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HONORS THESIS



HIV in the Dominican Republic: Local Issues with a Global Effect

BY Brianna Sutherland

ADVISOR • Kirsten Hokeness

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ABSTRACT

The island of Hispaniola, consisting of the vastly different nations of Haiti and Dominican Republic, creates an interesting dichotomy to study, especially because they rank amongst the top fifty highest seroprevalence rates for human immunodeficiency virus (HIV) globally. To date, little has been done to analyze the contributing factors that lead to the observed high rates of HIV in the population because most literature has focused on Sub-Saharan Africa. Therefore, the goal of this project was to review literature and global data in order to explore the unique factors contributing to the HIV epidemic in the Dominican Republic. Key communities that were identified included sex workers and their partners, men who have sex with men and small sugar cane communities called bateyes. An uneven distribution of wealth and access to health services amongst communities, stigmas against homosexual relationships and social taboos regarding sex in general are some of the driving forces behind the spread of HIV in the identified communities specifically. The purpose of this study was also to compile multiple sources of literature to prove the importance of targeted prevention programs and provide suggestions on how to alleviate local issues, eventually lessening the global impact of HIV. Suggestions for successful programs are tailored toward three stages: prevention, monitoring and maintenance, which can be universally adapted to the key communities addressed in this study. Characterizing the factors that contribute to the proliferation of HIV and proposing possible solutions to manage the spread will have an effect not only on the Dominican Republic, but on the expansion of this disease globally.

INTRODUCTION

According to the national organization, United Nations Programme on HIV/AIDS (UNAIDS), thirty-nine million individuals have died from acquired immunodeficiency syndrome (AIDS) to date. This figure does not include the many other individuals who are living with an HIV positive status and attempting to maintain a healthy lifestyle. HIV has been mentioned as a disease of focus in the United Nations Millennium Goal Report for 2015 and has continued to be a topic of discussion in the medical community around the world for decades (United Nations, 2015). For this reason, the UNAIDS organization set the ambitious goal of having 90% of individuals be aware of their status, 90% of those infected being on antiretroviral therapy drugs and 90% of those infected having suppressed viral loads (UNAIDS, 2018). Although AIDS-related deaths globally are trending downward, the number is still far-off from the goals set for 2020. In addition, the World Health Organization has made it a goal to end the HIV epidemic by 2030 (World Health Organization, 2016). Many other global initiatives address the need to alleviate the global impact the HIV/AIDS epidemic has had, amongst developed and developing nations alike.

Mechanisms and Treatment of HIV/AIDS

HIV is an aggressive virus that infects a type of white blood cell called the CD4 cell, which is essential to immune functioning in humans. The virus works by first binding, then fusing itself with the CD4 cell, allowing it to release its genetic material, ribonucleic acid (RNA). Since the cell contains genetic material in the form of deoxyribonucleic acid (DNA), the RNA is reverse transcribed in order to be integrated within the host CD4 cell's DNA. There, it is able to "blend in" essentially and use the host cell as a mechanism to replicate its genetic material. Then,

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the virus assembles and buds off to eventually become an additional mature version of the virus to infect other cells. It is important to understand the stages of the virus because it is so aggressive and difficult to control. However, a person will not die from HIV. When HIV progresses to an advanced stage, meaning the viral load is much higher and the immune system is severely compromised, the individual is said to have AIDS. This is commonly associated with the presence of opportunistic infections such as tuberculosis or pneumonia, or a white blood cell count of less than two-hundred (Secretary's Minority AIDS Initiative Fund, n.d.).

Although there is no cure for the disease, there are a variety of prevention and treatment options that are available today. To prevent HIV, one can remain completely abstinent, or choose to practice safe sex with the use of male or female condoms. Other forms of birth control such as oral contraceptives or intra-uterine devices, although they prevent pregnancy, do not offer protection against HIV because they do not act as barriers to fluid exchange with a mucous membrane. Another preventative method involves the use of clean needles for people who inject drugs and not sharing injection materials with others to avoid the transmission of the virus into the bloodstream. All those who are sexually active or use injection drugs should be tested frequently to make them aware of their status and diminish the threat of unknowingly transmitting the virus to others.

There are also drugs available for people who are particularly at risk to prevent their chance of contracting HIV. There is pre-exposure prophylaxis (PrEP), which can be taken daily and can greatly reduce the risk of contracting HIV, or post-exposure prophylaxis (PEP) which can be taken 72 hours after possible exposure to HIV. PrEP has been proven to reduce transmission by nearly 90% in those who are sexually active and 70% in people who inject drugs when taken consistently (Center for Disease Control and Prevention, n.d.). In terms of treatment

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for those already infected with HIV/AIDS, antiretroviral therapy drugs can work to decrease viral loads by targeting multiple stages of the viruses' life cycle (Secretary's Minority AIDS Initiative Fund, n.d.). However, it is important to note that providing PrEP and antiretroviral therapy (ART) drugs is often extremely expensive to implement as a health initiative. This is particularly difficult for nations that do not provide universal health care because only those who can afford it or are covered by private insurance can afford the needed treatments.

Global Perspective and Literature

UNAIDS data shows that the number of AIDS-related deaths globally have been steadily decreasing since 2004. Many people who study the epidemic choose to focus on Sub-Saharan Africa, particularly eastern and south Africa, since 53% of the world's HIV positive individuals reside there (UNAIDS, 2018). Furthermore, prevalence rates within the population averages to about 4.1% within the region (World Health Organization, 2016). However, vertical transmission is much more common in African Nations than the horizontal transmission seen in Dominican Republic. The global health community and literature often focuses on Sub-Saharan Africa because of the startling statistics, and smaller areas often get grouped together or ignored all together. It is not uncommon for Caribbean islands to be grouped with Latin America, or looked collectively as the "North and South Americas". The goal of this research study is to provide insight to an under-studied nation in order to fill the gap in HIV literature.

Literature and data that focuses on the Dominican Republic that is available also fails to comprehensively identify key communities impacted in the nation alone. Key populations are highlighted in literature but distribution of HIV prevalence by each key community has yet to be displayed. This study combines a variety of data sets and population estimates in order to provide

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an overview of the issue and to emphasize which populations need the most attention and resources. In addition to addressing key communities, it is crucial that the preventative programs offer aid that is consistent with specific needs, an ideal shared by many international aid organizations (United Nations, 2015). Not only will key communities be highlighted and explained, but suggestions for targeted prevention programs will be offered. The final goal of this study is to demonstrate to the global health community the avenues of future research and highlight which areas are in need of the most international or governmental aid and attention.

The Caribbean

Caribbean nations face many similar problems to each other, but differ from other parts of the world. For example, in Eastern and Southern Africa where HIV is very prevalent, sex workers makes up only 2% of the new HIV infections, whereas sex workers represent 13% in the Caribbean (UNAIDS, 2018). One interesting fact to note, however, is that the approaches toward HIV can vary greatly amongst each nation within the Caribbean. For example, Cuba has been recognized by the World Health Organization for their aggressive approach in preventing the spread of HIV (Hoffman, 2004). However, their ethically questionable approach began in the 1980s and ended in 1994, with mandatory testing for all and quarantining those who were infected in one of the twelve national sanatoriums (Baker, 2015). Caribbean nations appear to be confronted with similar populations that may not be at heightened risk in Africa, for example, but the approach differs in each nation.

Based on evidence from UNAIDS for 2018, the Bahamas and Barbados were the only countries that provided pre-exposure prophylaxis (PrEP) to individuals at risk via the public health system in 2018. Although PrEP is available through private providers in the Dominican

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Republic, many do not have access to private health care due to a large divide between socioeconomic classes. Furthermore, neither Haiti nor the Dominican Republic are one of the seven countries or island states that successfully eliminated mother-to-child transmission of HIV in 2017, whereas Cuba has been recognized specifically for that accomplishment (World Health Organization, 2016). It is evident that the island itself is lagging behind other adjacent nations in their advancements in regards to reducing HIV prevalence. The Dominican Republic has been successful in its efforts to reduce AIDS-related deaths in recent years, but is not seeing as much success in its ability to reduce the overall number of new HIV infections.

Why Dominican Republic Instead of Haiti?

The island of Hispaniola, which consists of Haiti and the Dominican Republic, accounted for 72% of AIDS-related deaths in the region for 2017 (UNAIDS, 2018). Although Haiti's share accounts for 47% and the Dominican Republic's only 25%, it is a more realistic approach to look at the latter country for many reasons. According to World Bank data, the Dominican Republic has a GDP that is nearly nine times larger than Haiti's. From a financial standpoint alone, the Dominican Republic has a higher chance of success due to its ability to allocate more money even though the two countries have a similar population count. Data also shows that lifetime expectancy is ten years longer in the Dominican Republic and current health expenditure is nearly seven and a half times more per capita than in Haiti. The Dominican Republic has also already come a long way in its battle against HIV/AIDS, seeing a 14% reduction in new infections since 2010 according to World Bank data versus Haiti's 10% reduction. Due to the financial, economic and health successes found in the Dominican Republic, it is a logical choice

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to first focus on the Dominican Republic over Haiti in regards to the HIV epidemic found on the island of Hispaniola.

IDENTIFYING KEY COMMUNITIES

Estimated population and prevalence rates were taken from a variety of organizations including the World Health Organization, USAID, and UNAID and other qualitative publications in order to identify the key communities at risk in the Dominican Republic. By estimating the population of key communities, then using the prevalence rates of HIV within them, given the total population of those living with HIV, an estimate of the distribution of HIV prevalence by key community within the Dominican Republic can be observed in Appendix A. The largest contributing population that could be individually isolated was men who have sex with men, making up 24% of people living with HIV in the Dominican Republic. The second largest population was within the small sugar-cane communities called bateyes, at an estimated 14%. In addition, it is estimated sex workers make up 5% of the people living with HIV in the Dominican Republic. Other key populations at risk, such as transgender individuals, prisoners and people who inject drugs are very small populations overall and have very limited HIV prevalence data available, which is why they are not included. The “other populations” featured in the graphic represents members of the general population or could not otherwise be isolated. However, the 57% contribution by this population may be largely influenced by the other three communities since horizontal transfer is so common. For example, this section may represent clients of sex workers, partners of men who have sex with men or other individuals who contracted HIV through these populations. Determining the source of infection is difficult to track, however it is projected that the effect of the three highlighted communities is underestimated by the data. Complications with collection of data and self-identification as a member of these populations also act as hindrances toward the accuracy of the data. On the other hand, three populations that can be identified contributing to nearly 50% of the HIV prevalence

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within this nation is an alarming fact, framing the need for research and targeted prevention methods.

Although the actual representation of each population may differ, the distribution for the Dominican Republic does reflect a similar representation provided for the entire Caribbean region. According to UNAIDS data for the Caribbean, over 40% of the new infections in 2017 came from sex workers or people that are partners of sex workers and other key populations (UNAIDS, 2018). Drug users and the transgender population make up only about 2% of the new infections combined, and men who have sex with men make up about 20% of the new infections. Each region of the world differs vastly in these percentages, but the problems in the Dominican Republic seem to remain consistent with the region.

Men Who Have Sex with Men

As demonstrated by Appendix A, this community alone contributes more to HIV prevalence than the other identifiable populations. Anal sex is frequently practiced amongst men who have sex with men (MSM), and it is predicted condom use is lower since the ability to be impregnated is eliminated during anal sex. According to recent data collection, condom use amongst MSM is only about 39.5% in the Dominican Republic (UNAIDS, 2018). Furthermore, literature suggests that men have sex with men for economic opportunities and this group often overlaps with the sex worker population, which is frequently not the primary source of income (Padilla et al., 2010). The stigmatization of homosexuality or homosexual acts is yet another contributing factor to the heightened rates of HIV within the population. Being labeled as gay or bisexual can have such a profound impact on an individual to the extent that it will deter them from seeking or even accessing medical care (Rojas et al., 2011). This stigmatization may also

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reduce the probability the man engaging in sex with other men will admit the activity toward a potential female partner. As previously mentioned, the impact MSM populations can have can extend much further than data and figures can represent due to their engagement with heterosexual partners. Programs that target this community must recognize that individuals do not often self-identify and are often either internally or externally deterred from seeking medical care.

Bateyes

Another community that is impacted by the HIV epidemic that is unique to the Dominican Republic are small sugar cane communities called “bateyes”. According to USAID data, it is estimated that in the year 2005 there were HIV infection rates ranging from 5-12% within the bateyes (Rojas et al., 2011). Furthermore, as seen in Appendix A, they represent the next largest contribution to the HIV epidemic in Dominican Republic as an individual community. Understanding how these small villages operate is crucial to framing the issue of HIV rates in this country.

The term “batey” comes from the Taino word which meant village center to the indigenous Arawakan people of the Greater Antilles and Bahamas (Bracken, 2015). Hundreds of these rural villages span across the country and are owned by either private companies, state-owned enterprises or individual plantation owners (Bracken, 2015). Many of them are made up of Haitian migrants who came to the Dominican Republic to work for better wages. However, with new laws passed in 2013, even those who were born in Dominican Republic to undocumented Haitian immigrants were denied citizenship (Bracken, 2015). This makes it

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difficult to receive basic needs such as healthcare and education services since most batey residence do not have “papers” (Batey Relief Alliance).

Many confounding variables can be considered contributing factors to these higher infection rates. The rural location and lack of access to medical care, low socioeconomic or educational levels of the workers, or the mingling between the health of two nations are some of the factors to be considered. Nonetheless, these specific communities having higher rates of HIV emphasize the important fact that HIV prevention programs often overlook the sub-communities impacted by the epidemic. Recent literature and data started to highlight the startling statistics within these communities, yet no public policies have specifically addressed how to target them directly. One potential issue is the fact that these villages are unregulated and overlooked by the government. Due to long-standing discriminatory practices against Haitians in the Dominican Republic, the government often turns to the state agencies or private owners of the bateyes to provide care for its residents (Children of the Nations, 2007). Furthermore, they are often located in rural areas that have less access to medical centers that are doing outreach in the cities. Due to the mechanization of the sugar cane industry, many Haitians have still been looking toward industries in the Dominican Republic for work, which further emphasizes the need for unity between the two nations on this epidemic (Children of the Nations, 2007). If they fail to address these rural working communities, HIV rates will continue to remain stagnant, or better yet, increase.

Sex Workers and Sexual Tourism

Out of the three communities, sex workers make up just 5% of the HIV prevalence contribution by community (Refer to Appendix A). However, as mentioned before, this

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community can overlap with MSM and may be under-estimated due to the need for self-identification. Nevertheless, sex work presents a unique problem for the Dominican Republic that is not apparent in other nations studied within the HIV epidemic in Africa for example. It also proposes the global impact this disease can have when combined with the sexual tourism component, with many visitors coming in from other nations to participate in sexual activities.

HIV is not a disease that impacts just one country in the world; its effects are widespread and can have an effect on any country across the world. Especially due to increased globalization and travel, the impact of the Dominican Republic's high HIV rates and increase in sex tourism and prostitution can spread farther than just the island of Hispaniola. Air travel data collected in December 2018 showed approximately 6.5 million tourists visiting the Dominican Republic. One interesting piece to note is that European nations account for nearly 1.4 million visitors, only second behind North American nations (Banco Central de la República Dominicana, 2018). It is also noted that nearly 69% of North Americans and 72% of Europeans flew into the popular tourism destination of Punta Cana (Banco Central de la República Dominicana, 2018).

According to recent literature, Europe has actually observed recent spikes in their own HIV rates (Britton, 2018). It would be far-reaching to contribute this solely to their travel to one small island, however, it does introduce an interesting component for study. In a society where globalization and travel is not only available, but normalized for most people, any given country's health issues can become a world-wide threat. Future research would comprise of studying the impacts travel can have on the spread of HIV, and if measures can be taken to limit it as well.

TARGETED PREVENTION PROGRAMS

It remains a goal of UNAIDS to implement “combination prevention that is tailored to populations and locations with the greatest need,” which is particularly important to a nation that has reduced HIV rates but still has a long way to go. In accordance with the “90-90-90” goal set by UNAIDS, the Dominican Republic is falling behind the benchmark with only 77% of infected individuals knowing their status, 52% of the infected individuals receiving ART and 43% of infected individuals being virally suppressed (UNAIDS, 2018). As seen in Appendix B, the Dominican Republic’s success falls behind the average percentages globally as well. Not only does this highlight areas of improvement, but demonstrates how this nation may be compared to global successes.

Global Fund, an organization that provides financial assistance to nations across the world to combat HIV/AIDS and other diseases, is a leading contributor to the fight of the epidemic in the Dominican Republic (Aceso Global, 2017). Even though nearly 40% of the population lives in poverty, the country as a whole is considered lower-middle income by the Global Fund, which explains why it will slowly be transitioned to a reduction in funding (Del Mundo, n.d.). Although the cases of newly infected individuals and deaths from the disease have been declining due to funding and prevention programs, stifling support will only halt the progress that has been made thus far. Haiti is nearly 90% externally funded, but as funds for the Dominican Republic are dwindling, the island may face further issues regarding access to life-saving antiretroviral drugs (UNAIDS, 2018). This further emphasizes the need for international organizations to continue their support to nations struggling with HIV spread, the Dominican Republic in particular.

In the Dominican Republic, there is both a public and private branch to the healthcare that was reformed to provide supposed universal health care in 2001 (Rathe, 2010). Although the

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public sector claims to be universal, due to large inequities amongst their socioeconomic classes, many of the poorest Dominicans are left with poor quality of care, or no access to care at all (Rathe, 2010). The most obvious indicator of this inequity is that household expenditure makes up the largest portion of health spending at about 40%, and the proportion of public spending within the total health expenditure was lower in the Dominican Republic than all other countries in the Caribbean and Latin American region as of 2006 (Rathe, 2010). The structure of their healthcare system and distribution of care demonstrates the need for outreach programs that specifically target at-risk populations, in an effort to bridge gaps of care where certain populations are being neglected.

Cuba: A Caribbean Model

As previously mentioned, Cuba has been recognized for having one of the most successful approaches to the HIV/AIDS epidemic (Hoffman, 2004). Not only does this make it an ideal candidate to act as a model for the Dominican Republic, but there are many similarities amongst the two nations as well. First is the geographic location, with both nations being islands in proximity to each other in the Caribbean. Furthermore, according to World Bank data, the GDP of Cuba is only slightly higher than that of the Dominican Republic, and both are classified as upper middle income countries. In addition, Cuba is one of the other nations in which bateyes are located, suggesting more similarities amongst the citizens and their occupations (Children of the Nations, 2007). Having a variety of comparisons to be made between the two, and the vast successes of Cuba, make it an ideal model for Dominican Republic to try and replicate.

Many components of the prevention program implemented in Cuba create for vast success. It takes aggressive action against vertical transmission and has mandatory testing for

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mothers and their partners, allowing Cuba to be recognized in 2015 as the first nation in the world to eliminate mother-to-child transmission as a public health problem (World Health Organization, 2016). Cuba also provides rigorous safe-sex education to adolescents and roughly 78% of young people (age 15-24) reported knowing what HIV was and how to prevent it (Avert, n.d.). Along with just generally having a widespread distribution of condoms and many available clinics, Cuba also has been producing their own generic form of ART drugs since 2001 and provides them to its people free of charge (Hoffman, 2004). What can be learned from the successes Cuba demonstrates can essentially be broken down into three major components.

- Prevention
- Monitoring
- Maintenance

It is suggested that by applying these three principles to the key populations at risk in the Dominican Republic, programs will begin to see the most success in reducing the impact of the HIV/AIDS epidemic.

Targeted Programs for Men Who Have Sex with Men

A crucial component regarding the men who have sex with men community would be to start by educating providers and reducing the stigmas around these individuals seeking care. Although the nation is heavily religious, it is important providers are reminded on how to provide care to all people without discrimination. Distribution of condoms to men who have sex with men constitutes the preventative portion, but working with providers to create comfort amongst the community to seek care is also important. Reducing stigmas again becomes vital when promoting men who have sex with men to seek frequent testing for the monitoring

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component of the comprehensive HIV epidemic approach as well. Lastly, for the maintenance element, implementing “treatment for all” and adopting similar practices to other nations around the work for providing ART to all individuals will further enhance the Dominican Republic’s ability to reach UNAIDS targets for individuals who test positive not only being on treatment, but having suppressed viral loads as well.

Targeted Programs for Sex Workers

Sex workers may make up the smallest portion of the distribution of HIV infected individuals in the Dominican Republic, but as mentioned before the overlap with sex tourism is what can cause a global effect. Prevention for sex workers begins primarily with targeting areas in which sex work is common and distributing condoms along with providing education on their importance in all encounters. This attention is of particular importance in areas of heavy tourism, such as the eastern tip of the island where Punta Cana is located. For the monitoring factor, sex workers should be encouraged to seek frequent testing and with adequate funding, ideally this would be completely free of charge. Lastly, to keep a low prevalence rate amongst sex workers, the maintenance factor of HIV programs would eventually provide free PrEP to sex workers in order to limit their ability to contract HIV if exposed.

Targeting Bateyes

To specifically address the issues faced in these communities, one easy answer would be to educate and provide protection to rural communities. However, this is easier said than done. A relatively low-cost model that has been proven successful in other developing nations is to have pop-up clinics in these rural communities on a rotating basis. In one study, less than 4% of women in these communities reported using a condom during their last sexual encounter, which

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emphasizes the need for condom distribution and education (Brewer et al., 1998).

Although programs targeting these rural villages may be difficult to implement, their cost and life-saving measures would be far reaching. This in particular would be where international organizations could bring the most attention, since many people outside the Dominican Republic do not even know what bateyes are. Clinics for sexual health in bateyes, or at the very least near them, could specifically work on handing out protective measures and provide HIV testing. This would cover both the preventative and maintenance components of the model being proposed in their study. The maintenance component would take the form of assisting residents in receiving ART even in rural areas, or at least coaching them on lifestyle changes they can make to lead the healthiest lives they can with limited access to care.

Limitations

It is recognizable that not all of the suggested prevention options would be feasible to implement in the Dominican Republic. First off, Cuba took an aggressive approach to HIV before the epidemic even reached the island (Hoffman, 2004). Also, it would be very difficult to implement their own generic ART production and essentially start a new sector of their health industry without considering many other factors. Furthermore, even if the Dominican Republic started to actually provide universal health care to all, and opportunities for free testing or treatments, that does not ensure the quality of care or service. This also introduces another factor, which is that social inequities amongst classes and groups are so prominent in the Dominican Republic that marginalized groups such as sex workers, men who have sex with men and especially undocumented descendants of Haitian immigrants living in bateyes may be pushed out of the system. Stigmas attached to certain groups cannot be changed overnight and public health

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policies will simply not be able to shift ideas within a society. Financing all of these initiatives would also be quite difficult in a country that is already facing a reduction of aid for the HIV epidemic. Nevertheless, the suggestions provided for targeting at risk groups are still valid and provide areas of future concern for public health policies and allocation of aid.

CONCLUSION

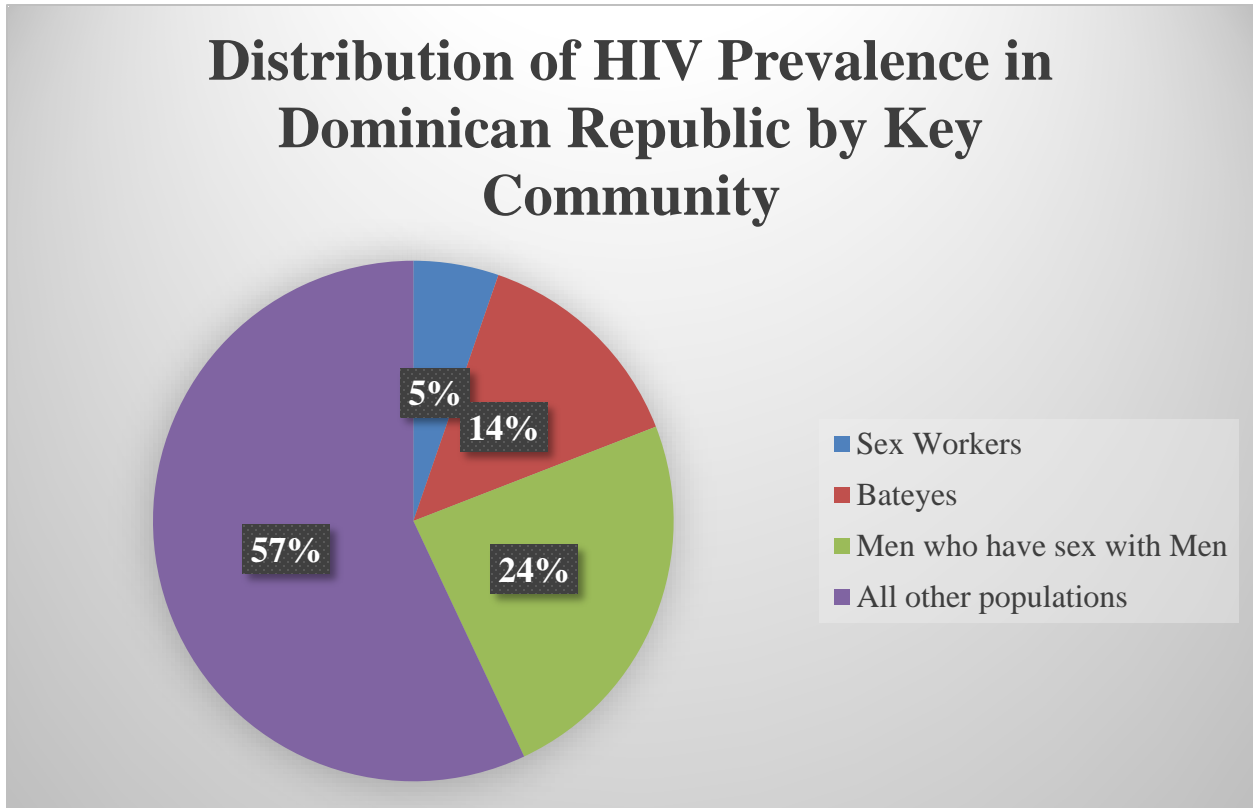
Although many organizations have set goals for the HIV epidemic, the battle is far from over. The island of Hispaniola contributes a majority of deaths in the Caribbean, which is an area that has been under-researched in terms of the HIV epidemic. This research highlights that the issues the Caribbean as a whole faces are vastly different compared to other areas of the world that have been heavily studied. In the Dominican Republic specifically, there are also few sources that point out which key communities are at risk, creating a gap in literature that this study fills. Sex workers, men who have sex with men and bateye residents were the identifiable key populations that contribute most to the HIV epidemic in this island nation according to a variety of compiled data sources. There is also a link between sex work and tourism, allowing local issues on the island to have a potential global impact. These key populations provide areas that are in need of intervention targeted toward their specific requirements. Many international organizations, such as the United Nations for example, recognize that interventions should occur in at-risk communities, but this will not be possible if they are not outlined. The Dominican Republic can look toward other successful programs, such as in Cuba, to follow a model of prevention, monitoring and maintenance within the general populations and at-risk communities. In addition, international funding should not solely be based on the income of a country, and should consider not only which nations, but which populations are in need of the most aid. Future research can provide actionable plans and financial needs for each at-risk community in the Dominican Republic. The HIV epidemic is not one that is solely found in this nation alone, and will only come to an end when problem areas can be recognized and handled accordingly. Globalization and increased travel provides an easy avenue for one nation's health problems to

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be spread to the next. Solving local issues, even on a relatively small island in the Caribbean, can not only have an impact on the country itself, but have far-reaching global effects as well.

APPENDICES

Appendix A - Distribution of HIV Prevalence in Dominican Republic by Key Community



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Appendix B – Comparative Chart for UNAIDS Goals

	UNAIDS 2020 GOAL	Current Status Globally	Current Status in Dominican Republic
% Infected Who Know Their HIV Status	90%	81%	77%
% Infected Receiving ART	90%	66%	52%
% Living with HIV that are Virally Suppressed	90%	52%	43%

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