes a potential challenge to health HSDNs in Africa. This creates a deficit and inadequate response capacity at the first level of care in terms of resources (health workforce, medication, and lab supplies) and a weak public hospital network (referral, counter-referral, and feedback system). The exclusive tendency of an international organization to determine health priorities limits the participation of member states in the decision-making process (25,26). This focuses on health intervention projects on the specific disease (vertical programming) rather than community-oriented primary health care intervention (horizontal programming) (24). This situation poses a challenge to the implementation of HSDNs due to a lack of shared responsibility among multilateral organizations, NGOs, governments, communities, the private sector, medical professionals, and other stakeholders (23). For this reason, there is a need to develop a mechanism that promotes the development of primary health care and improve collaborative network across healthcare levels in an integrated system context that improves accessibility, affordability, availability, and quality of care for the under-resourced population. Africa has the highest population growth rate (27) and lacks a sufficient health workforce to meet the demand of the growing population (28). This creates shortcomings in the distribution of skilled

health workforce across the different levels of health care and constitutes a serious challenge to establishing HSDNs. A review of the health workforce in five African countries (Mali, Sudan, Uganda, Botswana, and South Africa) revealed that a minority of doctors, nurses, and midwives are working in primary health centers (PHC) and shortage of skilled health personnel are the greatest in rural areas (29). A greater number of doctors trained in Mali, Uganda, and Sudan do not stay to work in government health establishments in their countries, let alone in primary health care, due to inadequate resource expenditure on recruiting or training, poor working environment, difficult living expenses, and poor career path (30). These imbalances in the health workforce model can create a huge gap in health service readiness towards establishing sustainable HSDNs in Africa. Population distribution and topography in SSA present many challenges for health care delivery (31) and HSDNs. A geocoded inventory of hospital services across 48 countries in Africa reveals that only 16 countries met the international recommendation of more than 80% of the population within a 2-h time of travel to a hospital (32). This situation creates a considerable gap between the demand and supply of health care services among a geographically marginalized population which potentially limits the implementation of HSDNs in affected African countries. Innovative approaches for integrated HSDNs in healthcare delivery in Africa are required in specific geographical locations, including improvement of ambulatory services, transportation modes, communication systems, and the number of quality health service centers. Information and Communication Technology (ICT) is integral in operationalizing HSDNs. Although technology in health has a potential beneficial impact on HSDNs, high implementation cost and lack of technical skills (33), security and confidentiality concerns (33,34) are barriers to implementation of both in Africa. The major barrier to e-Health adoption and one that can potentially affect the implementation of HSDNs in Africa is the lack of cooperativeness between health information systems (HISs) (35). The presence of varying standards in HISs often creates a conflict of interest which makes it quite difficult to establish cooperative governance that offers quality health services in a coordinated and timely fashion.

Figure 3: Access to emergency hospital care

Ouma et al. Access to emergency hospital care provided by the public sector in sub-Saharan Africa in 2015: a geocoded inventory and spatial analysis. Lanc glob health. 2018. Vol 6, Issue 3, E342-E350.

https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(17)30488-6/fulltext
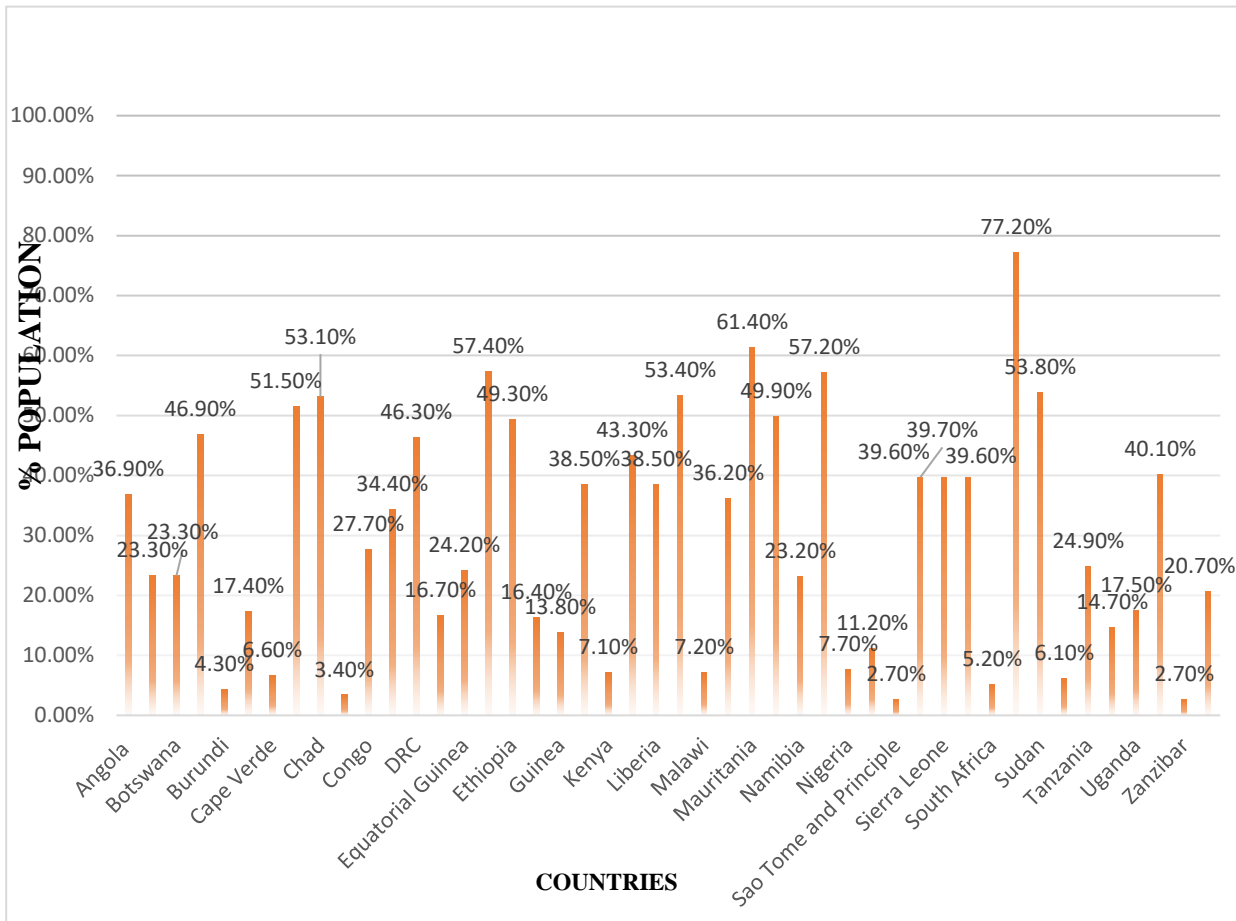
Discussion

### *Examples of Successful Models of Health Service Delivery Networks*

The referral pathway model

Referral systems in healthcare are processes in which a health worker at one level of the health system with insufficient resources (drugs, equipment, skills) to manage a clinical condition seeks the assistance of a better-resourced facility at a higher level to assist him/her, or take over the management of, the client's case (36). Clients/Patients in Ghana, just like in other African countries such as Mozambique, South Africa, and Zambia, among others, are expected to access services from primary services incrementally (e.g., the Community-based Health Planning Services, CHPS, and Health Centers), through to secondary facilities (e.g., district hospitals) and if required to the highest services (regional and tertiary hospitals) (37).

Figure 4: The referral pathway model

Amoah P.A, Philips D.R. 2017. Strengthening the referral system through social capital: A qualitative inquiry in Ghana. Healthcare 2017, 5, 80.
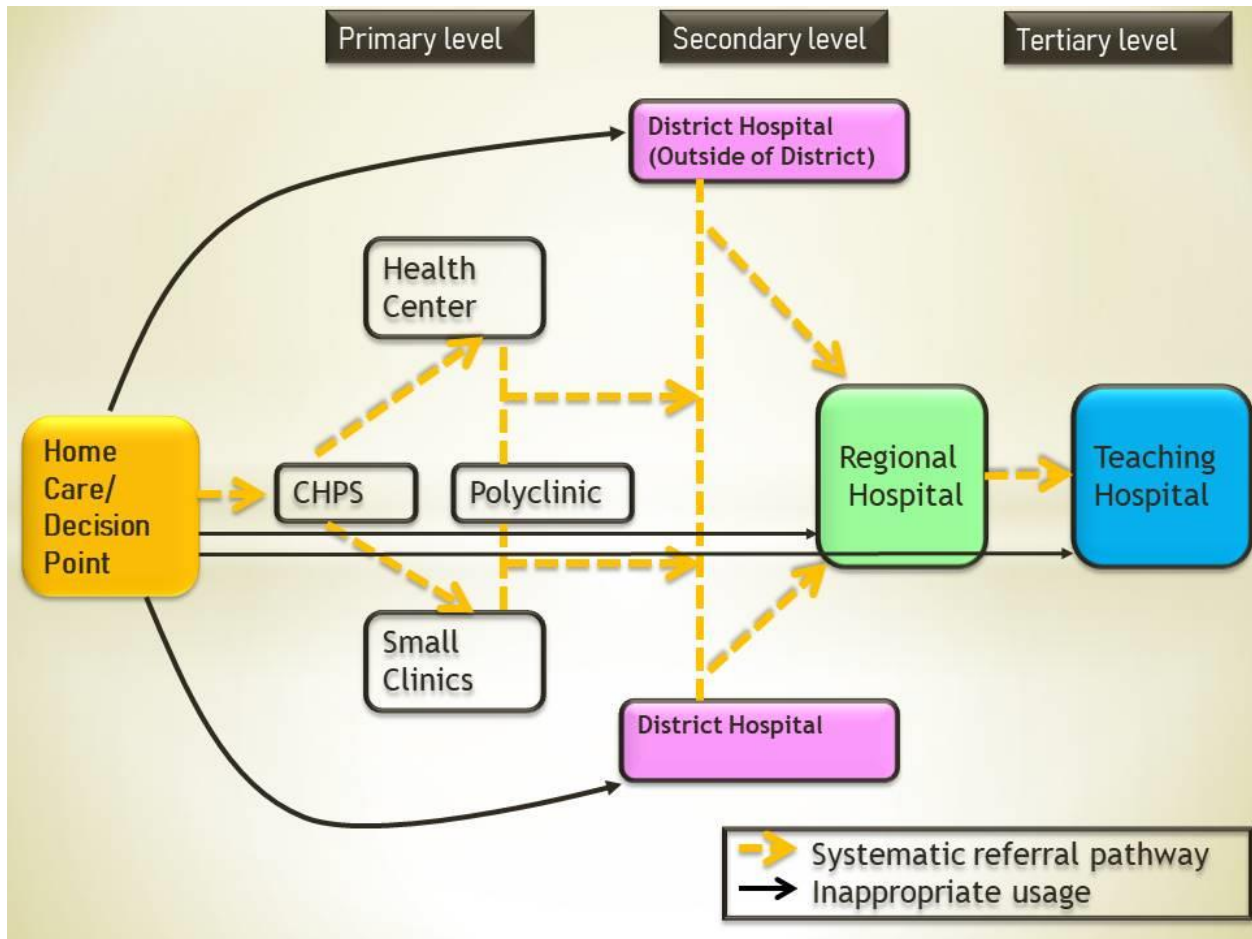
Social Marketing Model

The marketing strategies used by the majority of these organizations include both promotion of these services to the poor and the design of these services to meet the needs of this group. Social marketing refers to the application of marketing techniques to achieve behavioral changes (38). The Population Services International (PSI) in Africa has been making use of this concept for many years.

PSI runs programs that offer educational programs on reproductive health for urban youth in Africa. Magazines, television spots, call-in radio shows, and radio drama serve as avenues to address the taboo subject of safe sexual behavior (39). Studies have shown that youths have been responsive to these programs, and this resulted in increased contraceptive use and HIV testing (40). In a nutshell, this concept has largely contributed to making health services accessible.

Contracting out model

This involves the delegation of a health-related responsibility by the state to a private partner, and this can be a philanthropic or commercial basis (4,42). The private partner usually includes mining companies in Zambia and South Africa and faith-based based hospitals in Tanzania. These private partners tend to provide subsidized health services to the community, sometimes even those not covered in the contract. Type specificity, quantity, quality, and duration of services delegated are outlined in a contract (42). Antenatal care, delivery and postnatal services, and the Prevention of Mother to Child Transmission of HIV (PMTCT) are among the services that are contracted out by the state to private partners. Because of the very nature of this model, there has been overwhelming evidence that it improves access to health services and some evidence on improved equity in access (43).

Foreign-aided model

Global Public-Private Partnership (GPPP) is a collaborative, three-way partnership, including international donors and recipient governments, usually funded by multinational health initiative through a substantial disbursement of funds, in which both government and non-governmental entities participate in decision-making through a mutually agreed upon and well-defined division of labor (44). Most of the GPPP in African countries such as Botswana, Malawi, Zambia, etc. is aimed at HIV prevention and care-such as the African Comprehensive HIV/AIDS Partnership (ACHAP), and detection and treatment of women's cancers -Pink Ribbon, Red Ribbon (with PEPFAR and the Gates Foundation). With regards to Botswana, GPPP has provided the urgently needed infrastructure, equipment, human resources, and training of healthcare providers (45). Consequently,

GPPP cuts the cost of health services on national budgets while improving the access, coverage and, quality of health services being delivered to the people.

Lower operating costs through simplified medical services

"Operating costs were lowered by simplifying the medical services provided and using less than fully qualified providers." (46). For example, East Africa and some parts of Southern Africa have introduced a diploma in Clinical Medicine. These Clinical officers have contributed heavily to HIV/AIDS prevention and treatment initiatives in Africa (47). The use of community health workers (CHWs) is an excellent catalyst in providing "basic health promotion and healthcare within the communities in which they live" (48). CHWs are laypeople of varied background, coming from, or based in the communities they serve, who have received brief training on a health problem they have volunteered to engage with have been "cited as part of the solution to the shortage of health workers and lack of universal access to healthcare in low-income" (49, 50) and feature prominently in the WHO's workforce 2030 strategy for human resources for health (50). Ultimately, this model of HSDNs improves the accessibility of health services to poor people.

High volume and low unit costs

This model is very effective at improving the affordability of healthcare services through maximizing the use of infrastructure, and health personnel, and alternate use of cheaper medical procedures and equipment (51). Hospitals that implement this model tend to be located in high-density areas and target low-income groups requiring basic medical care. Since the available services are limited, there's high patient throughput (100 patients per day per doctor). The high productivity of

health personnel helps to make the services affordable. R-jolad Hospital in Nigeria, Nsambya hospital in Uganda, and Selian Lutheran hospital in Tanzania are examples of successful case studies (52).

Human resource optimization
Healthcare organizations have expanded the use of laypeople who are then equipped with skills and help in the distribution of oral contraceptive pills or eye exams. Aravind Eye system trains high school graduates into paramedical staff like patient flow managers, providers of simple diagnostic procedures, etc. (53). Another example is the Kisumu Medical, and Educational Training (KEMT) model in Kenya embarks on improving the quality of care by leveraging human resources. KEMT trains existing health workers in a safe procedure (54). These models trek miles in improving access, coverage, and quality of health services.

Increasing practice in rural areas model
SSA experiences a disproportionate burden of access to health services. In its quest to reach the poor, Narayarana Hrudayala (NH) Heart Hospital provides health camps in rural areas of India. Healthcare workers in these camps provide a cardiac diagnosis with transportation to the hospital for patients who require it (55). This model enhances accessibility to health services.

Recommended measures that can be implemented to strengthen health service delivery networks in sub-saharan Africa.

❖ Empowering and engaging people and communities:
This strategy allows for skill acquisition and places resources to people as a means of making them become empowered users of health services and advocates for a reformed health system. This is achieved through health education, engaging laypeople as community health workers. Empowering and engaging people is also about reaching the underserved and marginalized groups of the population to guarantee universal access to and benefit from quality services that are co-produced according to their specific needs.

❖ Strengthening governance and accountability:
The requirements for strengthening governance include a participatory approach to formulating policies, decision-making, and performance evaluation at all levels of the health system, from policy-making to the clinical intervention level.
The need for good governance in ensuring the best possible results cannot be over-emphasized. This demands that transparency, inclusiveness, reduced vulnerability to corruption which facilitates the best use of available resources and information, become the norm in HSDNs.

❖ Reorienting the model of care:
This strategic approach prioritizes primary and community care services and the co-production of health. This brings about a shift in inpatient to outpatient and ambulatory care and from curative to preventive care. It requires investment in holistic and comprehensive care, including health promotion and ill-health prevention strategies that support people's health and well-being. Reorienting the model of care ensures efficient healthcare services.

❖ Coordinating services within and across sectors:
The needs and demands of people serve as the basis for coordinating services within and across sectors. For this to be achieved, health care providers within and across health care settings, development of referral systems and networks among levels of care, and the creation of linkages between health and other sec-

tors should be integrated. This approach improves the delivery of care through the alignment and harmonizing of the processes and information among the different services.

❖ Creating an enabling environment:
 This complex strategy aims at effecting transformational change in leadership and management, information, methods to improve quality, reorientation of the workforce, legislative frameworks, financial arrangements, and incentives. The attainment of the above-captioned strategies largely depends on how favorable the environment is in allowing all stakeholders to effect transformational change.

❖ Creation of global and regional professional and/or academic networks:
These academic networks coupled with mentorship helps in transferring skills and knowledge across regions and generations, respectively. Integrating quality of care in healthcare and medical curricula and establishing open access repository for grey literature to share experiences helps make progress to UHC. Global networks such as Health Systems Action Network (HSAN) is committed to strengthening health systems through effective involvement of diverse stakeholders, spreading of actionable knowledge, and better management of resources that is guided by evidence.

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