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Burundi, Infectious
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Burundi's Preventable HIV/AIDS Epidemic

Burundi, or the Republic of Burundi, is a small landlocked country in the African Great Lakes region in central Eastern Africa, south of the Equator. Located on the eastern shore of Lake Tanganyika and bordered by Rwanda to the north, Burundi is "one of the few countries in Africa whose borders were not determined by colonial rulers," according to Britannica (2020). With a population density of 463 people per kilometer^2, Burundi is home to an estimated 11.86 million people forming 0.15 percent of the total world population (United Nations [UN] 2020)(Worldometer 2020). Concentrations tend to be in the north of the country along the northern shore of Lake Tanganyika in the west; most Burundians dwell in farms near areas of fertile volcanic soil (Central Intelligence Agency [CIA], 2020). Of its estimated 25,700 kilometers^2 of land, nearly 80 percent and 47 percent of the land area is classified as agricultural land and arable land, respectively (Trading Economics, 2020). Since independence in 1962, the country has been subject to aggressive ethnic conflict between the usually-dominant Tutsi minority (who constitute an estimated 15 percent of the Burundi population) and the Hutu majority (BBC, 2018) (Global Security, 2016). In 1994, the Burundi Civil War after the assassination of democratically elected president Melchoir Ndadye led to approximately 200,000 widespread civilian deaths (Global Security, 2016). Twelve years of genocide have ossified anti-Hutu discrimination throughout the country, leaving Burundi's predominantly agricultural economy in shambles. Today, the country continues to be plagued by food insecurity and malnutrition, not to mention a poor healthcare system that simply cannot meet the needs of the HIV/AIDS epidemic in Burundi (Standaert et al., 1989) (World Culture Encyclopedia).

Burundi has an average family size of 4.8 (Population Reference Bureau 2019). Due to socioeconomic factors such as land scarcity and poverty, Burundian families face a high risk of food insecurity. Although a vast 90 percent of the total population depends on subsistence agriculture, it is not uncommon for plots to be small, overworked, and less productive (CIA, 2020). Land scarcity is an imminent issue in Burundi. This is exacerbated by the traditional subdivision of land to sons and the redistribution of land to returning refugees. 86 percent of households in the country farm less than 0.5 hectares. Food insecurity takes a toll as households, given scanty divisions of land, are unable to produce enough food for family consumption (WFP,

2008)(Curtis, 2012). For both Burundian children and adults, their daily diet—a carbohydrate-rich farm diet—consists primarily of cassava leaves and Irish potatoes (World Food Program USA 2020). Other agricultural products like sorghum, sweet potatoes, and

plantains are additional staple foods in Burundi (Feed The Future, 2015). Unlike the stewed beans, typically red kidney beans, commonly eaten at least once a day over a wood fire in rural areas, meat (chicken and goat) is a rare delicacy in the country (The Borgen Project, 2014). Whereas, fish is a more accessible source of protein for those who live beside Lake Tanganyika.

Much to Burundi's relief, foreign aid has succored the country in the rehabilitation of schools and health services during the decade-long civil war and political instability. Yet, Burundi continues to suffer from a difficult education and healthcare system (UNAIDS, 2013). For Burundians between the ages of seven and 13, education is compulsory for six years, but the country's adult literacy rate stands at only 68.4 percent for the total population, with females at 61 percent (CIA, 2017). Regarding Burundi's healthcare, a paucity of reproductive health services has "prevented a significant reduction in Burundi's maternal mortality and fertility rates, which are both among the world's highest," according to the CIA (2017).

In view of the country's weak healthcare system, it is not uncommon for AIDS-related deaths to be left unmonitored as cases of new HIV infections climb day by day, month by month, and year by year. Human Immunodeficiency Virus (HIV) is a sexually transmitted disease (STD) that attacks cells essential for the body's fight against infections, weakening a person's immune system that is characterized by a low CD4+ count (National Institutes of Health [NIH] 2020). CD4+ T cells are crucial cells of the immune system that help direct the immune response by stimulating and signaling to other infection-fighting immune cells (NIH 2020). Left untreated, HIV can develop into a chronic viral infection, progressing later into the Acquired Immunodeficiency Syndrome (AIDS) phase. CD4+ T cell counts in blood samples are one type of HIV diagnostic procedure; for the count, white blood cells are separated and stained with immunofluorescent markers to determine the amount of CD4+ T cells per milliliter. According to NIH guidelines, if a person has a CD4+ count below 200 cells/millimeter^3 a person with HIV is considered to have progressed to AIDS (NIH 2020).

In Burundi, HIV/AIDS is a leading cause of death, especially in rural areas where there is a rapid increase in disease prevalence, according to the World Bank. While recent times have seen a dramatic (near 50%) reduction in the number of new HIV infections and AIDS-related deaths since 2010, there are an estimated 82,000 adults and children living with HIV in the country, of

which 44,000 are women aged 15 and over (World Health Organization [WHO] 2017). 11,000 children live with HIV and in 2016 more than 500 children were reported to be newly infected with the STD by vertical or mother-to-child transmission (WHO 2017). Sex workers, gay men and other men who have sex with men are said to be the key populations most affected by HIV in Burundi, according the WHO. As well, major vulnerable and affected groups of HIV/AIDS in the country subsume armed forces (e.g. soldiers, rebel groups, and police officers), youth

(especially school dropouts) and those at risk of sexual violence, specifically internally displaced people and refugees (WHO 2004).

The HIV/AIDS situation in Burundi, one of the poorest countries in the world, poses formidable challenges. On top of existing limitations in the country such as the deprivation of basic health care, individuals affected with HIV/AIDS do not have economic access to treatment options. According to the World Bank, individuals spend less than $49 on health per year in this country with a per capita gross income of $380. And, a concerning 71.7 percent of Burundi's population lives on less than $1.90 a day, according to a 2019 report released by the U.S. President's Emergency Plan for AIDS Relief (PEPFAR).

Importantly, food insecurity complicates the country's epidemic and minimizes access to a nutritious diet that is key for HIV/AIDS patients. As HIV can lead to immunosuppression, proper nutrition is at the core of maintaining strength, energy, and a healthy immune system, according to the U.S. Department of Health & Human Services (HHS, 2017). The U.S. Food and Drug Administration (FDA, n.d.) defines a healthy diet as one that "provides enough of each essential nutrient; contains a variety of foods from all of the basic food groups; provides adequate energy to maintain a healthy weight; and does not contain excess fat, sugar, salt or alcohol" (HHS, 2017). However, a proper diet is essentially unthinkable for most people in Burundi whose diets, as previously cited, are limited by subsistence farming. In addition, the country "has the highest hunger score and is the 9th food security crisis in the world," according to the 2018 World Food Security Report. Worse still, the malnutrition rates in Burundi are among the highest in the world (World Bank, 2020).

In less developed countries like Burundi, poor people live in poor food systems where nutrient-dense foods like eggs, milk, fruits, and vegetables are incredibly expensive; the country's crippling food insecurity poses attendant threats to already vulnerable HIV/AIDS patients (Heady and Alderman, 2019). Furthermore, Heady and Alderman's (2019) study for the World Bank Group suggests a strong correlation between the increased prevalence of stunting in children and high milk prices in Burundi. The problem, then, is that those nutrient-dense

foods represent the very sources of protein and carbohydrates recommended to people with HIV. According to the Food and Agriculture Organization of the UN (2017), more protein—which builds muscles and a strong immune system—and extra calories (in the form of carbohydrates and fats) should be introduced to diets of those with advanced HIV disease. In particular, eggs, milk, fruits, nuts, and vegetables help counter weight loss—a common side effect seen during advanced stages of HIV infection which can further weaken the immune system. Accordingly, Burundi, with its largely imbalanced protein and lipid-deficient diet, lacks quality foods and resources that are so imperative to maintain the health of immunocompromised people with HIV/AIDS (International Monetary Fund, 2004).

On the family level and beyond, HIV/AIDS visibly impacts food security in Burundi. Once a family member is infected, they may also come into contact with environmental factors that promote risk of infection and/or opportunistic infections. “Lack of adequate safe water and sanitation, displaced populations living in overcrowded conditions, and poor hygiene practices increase the risk of diarrheal diseases” and other opportunistic infections in the country (WHO, 2015). By definition, opportunistic infections are infections that occur more frequently and are more severe among the immunocompromised, according to HHS (2017). Given poor sanitation and the absence of a model of sexuality education in Burundi, HIV/AIDS transmission can easily spread from one family member—and one household—to another. As aforementioned, 90 percent of Burundi’s population depends on subsistence farming; this means that a family’s diet is largely restricted to the foods produced by a household’s limited share of land. If a family member falls victim to HIV/AIDS, there are less hands to manage the family farm and work, which translates to less income and less food production to feed hungry mouths. In most Burundian families, men are the primary breadwinners and decision-makers—from farming and cattle herding to producing and selling goods—, so the family experiences grievous losses from food insecurity if it is the father or eldest son who contracts the disease (Ungar, 2011). Thus, Burundi’s rural agrarian economies are most affected by the “multifaceted and bidirectional” relationship between HIV/AIDS and food insecurity, for the disease wields potential influence on the rural workforce and food production (Frega, Duffy, et al., 2010).

Considering the above and more, Burundi’s HIV/AIDS epidemic demands urgent solutions. One such solution is the Burundi Second Multisectoral HIV/AIDS Project, implemented from 2008 to 2011, which worked to “increase the utilization of a selected set of preventive services, among groups highly vulnerable to, or affected by HIV/AIDS” (World Bank, 2013). Those preventive services included the prevention of mother-to-child transmission (PMTCT) and male circumcision for HIV prevention with support from the Ministry of Health (MoH)—Burundi’s

core government sector that has undertaken the development of a series of platforms and reforms alleviating the quality of national human health. Also supported by the project was the expansion of antiretroviral (ARV) treatment. “The project contributed to a nationwide reduction in HIV prevalence from 3 to 1.4 percent, helped to more than double the number of people on antiretroviral therapy, and helped distribute over four million condoms,” according to the World Bank (2013). Drawing on the knowledge of successful HIV prevention programs in Africa, the remaining paragraphs will explore and propose further solutions for HIV/AIDS prevention in Burundi. Specifically, the solutions will focus on the integration of comprehensive sexual health education programs in schools; this is, at root, in an effort to inform Burundian youth about the significance of safe sex, sanitary measures, and healthy eating in relation to HIV/AIDS. Lastly, the paper weighs the benefits of educational radio campaigns on correcting misleading myths

and misinformation, as well as dispelling cultural stigmas and taboos (with an emphasis on discrimination against women in Burundi), surrounding the country’s epidemic.

As with the Burundi Second Multisectoral HIV/AIDS Project, Burundi’s MoH has overseen dozens of key projects that have produced critical first steps in approaching the country’s HIV/AIDS prevention. Even so, research on MoH-led initiatives in the fight against HIV yields relatively little records of a widely successful in-school sexual health education program as a means of disease prevention in Burundi. According to a report released by the Population Council (2014), “there is no framework for sexual health education in schools.” Although seemingly simplistic at first glance, sexual health education programs are fundamental to tackling HIV/AIDS in Burundi.

The mainstay of the country’s health system, the MoH should naturally conduct this outlined HIV prevention effort. Notwithstanding its sizable sociopolitical state power, the MoH struggles with “challenges and bottlenecks in the health sector” including, but not limited to, “poorly motivated staff with high turnover and attrition rates ... excessive administrative centralization ... [and] lack of involvement of the community in the management of health services” (WHO 2015). Fortunately, much of those government barriers were lifted by recent reforms that capitalized on “a contracts model for health-care delivery” (WHO 2015). To illustrate, the second National Health Strategic Plan (NHSP) 2011-2015 strengthened the performance-based financing (PBF) system, thereby improving the quantity and quality of Burundi’s health care services. Additionally, “increased interaction with subregional, regional, and international bodies and organizations” have addressed the excessive administrative centralization and lack of community involvement (WHO 2015). Finally, the MoH receives consistent foreign aid—a part of which can surely be allocated to HIV prevention initiatives—from esteemed bilateral and

multilateral donors such as the UK Department of International Development (DfID), Belgian Technical Cooperation (BTC), European Union (EU), and World Bank (Cailhol, Gilson, et al., 2019). Later paragraphs will address how community health workers (CHWs) as volunteers, or ordinary citizens, can collaborate with the government to achieve HIV prevention.

In order to do so, Burundi's MoH must work closely with the Ministry of Federal Education and Professional Training to introduce an effective school-based curriculum on HIV/AIDS—an ambitious leap which entails the thorough training of not only students but also teachers. On teacher training, challenges to consider do not exclude the teacher shortage in Burundi's education system. "It is not unusual to see one elementary school with one teacher for 103 students," according to George Mason University (2020). Accordingly, an alternative solution is the necessary training of Burundi's qualified CHWs and village leaders on HIV/AIDS and the STD largely in relation to nutrition/food security. Trained persons can then be strategically assigned (while accounting for possible barriers such as geographic location, distance/proximity,

access to transportation, etc.) to schools across various provinces and villages to share their formal knowledge on the disease with students and parents. At the classroom-level, opportunities should bring boys and girls together as equals in mutually inclusive and low-pressure discussions about HIV/AIDS and safe sex; here, the responsibility of men as much as women in safe sex and teenage pregnancy should be called to strict attention.

Similar community outreach projects in Burundi by nonprofit relief and development organizations signal optimism for this solution's success. Until 2018, the International Medical Corps had supported the training of nearly 200 "lead mothers," or female volunteers and 1,440 CHWs who, by leading home visits and childcare groups, successfully promoted the health and nutrition practices of three different Burundi provinces (International Medical Corps, 2018). The program saw definite results: more mothers engaged in exclusive breastfeeding and used fluids to rehydrate children with diarrhea—important measures to ensure HIV/AIDS protection. With this knowledge, villages can take their HIV prevention efforts a step farther by organizing separate parent-teacher or parent-educator conferences at convenient and accessible spaces led by lead mothers to further promulgate household awareness about the disease.

In a comparable 2018 paper in Zimbabwe called "The Role of CHWs in Improving HIV Treatment Outcomes in Children: Lessons Learned From the ZENITH Trial in Zimbabwe," the studied CHWs expressed "strong motivation, commitment, and job satisfaction," which rose during the interview rounds (Buzca, Dauya, et al., 2018). Not differently, recruiting and training more healthcare volunteers in Burundi may counterbalance concerns arising from the

previously mentioned lack of motivation among government health workers. Reflective of the study in Zimbabwe, an increase in the number of motivated CHW volunteers in Burundi may allow for "task shifting" so that less government money is spent on the remuneration of costlier, higher level staff; rather, trained volunteers, receiving little to no pay for their services, would assume more of the roles (requiring clinical skills) previously assigned to the expensive staff. For such reasons, the MoH should invest in more lead mothers and other CHW volunteers to support care for HIV patients, encourage uptake of HIV services and treatment adherence, and educate the rest of the community about the disease and disease prevention.

Objectively, it must be acknowledged that in Burundi not nearly enough work is being done on reducing the negative stigma, fear, and discrimination attached to HIV/AIDS patients, especially with respect to the country's adolescent girls and young women. All too often, people living with the lifelong condition conceal knowledge of HIV/AIDS from family and other community members, in fear of social rejection. Left untreated, the disease, helped by an extremely high mutation rate, develops into more serious stages of AIDS (Cuevas, Geller, et al. 2015). For those reasons, a critical issue that must be addressed by sexual health education in Burundi's schools is transparency. HIV/AIDS patients should be invited at schools and village meetings to speak

about their honest experiences with the disease and HIV/AIDS treatment (if applicable) in a supportive environment, facilitated by trusted CHWs serving as healthcare community liaisons. As private providers "may have greater potential for providing continuity of care and supporting treatment, driven partly by the economic incentive to retain client loyalty," according to Brugha's journal article on antiretroviral treatment in developing countries, Burundi's MoH and policymakers should cooperate with trusted private providers, like the aforementioned CHWs. Moreover, CHWs should stress the scientifically supported effects of good nutrition and a well-balanced diet including, but not limited to, fruits, grains, and vegetables on assisting immune maintenance of HIV/AIDS patients. Community members should be directed to the nearest supplementary and therapeutic feeding centers as safe shelters that can provide food rations and high-intensity treatment for the severely malnourished and food-insecure.

Questions and active participation should be strongly encouraged among community members in attendance. Workshops should gently guide members toward accessible routes of health care and pre/post-exposure prophylaxis (PREP/PEP) to HIV/AIDS. To receive necessary funding and/or tools for the workshops, the MoH should reach out to notable nonprofit organizations, of national and international level; influential organizations with which the government of Burundi has partnered in the past on controlling the HIV/AIDS situation should be at the top of that contact

list. One such nonprofit organization (NPO) is Population Services International (PSI) Burundi which has distributed a staggering 5,134,066 condoms to Burundians in their mission of "sensitizing Burundians to care and prevention for HIV/AIDS" (PSI Burundi, 2018). In fact, PSI Burundi could extend numerous other benefits as a potential nonprofit partner to the MoH. Founded in 1990, the NPO boasts an impressive network of 8,000 local experts across 50 countries (PSI, n.d.). Besides that, PSI Burundi poses a sustainable source of funding for some of the proposed HIV prevention interventions, for the institution holds strong partnerships and affiliations with government agencies and programs all over the globe. Donors of recent PSI Burundi projects such as the Department of Defense HIV/AIDS Prevention Program and Expanding Sexual and Reproductive Health Services Project in Burundi, include the U.S. Department of Defense/PEPFAR and the Embassy of the Netherlands, respectively (PSI, n.d.).

Despite this, wide opposition from the country's spiritual and religious leaders against condom use (primarily because of speculations about adultery) markedly hinders pivotal steps toward HIV/AIDS prevention and safe sex. In response to religious anti-condom denunciations, there is an obvious need for Burundian government and civil society groups to be more persistent in their rightful urging of church leaders not to oppose the use of condoms as a means of protection against the STD. Clearly, the proposed sexual health education program in Burundi should strive to demonstrate transparency through the public testimonies of HIV/AIDS patients, as well as nondiscriminatory, non-ethicist, and non-sexist conversations about the STD, safe sex, and adolescent pregnancy.

Last but not least, the media offers an extensive network through which Burundians can be educated about the disease and proper nutrition. The power of radio rings especially true in a landlocked country where "only 10 percent of the population has electricity and just over one percent have internet access, [so] most rely on radio for their news," according to The Christian Science Monitor (2015). Specific to promoting HIV/AIDS awareness in Burundi, Radio Ivyizigiro (Radio Hope), managed by the World Outreach Initiative, is an example of a successful radio campaign. True to the meaning of its name, the radio was able to bring hope to HIV/AIDS patients throughout Burundi. "I was feeling weak but the program gave me lots of information, which increased by knowledge [about HIV/AIDS] and made me stronger. I heard that I was not the only one to have [HIV]; it was important to have that testimony. When you listen a lot, you lose your worries," Aline, an HIV-diagnosed mother of three, said (ACT Alliance, 2013). As the fear of social rejection is central to why HIV/AIDS patients do not seek early medical treatment, community support groups can provide relief and correct the spread of misinformation and myths surrounding Burundi's little-understood STD. Mentioned earlier, PSI

Burundi could contribute to this campaign, as the NPO "uses a participatory approach to social behavior communication through peer education [and] mass media (including radio broadcasts) ... to better reach its targets and help Burundians to adopt healthy behavior" (PSI, n.d.). As witnessed during the 2019 UNICEF-supported education campaign in Burundi against Ebola, more organizations like UNICEF and PSI Burundi should continue supporting the Ministry of Communication, Information, Education and Population (CIEP) to produce radio spots and content educating the masses about the disease for radio programs to broadcast nationally.

Despite the discussed difficulties, HIV is a highly preventable disease. Therefore, in order to secure the country's prevention measures against the HIV/AIDS epidemic, Burundi's government—namely the MoH—must develop comprehensive sexual health and nutrition education programs in schools; reduce HIV/AIDS-related stigma through inclusive, nonsexist discussions and survivor testimonies across communities; control religious anti-condom denunciations for the sake of STD prevention; and connect HIV/AIDS support groups with the help of radio stations to provide hope and relief to affected Burundians. Finally, as HIV/AIDS are inextricably linked to undernutrition, agricultural productivity, and food insecurity in rural Burundi, the epidemic going forward must be evaluated and addressed beyond just the scope of increasing access to condoms, HIV/AIDS testing, and antiretroviral therapy. After all, as our father of the Green Revolution Dr. Norman Borlaug once famously said at the start of his 1970 Nobel Lecture, "Civilization, as it is known today, could not have evolved, nor can it survive, without an adequate food supply (The Nobel Prize, 1970)."

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