Better Health and Wellbeing:

An analysis of the United Nation's Sustainable Development Goal #3 in Rwanda

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HLTH 4700: Global Health

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20 November 2023

Introduction

What comes to mind when you see the phrase “good health and wellbeing”? For many, it may bring to mind imagery of a doctor’s office, salads, meditation, or gym equipment. While the terms “health and wellbeing” consist of a wide range of factors, what initially comes to mind when defining these terms will vary from person to person. Factors including nationality, age, sex, place of birth, and income all impact how a person views health. For example, a rice farmer in rural Rwanda and a person living in the capital city of Kigali will have differing expectations of healthcare facility operations, available treatments, and medication expenses.

One way to determine the biggest threats to health and wellbeing across the globe is to look at the Sustainable Development Goals (SDGs) created by the United Nations in 2015. These goals aim to improve the development of all nations by 2030 by acting as a “call to action” to care for the planet, end poverty and inequality, and ensure health, justice, and prosperity for all people (WHO). The SDGs also act as indicators for how much improvement countries have made in their progress toward overall development, compared to both their own progress and other countries’ progress. Currently, infectious diseases, especially malaria and lower respiratory infections, are major threats to health and wellbeing in Rwanda. Additionally, maternal and neonatal health are chief concerns.

To address these threats, one must consider a collaboration with other SDGs, such as more and better jobs for Rwandans, clean and affordable energy sources, and improving gender equality. It is essential to recognize that the solution to achieving health and wellbeing is a multifaceted one that requires working with a variety of prevention and treatment techniques.

Background and historical context

This report primarily focuses of the nation of Rwanda, a small, landlocked country in central Africa, just south of the equator. The average temperature ranges from 24-27°C (75-80 °F). The weather fluctuates between wet and dry seasons, with Rwanda having two rainy seasons: March-May and October-November, with an average rainfall of 4-8 inches per month. It is important to note that Rwanda is a mostly rural nation, with 83% of its population living in a rural area (Sabet et al., 2023).

Rwanda is comprised of three ethnic groups- Hutu, Tutsi, and Twa, with the majority being Hutu (84%). After World War I, Rwanda was named a territory under Belgian rule. For the next forty years, the Belgians imposed a system that segregated the different ethnic groups of the region. Tensions caused by this system built up over time until, in 1959, the Hutus overthrew the ruling Tutsi king, inciting the start of the Rwandan Revolution. On October 1, 1990, a Tutsi liberation group launched an armed movement, sparking civil war. The fighting peaked in April 1994, with the genocide of roughly 800,000 Tutsis and moderate Hutus. The Hutu regime fell on July 4, 1994, causing approximately 2 million Hutu refugees to flee to neighboring countries.

Since the end of the civil war, the country has made socio-economic and political progress and improved peace, stability, and unity. Many of the refugees have returned to Rwanda. However, these reforms, the country continues to struggle to maintain agricultural output and overall economic success. Agriculture is the main economic activity in Rwanda, with 72% of the working population employed in agriculture (FAO, 2023). Tea and coffee are the major exports while plantains, cassava, potatoes, sweet potatoes, maize, and beans are the most productive crops (FAO, 2023). The challenges concerning the majority agriculture-based economy,

including land shortages, soil erosion, inefficient farming practices, and weak product processing capacity (FAO, 2023).

Purpose of this report

The purpose of each of the seventeen SDGs is to incite action in all countries and include them in a global partnership (United Nations, n.d.). The SDGs aim to accomplish a number of "targets" by 2030. This report will primarily focus on SDG 3: good health and wellbeing. The mission statement for this SDG is to "ensure healthy lives and promote well-being for all at all ages" (United Nations, n.d.). The COVID-19 pandemic and other ongoing crises have slowed progress toward achieving SDG 3. This hinderance has a greater impact on low-income countries who had pre-existing under-resourced healthcare systems and health inequalities (United Nations, n.d.).

To determine the severity of threats to accomplishing SDG 3 in Rwanda, three primary measurements were assessed: disability-adjusted life years (DALYs), years lived with disease (YLD) and years of life lost (YLL). Additionally, the mortality ratio of the disease and the country's current progress toward achieving each target was considered.

SDG 3 and SDG 8: Infectious diseases and decent work and economic growth

Infectious diseases impact rural communities in a drastic way, therefore, more allowance for economic growth in these areas would decrease the presence of infectious diseases, such as malaria. Malaria is the primary focus of this section because it is the third highest DALY in Rwanda, and because of the unique way it impacts rural communities. Globally, malaria rates have increased since 2016, while rates of most other infectious diseases have declined. In Rwanda, malaria incidence has been declining, with current incidence being 114 per 1000, which

decreased from 308 in 2015 ("Goal 3," n.d). However, this rate is still too high to be considered achieved. The SDG target 3.3 addresses malaria: "By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases, and other communicable diseases". Until new cases of malaria are eradicated or at least able to be treated, this disease will continue to be a public health concern in Rwanda.

Malaria is a tropical disease that can affect anyone, however, there are some populations that are more at risk than others. One literature review determines that malaria incidence in Sub-Saharan Africa tends to be higher among villages with rice cultivation compared to those without rice cultivation (Rulisa). While beans have traditionally been the main staple food of Rwanda, Rwandan households currently spend more on rice than other food products (Rulisa). However, rice cultivation is often linked to an increased risk of malaria, since rice fields are an ideal breeding habitat for *Anopheles* mosquitoes (Rulisa). The negative impact on public health from rice cultivation has in turn created a market failure, as the societal cost of increased exposure (malaria) is not factored into the economic cost of the product (rice) (Rulisa).

In this example, the quality of working conditions is closely related to health outcomes. Therefore, this section focuses on SDG 8: decent work and economic growth. One goal of SDG 8 is to "create decent jobs for all and improve living standards" (UNDP, n.d.). Moreover, focusing on SDG 8 is essential because it is the only SDG for Rwanda that simultaneously has major challenges remaining and is declining in progress. Focusing on SDG 8 will improve this area of SDG 3 because malaria specifically impacts people living and working in rural areas, whether that is due to transmission of disease, availability of treatment for the disease, or direct/indirect cost of disease. It is recommended that malaria exposure be considered by both Rwanda's agricultural and public health policymakers to ensure the health of rice farmers.

SDG 3 and SDG 7: Lower respiratory infections and clean energy

Lower respiratory infections (LRIs) have been shown to be connected to climate and indoor air quality (Buchner & Rehfuess, 2015). LRIs are both the second leading cause of death and the second leading cause of DALYs in Rwanda overall. A significant proportion of these are attributable to household air pollution (HAP) from solid fuel use (Buchner). In Sub-Saharan Africa, HAP exposure was ranked the second most important risk factor behind malnutrition (Buchner & Rehfuess, 2015). Each year, there are 165.8 deaths that occur per 100,000 people in Rwanda, and the prevalence of ALRIs in Rwanda is similar to that of other sub-Saharan countries (Harerimana et al., 2016). The SGD target 3.9 addresses pollution: "By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination".

The increased rate of ALRI incidence arises from both biological and social factors. Biologically, pathogens that cause ALRIs vary across geographic and climate regions (Harerimana et al., 2016). Socially, crowding becomes more common during seasons with heavy rainfall, which increases chance of exposure to ALRIs (Harerimana et al., 2016). Low-income housing can also affect ALRI exposure due to poor ventilation. In 2010, around 77% of households in sub-Saharan Africa relied on solid fuels for cooking (Buchner & Rehfuess, 2015). This statistic proves to be problematic for Rwandan public health because burning solid fuels on open fires or simple stoves produces high concentrations of hundreds of toxic pollutants, such as particulate matter, carbon monoxide, and other carcinogens (Buchner & Rehfuess, 2015).

Improving clean energy in Rwandan homes will decrease the probability of developing a LRI over time. Therefore, this section focuses on SDG 7: affordable and clean energy. Climate factors

are a large contributor to this health outcome, but changing the way people fuel their homes during certain seasons can significantly improve health outcomes.

A study conducted by Buchner and Rehfuess determined that cooking with clean fuels is the healthiest option for cooking indoors (2015). However, obtaining clean fuels can prove to be difficult in a heavily rural country like Rwanda. Therefore, other methods that were determined to improve health outcomes by reducing HAP levels. In the absence of clean fuel sources, burning fuel outdoors, or at an alternative indoor location (other than inside a living space) was found to be the healthiest option (Buchner & Rehfuess, 2015).

Given increased risk for ALRIs during the rainy season, it is recommended that public education campaigns be delivered. The Rwanda Environment Management Authority has produced short films that educate viewers on "sustainable development and environment protection" (Harerimana). While effective, more could be done to describe the risks of HAP to the public via other methods, such as radio or community productions (Harerimana). These campaigns could encourage prevention techniques, such as properly ventilating homes, using a cleaner energy source, and cooking in a separate area outside the home. Additionally, these campaigns could teach symptoms of LRIs and encourage Rwandans to seek treatment.

SDG 3 and SDG 5: neonatal/maternal health and gender equality

Social perceptions on gender and gender roles impact healthcare, especially childbirth and infant care. The maternal mortality ratio in Rwanda has decreased from 476 per 1000 in 2010 to 203 per 1000 in 2020 ("Goal 3," n.d.). The rate of neonatal deaths has decreased from 27 per 1000 live births in 2010 to 19 per 1000 live births in 2020 ("Goal 3," n.d). While these rates have been reduced, they have not yet reached the goals set under targets 3.1-"by 2030, reduce the global

maternal mortality ratio to less than 70 per 100,000 live births"- and 3.2- "by 2030…reduce neonatal mortality to at least as low as 12 per 1,000 live births". In Rwanda, neonatal diseases are the top cause of deaths and DALYs in both males and females under 5 years old, meaning it contributes significantly to the years of potential life lost (YLL). SDG targets 3.1 and 3.2 in Rwanda are either considered major or significant challenges that are experiencing only moderate improvement.

Due to the 1994 genocide and increased urbanization, Rwanda has experienced changing family dynamics, altering the social expectations of men's role during pregnancy (Påfs, 2016). However, it may take more time for the new ideals to be put into practice. For example, one survey showed that 93% of men agree that a father should be just as involved in the care of a baby than the mother, yet 78% say that their partner is usually or always responsible for the daily care of their child (Doyle et al., 2015). Although there is no legal barrier that prevents men from being present during childbirth, many men face institutional and social barriers from being involved in their partner's pregnancy. Most men (96%) attended antenatal care visits, however, of these, 43% did not actually participate in the visit (Doyle et al., 2015). Resistance was usually amplified by healthcare staff and shaped a mistrust of both the health system and intimate partner, since women also often oppose increased male involvement in pregnancy and childbirth. (Doyle et al., 2015). Societal norms in Rwanda discourage women from allowing their partner to be involved in pregnancy, possibly because the maternal domain may be one of the few areas women can exercise power (Påfs, 2016).

Both men and women in Rwanda are responding to the gendered expectations placed on them by society and tradition. Therefore, this section focuses on SDG 5: gender equality. This SDG empowers women to be able to make decisions in all areas of life and have the right to quality

reproductive care (UNDP, n.d.). It is therefore recommended to increase the quality of maternal care and include men within the health system to be seen as partners rather than barriers. Both practices will build overall trust in the healthcare system and ensure safety for expecting mothers. However, increased male involvement in maternal health should not compromise the autonomy of the pregnant woman. It is hopeful, however, that improved gender equality in other public sectors will allow for women to feel more in control of all areas of health.

Conclusion

To achieve overall health and wellbeing in Rwanda, it is essential to not only focus on treatment and prevention strategies, but also a collaboration with other sectors of health, including decent work and economic growth, affordable and clean energy, and gender equality. By paying attention to how these goals intersect, SDG 3 can be reached in Rwanda.

Not all aspects regarding healthcare in Rwanda need to be fixed, however. Rwanda has made significant strides in improving healthcare quality and access in recent years. Since the genocide almost thirty years ago, the country has made major improvements in its healthcare system by implementing low-cost community-based health insurance plans, rural health posts, and foreign collaborations (Sabet et al., 2023). Rwanda is also home to the University of Global Health Equity, a teaching hospital located in Kigali. These factors have helped the nation to improve other areas of reform, such as the push for more gender equality in politics and beyond. Although healthcare in Rwanda is not without challenges, its current progress requires global acknowledgement.

Bibliography

Buchner H. & Rehfuess E. A. (2015). Cooking and season as risk factors for acute lower respiratory infections in African children: A cross-sectional multi-country analysis. *PLoS ONE 10*(6): e0128933. https://doi.org/10.1371/journal.pone.0128933

Doyle, K., Levtov, R., J., Kazimbaya, S., & Barker, G. (2015). Gender Equality, caregiving, and maternal health: baseline findings from RCT of Bandebereho Couples' Group Education in Rwanda. *In collaboration with Rwandan Ministry of Health* https://www.hsph.harvard.edu/wp-content/uploads/sites/2413/2015/12/Levtov.pdf.

Food and Agriculture Organization of the United Nations. (2023). *FAO in Rwanda: Rwanda at a glance*. https://www.fao.org/rwanda/our-office-in-rwanda/rwanda-at-a-glance/en/

Goal 3: Ensure healthy lives and promote well-being for all at all ages. Sustainable Development Goals - 17 Goals to Transform our World. (n.d.). https://sustainabledevelopment-rwanda.github.io/3/

Harerimana, J.-M., Nyirazinyoye, L., Thomson, D. R., & Ntaganira, J. (2016). Social, economic, and environmental risk factors for acute lower respiratory infections among children under five years of age in Rwanda. *Archives of Public Health = Archives Belges de Santé Publique, 74*(19), 19–19. https://doi.org/10.1186/s13690-016-0132-1

Påfs, J., Rulisa, S., Musafili, A., Essén, B., & Binder-Finnema, P. (2016). "You try to play a role in her pregnancy" - a qualitative study on recent fathers' perspectives about childbearing and encounter with the maternal health system in Kigali, Rwanda. *Global Health Action, 9*(1), 31482. https://doi.org/10.3402/gha.v9.31482.

Rulisa, A., van Kempen, L. & Koch, DJ. (2023). Exploring willingness-to-pay for ‘malaria-free’ rice among rural consumers in Rwanda: examining the potential for a local voluntary standard. *Agric Econ 11*(30). https://doi.org/10.1186/s40100-023-00271-w.

Sabet, C. J., Hammond, A., Bajaj, S. S., & Rugwizangoga, B. (2023). Rwanda’s health-care success holds lessons for others: Three takeaways for other low-income countries. *Think Global Health*. https://www.thinkglobalhealth.org/article/rwandas-health-care-success-holds-lessons-others

UNDP. (n.d.). *Sustainable development goals*. United Nations Development Programme. https://www.undp.org/sustainable-development-goals