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The HIV/AIDS Epidemic in the Dominican Republic: Key Contributing Factors

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Abstract

This article reviews HIV/AIDS epidemiological data and recent research conducted in the Dominican Republic, with a focus on explaining the variability in estimated seroincidence and prevalence within the country. HIV seroprevalence estimates range from 1.0% (in the general population) to 11.0% among men who have sex with men (MSM). Some have indicated that the highest HIV seroprevalence occurs in Haitian enclaves called bateyes (US Agency for International Development [USAID], 2008), which are migrant worker shantytowns primarily serving the sugar industry in the Dominican Republic. Others report higher or comparable rates to the bateyes in areas related to the tourism and sex industries. As in other Caribbean and Latin American countries, reported HIV transmission in the Dominican Republic is predominantly due to unprotected heterosexual sex and the infection rate has been increasing disproportionally among women. The Dominican Republic represents two thirds of the Hispaniola island; the western one third is occupied by Haiti, the nation with the highest HIV prevalence in the western hemisphere.

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Contribution of Authors

The first author (Dr. Rojas) conducted the review of the literature, and wrote the first and last draft of the manuscript. The second and third authors (Dr. Malow and Ms. Ruffin) contributed to the analyses and summaries of previous related work. The fourth and fifth authors (Drs. Roth and Rosenberg), co-designed the study and contributed to the writing of the last draft. Dr. Rosenberg reviewed the manuscript contributing with summaries of previous related work. All authors critically reviewed and approved the final drafts of the manuscript.

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Although data is limited, it shows important differences in seroprevalence and incidence between these two countries, but commonalities such as poverty, gender inequalities, and stigma appear to be pivotal factors driving the epidemic. This article will discuss these and other factors that may contribute to the HIV epidemic in the Dominican Republic, as well as highlight the gaps in the literature and provide recommendations to guide further work in this area, particularly in the role of governance in sustainable HIV prevention.

Keywords

bateyes; Dominican Republic; Haitians; HIV/AIDS

Introduction

The HIV epidemic in the Caribbean region reflects the highest HIV seroprevalence rate (1.2%) in the Western Hemisphere. Approximately 250 000 persons are living with HIV/AIDS in the Caribbean. This figure includes 27 000 persons who became infected in 2006.[1,2] The majority of HIV/AIDS cases in the Caribbean are reported in Hispaniola, the island shared by the Dominican Republic (DR) and Haiti. This article presents epidemiologic information about the HIV/AIDS rates in the DR, the development of the epidemic, and the successful and failed governmental responses to the epidemic. In addition, this chapter will present gaps in the research literature that are important to addressing DR-specific needs.

Almost 75% of People Living with HIV/AIDS (PLWHA) in the Caribbean live either in Haiti or the DR. The great majority of PLWHA on Hispaniola reside in Haiti.[3] Women are most vulnerable to acquiring HIV, particularly due to factors such as stigma, poverty, sexism, and lack of prevention awareness. For the vulnerable populations in the DR, a lack of access to medical services further increases the risk of acquiring HIV.[2] There are also hidden populations at risk such as men who have sex with men (MSM) in which the prevalence of HIV has been hard to ascertain due to the lack of research and inadequate national surveillance.

In the DR, many factors appear to enhance the risk of HIV. Most predominant are sociocultural risk factors such as early sexual debut, high rate of adolescent pregnancy, and the stigma of homosexuality, anal sex, and the lack of condom use. Other socioeconomic factors include the internal migration from rural to urban areas, the large tourism industry, which provides the setting for increasing sex tourism, and the influx of migrants from Haiti and Dominican-Americans from the United States, including Puerto Rico.[4,5] Haitians and Dominicans of Haitian descent are some of the most vulnerable groups because they have limited access to information and no educational materials in their primary language, Creole; furthermore, there are no official HIV prevention programs targeting Haitian migrants.[5]

Epidemiology of HIV/AIDS in the DR

The first HIV case in the DR was reported in 1983 and the first AIDS case was reported in 1989. Cases have been officially reported to the health ministry department since 1991.

From the outset, because of stigma and discriminations, many PLWHA have attempted to hide their HIV serostatus. Trends of HIV/AIDS cases in the DR have varied based on the reporting organization. However, the Caribbean Epidemiological Centre (CAREC) reported a total of 30 712 cases from 1982 to 2005,[3] and according to CAREC, the reports of AIDS have increased since 1982 except for the years 2003–2005. The Pan American Health Organization (PAHO) has reported an average of 447 cases per year between 1997 and 2003.[6] In 2003, researchers found a 2% prevalence rate among pregnant women and reported that 1 out of every 40 adults was HIV positive.[7] The areas that are most affected by the epidemic are cities in regions with higher tourism (Romana and Puerto Plata), mainly due to the demand for sex tourism, and large urban areas such as the capital.[8,9] Researchers hypothesize that bisexual behaviors and homosexuality among men are underreported because those behaviors are highly stigmatized by the health care system and Dominican society in general.[9,10]

Among the most vulnerable groups in the DR are MSM, sex workers, Haitians, and the Haitian-Dominican residents of the bateyes, especially those that are seasonal migrants from Haiti. A *batey* is essentially a make-shift town operated by the DR's sugar companies. Typically, the DR has deferred governance of the bateyes to the sugar industry, allowing the sugar industry to make decisions regarding public services.[11] Hence, Haitians and Dominicans of Haitian descent living in bateyes work under subhuman conditions that expose them to diseases, such as malaria and filariasis, that often prove deadly because of inadequate prevention and treatment.[12] These community health issues are compounded by having illegal status and limited access to education, political representation, and rule of law, since Haitians and Haitian-Dominicans in the batayes are unable to legalize their status or obtain citizenship even if they were born in the DR.[12,13] Although official reports indicate that heterosexual contact remains the chief method of transmission, female-to-male incidence ratios suggest that there could be an underreporting of MSM and bisexual behavior.[10] In the beginning of the epidemic, surveillance data revealed that HIV was transmitted primarily through homosexual contact; the most recent data reveals the predominant mode of transmission is a combination of homosexual and heterosexual contact. One factor that is not consistent with the mainly heterosexual HIV epidemic reported in the DR is the close infection ratio between males and females (1:1) found in the 2007 national health survey, Encuesta Demográfica y de Salud (ENDESA). In most countries where the epidemic is mainly driven by heterosexual contact, the HIV/AIDS infection ratio between males and females is approximately 2:1.[14]

The national response to the epidemic has also transitioned through different stages, ranging from a lack of surveillance to some level of organized intervention. However, there has been a conscious effort to combat HIV/AIDS through organizations such as the Presidential Commission against AIDS (COPRESIDA). COPRESIDA has faced many challenges in successfully monitoring and integrating HIV care into the national health care system. There is an existing health care system that is overcrowded, inefficient, and fraudulent.[15] The limited government effort is also combined with a shortage of health professionals committed to a nondiscriminatory approach toward PLWHA. Of great importance are the private nonprofit organizations and the international organizations that are focused on implementing HIV testing, prevention, and surveillance procedures. The substantive

international funding for HIV/AIDS prevention and treatment programs has created the sense that they are independent and autonomous, contributing to the lack of integration of these services into the health care system and even increasing the stigma and discrimination of PLWHA.[15]

As in many resource-constrained countries, HIV treatment and prevention services are insufficiently prioritized in the research and development efforts of the public health and academic/biomedical sectors. International aid efforts have frequently sought to buy time for internal change; however, the structure of this help has tended to relieve Dominican society and authorities from making the changes needed in order to integrate HIV prevention into a new consensus of governance. The US Agency for International Development (USAID) has long had a Democracy and Governance program[16] and has specifically funded such programs in the DR and tied them to the health sector and the government's capacity to address diseases like HIV/AIDS.[16] However, despite the massive scale-up of international aid for antiretroviral treatment (ART) in countries like the DR, little peer-reviewed literature exists on the subject of governance and HIV/AIDS prevention. Only a single recent publication has addressed this issue as it relates to Hispaniola, and this was from the perspective of Haiti.[17]

Concentration of HIV and AIDS Cases in the DR

In the year 2000, AIDS was the fifth and the sixth cause of death for 20- to 49-year-old males and females, respectively, while in 2006, it was the leading cause of death for people aged 25 to 40 years.[3] The bateyes are starting to receive some scrutiny because of an alarming figure: between 5% and 12% of their Dominican residents are HIV positive. According to an epidemiological report in 2004,[4] the majority of AIDS cases in the DR are found in the National District (48%), Puerto Plata (5.6%), Santiago (5%), and San Cristobal (4.2%). A limitation of the epidemiological data is that there are large urban areas such as Romana and San Pedro De Macoris that are not included. Furthermore, although the methods used to report the epidemiological situation of the DR are the most accurate in the region, they only provide a marginal indication of its magnitude. Thus, surveillance by international and local groups continues to be vital to HIV/AIDS prevention in the DR and its improvement should be an integral part of all such efforts, including research and projects not directly concerned with the epidemiology of the epidemic.

HIV/AIDS Prevalence among the General Population

The most recent data from the national population-based household survey (NPBHS) shows that HIV prevalence among the general population seems to have declined mainly because of behavior changes in the heterosexual population. These changes include decreasing the number of partners among males.[14] The HIV prevalence in the sexually active general population is 0.8% (15–49 years old). However, a higher prevalence of HIV has been found in men aged 35 to 39 and women 30 to 34.[8]

The first studies of HIV prevalence in the DR were limited to only pregnant women.[7,16] However, due to the small number of participants, it was not possible for these studies to

accurately estimate the rate of HIV transmission related to engaging in risky sexual behaviors, including age of sexual onset, having multiple partners during the last 12 months, and use of condoms during the last sexual contact. The most recent national estimate in 2006 is lower than the 2005 USAID estimate of 1.1% among the adult population.[9] ENDESA data also show that starting in 2002, the epidemic has become more predominant in rural areas. According to the NPBHS data, in 2007 the prevalence in rural areas was 1%, while prevalence in urban areas was 0.7%.[8] Greater educational levels among the general population have been linked to a lower prevalence of HIV in the DR.[8,14]

Prevalence of HIV/AIDS in the Bateyes

The bateyes are communities of the DR that have been historically associated with sugar cane cultivation and are comprised of mostly Haitian immigrants of low socioeconomic status with limited access to health care services.[18] In 2007, the overall HIV/AIDS prevalence in 15- to 19-year-olds in the bateyes was 3.7%. The HIV rates for older residents are relatively high at 3.0% to 9.0% per 3666 people in the 20 to 49 age category.[8] However, women between the ages of 30 and 34 had a 4.9% rate and, unexpectedly, older women (45–49) were estimated to have a rate of 7.9%. Among men between the ages of 30 and 34, 6.2% tested HIV positive, while men with the highest rate of HIV infection were aged 40 to 44 (8.7%). These results are based on a large sample of bateyes' residents.[18] Women and men with no education or only preschool levels of education who reside in the bateyes show higher HIV-infection rates (8.9% and 4.8%, respectively). As expected, men and women with lower socioeconomic levels also have higher rates of HIV infection regardless of age.[18] Data from USAID estimates in 2005 showed a range of 5% to 12% in the HIV infection rate among people living in the bateyes.[9]

In 2007, 87% of the women interviewed reported problems accessing health care during a Centro de Estudios Sociales y Demográficos (CESDEM) national survey. In the bateyes, as in the rest of the population, 98% of women and 97% of men have heard about HIV/AIDS.[18] One of the beliefs that still fuels the HIV infection rate in the bateyes is that more than 25% of women believe that HIV can be acquired through supernatural powers and witchcraft. Similarly, only 22% of the men interviewed agree with that erroneous belief.[18] HIV infection by sharing food with others is also widely believed in the bateyes. Such data show that in the bateyes and rural areas, erroneous beliefs about HIV infection are higher than in the rest of the country.[18] In general, HIV/AIDS knowledge (transmission prevention) among residents of the bateyes is lower than in other parts of the DR. Only 25% and 30% of the women and men, respectively, who participated in a national survey, demonstrated comprehensive HIV knowledge, including how the virus is transmitted. In contrast, more than 80% of the population outside the bateyes demonstrated this knowledge.[18] During the 2007 national survey, less than 50% of the women living in bateyes knew that perinatal transmission of HIV could be reduced by using medication.

In addition to being less knowledgeable about HIV/AIDS, bateyes' residents have relatively low-risk perceptions of their chances for acquiring HIV. Despite the bateyes having higher rates of HIV as reflected in a national survey, 55% of women and 59% of men reported not having any risk of infection. A total of 33% of women compared to only 7% of men believed

they had some risks. Women with more formal education had a greater perception of being at some risk of acquiring HIV. In the bateyes, compared to women, men have more risky sex but also have a higher rate of using protection during sex.[18] Such findings are also characteristic of the general population in the DR. Regarding stigma, although 80% of residents agreed to care for family members infected with HIV, less than 25% of men and 35% of women were willing to buy fresh vegetables from an infected person. Findings about stigma in the bateyes are similar to those found in the Dominican society in general.[15] As expected, more education was associated with lower levels of stigma. But overall, only 4% of the bateyes population found casual contact with an infected person to be acceptable (eg, buying vegetables, having a teacher with HIV, or taking care of an infected family member).[18]

Haitians and Haitian-Dominicans in the DR are an underprivileged minority facing decades of anti-Haitian sentiments created by the personal biases of prominent elitist Dominicans.[19] The DR obtained its independence from Haiti, and for more than a century, the relationship between these two countries has been less than cordial. Dominicans of Haitian ancestry are denied their citizenship and therefore do not have access to education, employment, and health care.[20] The modernization of the sugar cane industry has added to the mistreatment and exploitation of the Haitian immigrant labor force, encouraging similar practices in other underpaid, unregulated, and unprotected industries such as construction.[19] Improving cooperation across the border in health, business, and infrastructure may be challenging given the belligerent past between these two countries and the unprecedented acceptance of a binational agenda. The Dominican government will hopefully examine the institutional discrimination against the hardworking Haitians in the DR despite these challenges.[19]

HIV/AIDS among MSM in the DR

In Latin America and the Caribbean, the leading modes of HIV/ AIDS transmission include sex between men and heterosexual sex.[3] In the DR, 7.6% of HIV transmission is related to homosexual or bisexual (MSM) contact.[4] Men constitute 52% of the HIV cases among young people (ages 15–24) and this age group constitutes 18% of the HIV-infected population.[4] Estimates of HIV prevalence among MSM in the DR declined from around 15% in 1987 to 12% in 1994.[4] In 2004, USAID estimated an HIV prevalence of 11% in 2 major cities (Puerto Plata and Samana) and in the capital, Santo Domingo. In 2008, MSM have been estimated to have the highest rate of HIV infection next to batey residents.[9]

Contributing to the elevated HIV risk of MSM in the DR is the frequent practice of anal sex, having many and concurrent sexual partners, and engaging in prostitution.[3] MSM risks are also exacerbated by how highly stigmatized homosexuality and prostitution are in Dominican society.[21] For example, being labeled a homosexual or bisexual is so stigmatizing in the DR, that it is likely to prevent men from accessing HIV/AIDS prevention services.[22] Other contributing factors associated with MSM risk for HIV infection are coping mechanisms such as a man believing that as long as he is not penetrated during anal sex, he is being a “man” and does not view himself as gay, homosexual, or bisexual.[22] Economic reasons such as lack of job opportunities and very low paying jobs de-power

MSM sex workers when negotiating condom use because they are having sex out of the necessity to help provide for their families.[3,14,22]

HIV/AIDS among Incarcerated Population

Prison inmate populations are considered by many to be at greater risk of infection than the general population due to circumstances associated with incarceration, which are likely to facilitate HIV transmission. These include sharing nonsterilized instruments (during shaving, tattooing, and piercing), and other body fluid sharing behaviors such as unprotected sexual activity and injection drug use via needle/syringe.[3] Although the inmate population is considered to be at highest risk because of the above circumstances, there is a paucity of information about HIV rates among the incarcerated in the DR. The prevalence rate of 19% in the incarcerated population was the highest in the country in 2001.[23] Despite the limited study of prisoners in the DR, the absence of systematic prevention for this population is a cause for public health concern since high-risk behaviors can be expected to continue upon leaving prison and reentering the community.[3]

Male-to-Female Ratio of HIV/AIDS

The male to female HIV infection ratio in the DR (1:1) is incongruent with the heterosexual nature of the epidemic shown by the data. According to a report published in 2009 by Halperin et al,[14] this infection ratio does not reflect a mainly heterosexual epidemic. In the DR, twice as many HIV-sero-positive women should be expected if in fact the main mode of transmission is heterosexual sex. There is no difference in the (15-to 59-year-old) male-to-female HIV prevalence (0.8%) found in the 2007 national health survey.[8] However, there are differences in the socioeconomic characteristics among them. Although in general, lower education was positively related to higher rates of HIV infection, HIV prevalence among females with less schooling was higher than that of males with the same level of education (3.7% vs 1.6%).[8]

Although risky sex has decreased in the general population in the DR, it has not decreased among female sex workers and other high-risk populations such as MSM.[14] Among 15- to 49-year-old men, 56% reported risky sexual behaviors in the last year.[24] Among 15- to 24-year-old males, up to 87% engaged in risky sexual behavior in the year prior to the national health survey (2007). Encouraging is that higher education was associated with less risky sex and with condom use among young males. In particular, women with limited or no formal education are 10 times more likely to acquire HIV than women with at least a high school education.[24] Thus, it might be beneficial to include educational interventions in HIV-prevention strategies. The DR's school-based sex education programs, which are already mandatory, need to be prioritized for continued review and revision to reflect changing realities related to the Dominican HIV epidemic. Moreover, vigilance is needed to ensure full implementation in both private and public schools.

HIV among Pregnant Women and Mother to Child Transmission

Since HIV rates among pregnant women are usually easier to obtain, they are often used to estimate the prevalence in a population. The highest prevalence of HIV among pregnant women in major urban areas in 1999 was 1.20%, and outside these areas it was 4.46%. HIV/AIDS among pregnant women has declined in the DR since 1999. In 2003, a large study conducted in 8 major DR hospitals observed a rate of 2.5%.[7] In 2006, the average seroprevalence rate reported at 4 prenatal sites in Santo Domingo was 3.4%, with 1 reporting rates as high as 5.9%; and a national survey showed a lower prevalence of 2.3%.[24] Prenatal HIV prevention campaigns conducted in the DR appear to have been successful, particularly in the urban areas where infection rates among pregnant women declined during 1991–2002. However, some antenatal sites have shown slight increases during the last 6 years,[14,25] which indicate that the country's overall prevalence is not stable.

There is limited documentation on the number of orphans due to AIDS mortality. Further, the number of AIDS orphans may be underreported and underestimated because of family members, relatives, and friends assuming child-raising duties. Although there are programs serving AIDS orphans in the DR,[26] there is little documentation and research on the effect of the epidemic in this regard. Most data come from international sources; for example, the United Nations program on Acquired Immunodeficiency Syndrome (UNAIDS) reported a cumulative 7900 orphans from AIDS in 1999. But by 2009, Pina[27] reported an estimated 33 000 orphan children due to AIDS mortality, thus highlighting the historically poor tracking of this statistic either for basic surveillance or social services planning. The mother-child HIV transmission prevention programs have been relatively successful since prenatal medical care is highly prevalent in the DR. Further, breast feeding is not prevalent and less than 25% of newborns are exclusively breastfed.[7] Family planning is often offered as part of prenatal care visits, and most HIV-positive women are offered sterilization after an elective cesarean section, which the majority of them accept.[28] The high rate of sterilization and the integration of prenatal care with HIV testing and the emphasis of HIV prevention as part of prenatal care have likely contributed to the low incidence rate of mother to child transmission of HIV in the DR.

The escalation and entrenchment of the HIV epidemic in female populations throughout the world has been well-docu-mented.[29–31] In the DR, there are multiple factors that increase the risk of HIV infection among women and increase women's vulnerability to HIV transmission.[32] One conspicuous but understudied factor is gender violence and intra-familial violence in Dominican society. Violence against women in the DR is fueled by poverty, discrimination, a society with machismo values.[33] According to non-governmental organizations that provide services to women, 40% of their clients have experienced domestic violence; fortunately, there is a promising law in the legal system that aids officials to prosecute discrimination against women and domestic abusers.[34]

HIV/AIDS among Sex Workers in the DR

Sex work in the DR has evolved during the last four decades into a lucrative business with multinational connections. As such, and because sex workers may represent an important

bridge population in transmitting HIV to others, sex work has become the focus of intense study. Since prostitution is not explicitly prohibited among adults over the age of 18, sex work is legal in the DR.[35,11] An estimated 100 000 women in the DR are involved in the sex industry.[36] However, because of the different types of prostitution establishments throughout the country (eg, direct or traditional brothels and indirect such as discos, bars, dancing clubs), there is no official data, and the accuracy of this estimate is unclear.[35] Nevertheless, there is confidence that prevalence among sex workers in the DR is extremely high and second only to the bateyes' populations. For example, in 1999, there was a prevalence rate of 6.60% in the major urban areas and 9.46% in rural areas. One encouraging sign, however, is that condom use negotiation efficacy has been found to be relatively high, with approximately 60% of DR female sex workers using condoms consistently with their clients.[36]

HIV/AIDS and Substance Abuse in the DR

Aside from the sociomedical problems posed by the abuse of psychoactive substances, illicit drug use has contributed to money laundering and drug trafficking,[37] which are linked to risk behaviors. Along with Haiti, the DR has increasingly become a part of the drug trafficking network over the past several decades.[37] This has been attributed to its strategic geographic location. Specifically, the DR is located between a large producer (South America) and a great consumer (the United States). Although a high level of drug trafficking (cocaine, marijuana) has been documented in the DR, the few studies that have focused on this topic have documented relatively low illegal drug abuse, particularly among adolescents.[38] Recent reports indicate an increase in substance use in the last few years, including articles reporting that more than 75% of crimes are substance-abuse related,[39] but this may be partly due to increased availability from drug trafficking.[34] It can be hypothesized that as a drug trafficking bridge country, future use of illegal drugs in the DR will resemble that of Puerto Rico, since intravenous drug use (IVDU) risk patterns are similar.[34] To its credit, the DR has joined with multinational forces to establish antidrug trafficking laws and regulations. However, similar to its Caribbean counterparts, multiple factors (eg, the lack of execution of antidrug trafficking treaties, apathetic governmental administrations, financial, and poor technical abilities) have undermined efforts to successfully counteract these drug-trafficking networks.[37]

In general, different researchers have found drug abuse in the DR to be low, except for alcohol use. In a review of the literature on drug use in Latin America and the Caribbean, Aguilar-Gaxiola reported that marijuana and inhalants were the preferred drugs of school-aged youth in Latin America and the Caribbean, but alcohol was the predominant choice in the DR.[38] A regional report also noted that the DR has the lowest marijuana use (0.3%) compared to Uruguay (9.7%) and Panama which has a total use of any drugs of 12.2% (CICAD as cited by Garcia-Gaxiola, 2006).[38] In the DR, as in other Caribbean countries, drug abuse is more prevalent among males, while women are more likely to consume prescription medications without a health provider's authorization.[38]

Published literature on drug abuse in the Caribbean is scarce,[38] and research linking substance abuse and HIV risk using international search engines or through the review of

major journals was not located. Existing literature on substance abuse in the Caribbean is found mostly in international reports. Contrasting with Puerto Rico, where IVDU is a major risk behavior for HIV, currently in the DR, sharing needles is not considered a major risk behavior due to the relatively low rate of IVDU.[38] However, due to risky sexual behaviors and their association with alcohol use, it has been speculated that the spread of HIV due to behaviors associated with nonintravenous substance use, has been underreported.[38] The population at highest risk in the DR (youth, female sex workers, men who have sex with men, male sex workers, and prisoners) are most vulnerable because of their limitations in resources and preventive measures, and their potential for contracting HIV through sex while under the influence of drugs.

Surveillance Efforts

Like other resource-constrained countries with weak health care and epidemiological surveillance systems, the low reported DR seroprevalence rates may underestimate HIV prevalence and incidence, and may avoid disturbing and persistent rates in high-risk subpopulations. Until 2001, cumulative AIDS cases in the DR were 6120.[4] With these limitations in mind, HIV/AIDS surveillance rates can provide a useful estimate of the socioeconomic burden of the disease to help guide health care services planning. Monitoring the trend of sexually transmitted infections (STIs) other than HIV (eg, gonorrhea and syphilis) could be valuable in enabling a more accurate estimate of prevalence and transmission of HIV. Since HIV is transmitted in the same manner as other STIs, if STI prevalence is high, the HIV rate will invariably be high. In La Romana (the third largest DR city), researchers found an STI rate of 4.0% among female sex workers with mostly Dominican clients.[40] However, detection and surveillance of STIs in the DR is limited due to an inadequately integrated countrywide surveillance program with poor monitoring of private practice health services.[15] Although the national surveillance system, in place since the 1990s, has worked relatively well, it was not until 2002 that population-based national surveys included HIV-sero positive monitoring.

Increasing the clinical health care services offering STI testing and treatment could serve as an important method for identifying those at high risk of HIV. Such services would also provide an excellent site for prevention education and partner notification, particularly for those in need of HIV care and prenatal services. Although some surveillance and monitoring progress is evident, there is scarce data on high-risk subpopulations such as MSM and male sex workers.[3] There is also limited data on the epidemic in rural areas, despite surveillance data indicating comparatively higher seroprevalence. Although these gaps in epidemiological evidence make it difficult to estimate the epidemic’s status in the DR, they nevertheless present important opportunities for future research and for civil society and government to become actively involved in responding to the HIV/AIDS epidemic in the DR.

Government and Health Ministry Response to HIV/AIDS

Geographic disparities persist despite national prevention efforts. The national health survey shows considerable differences between rural and urban zones. Additionally, when the

country's different health regions (8 regions) are examined, the lowest knowledge of HIV prevention, such as use of condoms and monogamy, is found in the southwest border region (the provinces of Bahoruco, Barahona, Independencia, and Pedernales).[8] Progress has been partially hindered by the lack of management and the technical limitations of the Dominican government's institutions. Additionally, access to care and efficiency in the country's health care system will ultimately need to be addressed in order to meet the HIV/AIDS service needs of different vulnerable populations. Additionally, because of the permeable border between Haiti and the DR, a binational strategy is necessary in order to stabilize gains.

There have been improvements in the response to HIV/ AIDS in populations at risk of HIV and PLWHA. Using international funds (ie, global fund and the World Bank), the Presidential Commission against AIDS (COPRESIDA) has recently signed work agreements with privately owned sugar companies to provide HIV prevention services in the bateyes.[41] Although the Dominican government formed this executive commission branch to implement, supervise, and evaluate HIV prevention and treatment programs, there are concerns that the organization has failed to perform and manage its funds effectively.[25]

One of the interventions aimed at increasing condom use among sex workers was a Dominican adaptation of the "Thailand 100% condom program".[35] This was a government-run campaign that achieved success in enforcing condom use in all the brothels and distributed condoms among sex workers. Although there are many barriers affecting HIV prevention among sex workers in the DR, namely the moral stigmatization of prostitution, prevention campaigns have been partially successful at reducing HIV infection in this population. In geographic areas where the public health policy was supported by both the community and the local government, condom use among sex workers increased by more than 50%.[11] However, women were more likely to negotiate the use of condoms with their clients than their main partners[35] since they saw condoms as a sign of distrust in a relationship. Similarly, studies have shown that men who paid for sex were more likely to use condoms, particularly if they did not trust their partner.[21]

It is important to note that DR sex workers represent a heterogeneous population, for example, women, bisexuals, homosexuals, MSM (including bugarrones), and sanky-pankies. Sanky-pankies are male commercial sex workers who usually have sex with tourist women,[42] and bugarrones are men whose clients are predominantly males for whom they play the inserter role during anal sex.[43] Prevention campaigns need to be tailored to address these sex workers and their diversity. Further, sex tourism appears particularly strong in the DR, fueling a demand for sex workers.[44] To our knowledge, there have been few public health policies directed to the combined industries of sex and tourism in the DR.

While the Dominican government has instituted programs to improve condom use among sex workers,[44] efforts have been limited in other areas, such as increasing the involvement of sex workers in improving their living conditions and monitoring and reducing the number of STIs among sex workers. Furthermore, it would be more beneficial for public health authorities to target areas such as reducing the stigma of HIV/ AIDS and providing education and prevention interventions for the general population, particularly for populations at risk of becoming involved in the sex industry, such as migrant populations

and street children.[44] According to some studies, both male and female sex workers affirm great responsibilities to their families and their main partners. Concern for loved ones is often cited among the major reasons for using condoms while engaging in commercial sex.[21,35]

Approximately 66 000 adults and children live with HIV in the DR and an estimated 37% of HIV-infected people receive ART based on the most recent data.[9,45] There are major barriers hindering health care access, linking conventional health care to HIV prevention, and establishing health care networks for PLWHA. The DR government only offers ART in major cities, and in such places, the public health ministers have been excessively slow in providing treatment.[13] Medication shortages are very frequent, partly due to limited logistical government assistance.[15,28] Furthermore, in the bateyes where HIV/AIDS prevalence is the highest and coupled with tuberculosis (the primary cause of death among HIV infected people), treatment access has been said to be “on paper” only.[13]

National and International Response to HIV/AIDS in the DR

Various international organizations have collaborated with the Dominican government in its response to the epidemic. The Dominican Government established COPRESIDA in 2000 and this entity has coordinated the national strategic HIV prevention and control plan. The data is extremely scarce on COPRESIDA’s activities in implementing public health policies, providing services for PLWHA, and promoting the private sector’s involvement in HIV prevention. In addition, the National AIDS program has been in charge of developing health policies and surveillance methods. Regarding the comparatively higher rural HIV rates, information and education campaigns have been more successful in the urban areas, but there is little data showing the campaign’s efforts in rural areas. Similarly, surveillance in rural areas has been weak due to the difficulty of tracking the epidemic.[13]

For over a decade, there have been laws to help prevent discrimination against PLWHA in the DR. The Dominican AIDS law is one of a kind in the Caribbean. However, it has been viewed as having little effect given that laws are often not monitored for consistent enforcement. For example, some jobs require applicants to have an HIV test. After an applicant takes a required HIV test, practitioners may call the applicant’s potential employer to divulge HIV-positive serostatus. Further, community activists have claimed that patients are denied health services due to HIV-positive serostatus. In fact, in 2002, an advocacy group (REDOVIH) won a legal suit before the Inter-American Human Rights Commission in Washington after protesting the lack of antiretroviral treatments for PLWHA in the DR. After 4 years, and further international pressure, the Dominican government responded to the Human Rights Commission’s order.[46]

Efforts by international donors have been commendable. USAID and the US President’s Emergency Plan for AIDS Relief (PEPFAR) are 2 major donors. USAID donated 5.7 million dollars in the 2008 fiscal year to HIV/AIDS programs and related services. PEPFAR is also a partner of the Dominican government, as well as the Clinton and Gates foundations.[9] Other organizations assisting the Dominican government are the United Nations Population Fund, the World Bank, and the Global Fund to Fight AIDS, among others.[9] Despite multiple

collaborations, due to its various health care system needs and poor infrastructure, the DR government has had many challenges creating effective surveillance and HIV/AIDS treatment programs. Further research is needed to examine whether low treatment rate and governmental challenges in the DR are associated with its HIV/AIDS prevalence.

Other nonprofit organizations working with the DR government are Catholic Relief Services, Caritas network,[47] and the Batey Relief nongovernmental organizations (NGOs) that provide free medical services and social services in the bateyes. These organizations are also sources of data that often report the highest prevalence rates and levels of need across neglected Dominican communities. Although some NGOs have made progress in the DR,[13] it has been the work of international organizations that has had the most impact on preventing HIV infection among newborns and sex workers.[48] Unfortunately, government support and response has not been as effective as that found in neighboring Haiti.[13] Results from various studies indicate that there is weak general surveillance,[14,25] and some clinicians and researchers doubt the quality of the government-run ART programs, reporting concern that incomplete treatments may be creating resistant viral strains.[13]

Strategies to Prevent HIV/AIDS in the DR

The challenge posed by the epidemic in the DR is emblematic of what other developing countries in Latin America and the Caribbean experience, even when receiving sizable assistance from international and foreign government sources. Evidence indicates that prevention interventions have been effective enough to reduce HIV prevalence in the country's population as a whole.[14] Although moderately efficient, monitoring and surveillance systems could be improved. Nascent research is starting to show that prevention strategies are proving successful among the female sex workers[11,14,36] and among heterosexual men who now report a decrease in their number of sex partners. There is much needed research, however, on the tourism, migration, and sex industry involving MSM and the prevalence of anal sex among self-identified "heterosexual" men in the DR.

HIV/AIDS prevention among MSM must include multiple intervention levels and must be tailored to men who do not self-identify as homosexual because they adopt the inserter role during homosexual sex.[22] This subpopulation of men is at high risk for HIV for a variety of reasons including the biological risk of the sex act itself, multiple partnerships, condom negotiation, vulnerabilities during anal sex with other men for economic reasons, and reduced access to prevention services. Some studies have found that many clients of MSM are wealthy and are willing to pay 3 times more for sex without condoms.[21] Other sociocultural barriers for HIV/AIDS prevention include that MSM are less likely to have an HIV test and seek treatment due to fear of stigma and discrimination.[22,49]

Substance abuse is not one of the major factors driving the HIV epidemic in the DR, in contrast to Puerto Rico and Bermuda.[4] Alcohol abuse in the DR may represent the linking factor between risky sex and the HIV epidemic. Populations with higher rates of HIV are highly marginalized and stigmatized sex workers, MSM, and bateyes' residents. Compounding these risks may be an increased vulnerability to engaging in alcohol use.[50] Therefore, studies exploring the connection between alcohol use, tourism, and HIV infection

are crucial to understanding the influence of alcohol use in the sex tourism.[51] A recently funded study by the National Institutes of Health (NIH), led by Guilamo-Ramos and Padilla, exemplifies the type of research particularly needed in the DR in order to understand and control HIV transmission risk behaviors contributed by the sex industry and tourism.[52] Other populations at risk for HIV infection through risky sex are young adults and adolescents. In an intervention project by Family Health International (FHI), adolescents from marginalized neighborhoods were at higher risk for alcohol abuse, engaging in risky sex, and trading in sex for money.[53]

Conclusions and Recommendations

Like many developing countries in the region, the Dominican government must establish efficient ways to monitor the epidemic and build the infrastructure needed to provide the best estimates of HIV/AIDS prevalence among the different populations at risk. More governmental and civic participation may increase the DR's participation in HIV prevalence surveys conducted by the regional CAREC. Important missing data such as that of incarcerated Dominicans could be made available through collaboration with regional and internationally funded surveillance mechanisms. Caribbean countries that have reported their prisoners' rates of HIV infection have shown that their prevalence rate is higher than that of the general population.

There are a variety of factors that affect the vulnerability of Dominicans for HIV infection: poverty, lack of access to health care and HIV/AIDS prevention services, high illiteracy levels, lack of information on sexuality and HIV/AIDS, low-risk perception of HIV, and cultural barriers to preventive measures of HIV, which are faced particularly by young people. In addition to the factors that place the Dominican population at risk for HIV infection, Haitian immigrants and batey residents face a higher level of human rights violations (eg, lack of public health sanitation, illegal status in the county although they may have been born in the DR) that place them at an unparalleled risk of HIV infection. For this population, HIV prevention must include assistance in human rights defense, education, social mobilization, and authentic governmental decisions and interest. Furthermore, the shared and complex Haitian-Dominican HIV epidemic may be more effectively fought using a binational approach to the epidemic rather than a mostly Dominican focused framework.

The latest national health survey showed a high HIV prevalence rate in the northwestern part of the country and low HIV prevention knowledge in the southwestern region. This information calls for improvement in the areas of treatment and prevention in those regions. According to a report in 2008, USAID will focus on those areas during the coming years.[9] The HIV epidemic in the DR has increasingly moved to the rural areas of the country, men aged 40 to 44, and people with low socioeconomic status (lower formal education). When health regions are examined, region VI (western border part of the country) and region V are the ones with the highest rates of HIV.[8] As expected, these 2 regions have high levels of disenfranchised Haitian immigrants, poverty, and the most prolific tourism industry (region V). It is imperative to focus more prevention and intervention programs in the bateyes of the DR since the HIV prevalence is still approximately 4 times higher than that of the rest of the population. Moreover, similar to the rest of the population, less-educated people had higher

rates of HIV, especially women.[8] Binational work with Haiti's successful surveillance of HIV/AIDS in the rural areas[13] may be needed to assist the DR government in monitoring the rural epidemic in order to intervene and stabilize its trajectory.

The focus of HIV prevention in the DR has been in the urban areas, therefore higher levels of HIV prevention knowledge and lower levels of HIV rates in this area are expected. According to a population-based health survey, HIV prevention programs are not having the expected impact in rural areas, although it is difficult to determine this result because there is little data on rural programs and their adaptations to the rural population. Treatment adherence also needs further research in the DR. There are many unanswered questions involving the HIV/AIDS prevention efforts in the DR. How many HIV/AIDS patients receive treatment in the DR? This number is inconsistent and surprisingly low. Why are so few patients receiving treatment and prevention care in the DR if the government has been offering ART since 2004? What are the barriers that keep bateyes' residents from visiting nearby clinics? Are the cultural or language barriers the largest determinants? Is it due to stigma and fear of discrimination? There is no accurate documentation of how many treatment centers are providing services to the bateyes and what health policies need to be in place to ensure appropriate and necessary treatment to these residents.

There is a need for intensifying the work public health officials have been doing for the last two decades and operationalize their plans in the national AIDS coordination center and COPRESIDA. It is imperative that the national plans include the monitoring of health policy laws that are rarely obeyed at present. Although some extant data suggest that the national prevalence of HIV has decreased, there are many gaps in the surveillance and the behavioral aspects of the epidemic that need to be addressed. The Dominican government has started to recognize the need and importance of binational efforts in order to counteract the epidemic on the island.[41] However, national public health law focusing on border health needs must be implemented in order to address the low education levels of the population in this area and the high rate of HIV/AIDS.

Menon-Johansson[54] has shown that HIV prevalence is higher in countries with poor governance. The UN Commission on HIV/AIDS and Governance in Africa is an example of the growing importance of prioritizing institutional design and rule of law in fostering sustained outcomes from HIV interventions; including ART scale-up.[55] This effort and others, which tie governance and infrastructure to data collection, program performance, as well as women's empowerment, were fostered by the US Global AIDS Program during the Bush Administration of 2000–2008. Governments have many opportunities to seize the challenge of HIV/AIDS by enforcing public health policy and changing laws that are detrimental to addressing HIV/AIDS while respecting their country's traditions. Hopefully, HIV/AIDS researchers and others will examine this model for adaptation in the Caribbean region where so much evidence points to the undermining effects of poor governance and the absence of equal protection under the law.

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