OPINION EDITORIAL

Tanzania and Rwanda on Pace to Reach SDG Under-5 Mortality Target

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INTRODUCTION

The United Nations adopted Sustainable Development Goal (SDG) 3 to end preventable child deaths by 2030 [1]. Two thirds of under-5 deaths are considered to be preventable and a third are linked to malnutrition [2,3]. Under-five mortality has decreased globally by ~50% from 1990 to 2018[1], however; disparities exist in regions such as sub-Saharan Africa and Southern Asia which accounted for >80% of under-five deaths in 2018 [1]. Furthermore, under-five deaths are almost twice as likely in rural areas while children of educated mothers are three times more likely to survive, suggesting that accessibility and public health efforts are factors worth considering [4]. A 2019 modelling study identified Tanzania and Rwanda to be the only two countries in sub-Saharan Africa on pace to reach their SDG targets for under-five and neonatal mortality [5]. Based on the nature of most under-five deaths, successful strategies which target preventable child deaths should be discussed for wider adoption. In this article, the strategies implemented in Tanzania and Rwanda will be analyzed and common themes including institutional partnerships, capacity building, and increasing accessibility to healthcare will be discussed. Although strategies cannot be perfectly replicated, lessons learned can be considered for other nations to effectively reduce preventable under-five child mortality.

TANZANIA

Tanzania's success in reducing child mortality comes from political involvement, increased funding, and implementing effective interventions which target preventable deaths at the community and facility levels of the healthcare system [5]. Three key examples of this include the Maternal and Child Survival Program (MCSP) to scale up reproductive, maternal, newborn, and child health (RMNCH) services, pneumonia treatment by Results for Development (RD), and national strategies to decrease diarrhea-specific mortality.

The United States Agency for International Development's (USAID) MCSP was implemented in Tanzania from 2014 to 2019 [6]. The program increased accessibility of effective RMNCH services, along with the introduction and scale-up of high impact and sustainable interventions from hospitals to community-based care [6]. MCSP supported the integration of new vaccines into the national system, saving 35,000 children's lives between 2013-2018 [7].

The RD organization tackled childhood pneumonia alongside the government of Tanzania in 2015 [8]. RD obtained funds for six million courses of treatment, worked with national health authorities to accurately predict antibiotic demand to prevent stockouts and over-ordering, and brought in drug manufacturers to ensure adequate supply and drive down prices by competition [8]. They instructed the Medical Stores Department (government agency) on bidding for antibiotics and worked with the Ministry of Health to improve diagnostics and prescriptions for childhood pneumonia through mentorship programs [8].

Tanzania's decrease in diarrhea-specific mortality

comes from a combination of strategies focusing on treatments and nutrition [9]. The National Control of Diarrheal Disease increased oral rehydration therapy (ORT) availability in health care facilities and instructed mothers on prevention and at-home care [9]. Diarrhea treatment corners were put in primary health care facilities for preparation and use of ORT. Village scouts trained mothers how to prepare ORT and community health workers (CHWs) prepared and administered ORT in the community [9].

These three examples highlight wide-spread strategies to increase accessibility of health care through implementation and scale-up of interventions to improve under-five health outcomes. Altogether, the initiatives scaled-up RMNCH services, increased treatments for childhood pneumonia, and reduced diarrhea specific mortality through several interventions within health centers and community level care.

RWANDA

Rwanda has achieved significant reduction in under-five mortality over the past decade [10]. Like Tanzania, many under-five deaths in Rwanda are both preventable and treatable. Three examples of high-impact interventions include the national vaccine rollouts, MCSP's efforts to improve diagnostics and treatment, and the Kuraneza project implementing early childhood development (ECD) centres.

From 2009 to 2013, the government of Rwanda released vaccines for pneumococcus, human papillomavirus, rotavirus, and measles and rubella, achieving over 90% coverage [11]. Rwanda's Health Management Information System (HMIS) identified pneumonia and rotavirus as the first and third leading causes of under-5 deaths in Rwanda, respectively [11]. The vaccine rollouts were supported by international partners and included training of healthcare workers [11]. Widespread acceptance of the vaccines was achieved through awareness amongst local authorities, community leaders, and local non-governmental organizations (NGOs). Additionally, vaccination sites were set up in remote areas with the use of motorcycles and cold boxes.

The United States Agency for International Development (USAID) MCSP – Rwanda (2015-2019) identified capacity gaps to scale up and deliver high-impact interventions [12]. Rwanda's three professional association partners considered essential in delivery of RMNCH services each received funding from the MCSP for organizational development and capacity building. The three organizations executed low-dose high-frequency mentorship programs, resulting in increased treatment of pneumonia and diarrhea cases [12]. The MCSP trained lab technicians, health providers, and CHWs to improve diagnostics and increase malaria prevention in the community.

Kuraneza was a four-year project in rural Rwanda by CARE international and financed by USAID [13]. Health facilities and CHWs promoted healthy feeding habits, home gardening, and small animal production for families to become self-sustaining [13]. The program created ECD centres for children of ages three to six, meeting with groups of mothers with children of ages one to three, and home visits for pregnant women and mothers of infants [14]. The ECD groups allowed mothers to work longer hours and contribute financially to their families [14]. Kuraneza educated caregivers on prevention and early treatment mechanisms of pneumonia and diarrhea, while CHWs provided counselling on household practices to prevent childhood illnesses [13].

The three initiatives in Rwanda targeted under-five survival through increasing preventative measures and increasing accessibility of healthcare services in rural parts of Rwanda. Together, the programs increased vaccine coverage, increased treatment availability, and established programs in rural communities to encourage healthy ECD.

DISCUSSION

The child survival strategies vary between Tanzania and Rwanda, yet common themes emerge (Table 1). Both national governments took steps towards improving child health outcomes through introduction and scale-up of interventions targeting preventable child deaths and forming partnerships

Table 1. Comparison of Tanzania and Rwanda's Strategies.

	Tanzania	Rwanda
Partnerships	-Government collaboration with USAID (MCSP) and Results for Development -Existing partnerships allowed manufacturers of antibiotics (pneumonia) to enter the Tanzanian market	-Government collaboration with GAVI, UNICEF, WHO for vaccine rollouts Collaboration between USAID, Ministry of Health and Rwanda Biomedical Center for MCSP
Training health care workers	-Training Medical Stores Department to purchase appropriate quantity of antibiotics in a timely manner -Training health providers to accurately diagnose pneumonia in children and prescribe antibiotics	-Health workers extensively trained for vaccine rollouts to maximize efficiency and safe use of resources -Low-dose high-frequency training resulted in increased detection, treatment, and documentation of pneumonia and diarrhea
Increasing accessibility	-MCSP focused on establishing funding for malaria treatment for pregnant mothers -Increased ORT services in health care facilities for diarrhea treatment	-Ministry of Health set up vaccination sites in remote areas with motorcycles and cold boxes -CHWs and community leaders made arrangements for emergency transportation to health facilities
Improving evaluation	-MCSP: Development of health information systems, including the vaccine information management system. -Improved existing quantification system to predict accurate demand of antibiotics for pneumonia	-Vaccine rollout from province to province allowed lessons learned from one province to be incorporated into the next province -MCSP implemented indicators into facility registers and HMIS to measure progress and monitor on dashboards for scale-up

with multilateral organizations such as USAID and Global Alliance for Vaccines and Immunization (GAVI).). These organizations are able to secure funding by investing long-term donor contributions into capital markets and bundling demand for critical commodities such as vaccines to bring down prices [15].

The two nations were able to decrease under-five deaths through nationwide training of healthcare providers and CHWs for treatments and improved diagnostics. For example, care givers in Rwanda received training for vaccine handling, storage, and transportation to ensure efficient resource use during vaccine rollouts [11]. Additionally, capacity building ensures that children receive appropriate diagnosis and treatment plans [12].

Mobilizing healthcare into marginalized communities increased usage and accessibility of healthcare. CHWs can provide basic services, educate mothers, and encourage regular access to healthcare to reduce preventable and treatable child illnesses. Additionally, vaccination sites in rural areas and transportation arrangements to health facilities can further target marginalized communities [11].

Projects in both countries placed emphasis on effective monitoring and evaluation mechanisms to measure progress, identify areas of concern, ensure efficient use of supplies, and predict health care needs. Evaluation mechanisms enable future strategy improvements and avoidance of unwanted circumstances [11]. Lastly, advanced planning and preparation of equipment and human resources can highly benefit introduction and scale-up of interventions [7].

CONCLUSION

Tanzania and Rwanda have successfully reduced their under-five mortality rates through the implementation of effective and low-cost interventions. Their initiatives, although different, made use of similar strategies which led to their success. Capacity building, multilateral organizations, CHWs, and evaluation mechanisms allowed the two nations to effectively target preventable and treatable child illnesses. It would be worthwhile for other regions in sub-Saharan Africa and Southern Asia to evaluate the projects implemented in Tanzania and Rwanda and determine the form in which they could be adopted in their own respective contexts. Strategic partnerships and well-planned initiatives targeting preventable under-five child deaths can enable other LMICs in reaching their targets and improving child health across the world.

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