

The HIV/AIDS epidemic in Grenada

A cross-sectional approach used to measure response variation regarding sexual behavior and health depending on the method of data collection

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Abstract

The objective of this study was to determine the association between high-risk sexual behavior in relation to HIV transmission and prevalence among different groups of people in Grenada. In addition, this study intends to increase the involvement and improved services by Grenadian chapter of the Caribbean HIV/AIDS Partnership (GrenCHAP).

A cross-sectional study was conducted over a 2-month period in Grenada, West Indies, to measure the responsive nature of different populations to an inquiry about HIV and sexual behavior. The 2 methods used to collect the data were online (via social media) and through an in-person interaction with local NGO GrenCHAP personnel. Survey responses were recorded via SurveyMonkey ending on April 11, 2014.

The findings of the study were that there was an increased degree of frankness and demographic diversity in participants who responded online as opposed to in-person.

People who responded online were more likely to engage in high-risk sexual behavior. GrenCHAP has the opportunity to contribute in the collection of invaluable data concerning HIV and other STIs because of its NGO status and anonymity.

Abbreviations: ART = antiretroviral therapy, CI = confidence interval, DGSH = Dudley Group Sexual Health, GrenCHAP = Grenadian chapter of the Caribbean HIV/AIDS Partnership, HIV = human immunodeficiency virus, MSM = men who have sex with men, NAD = National AIDS Directorate, NGO = Non-Governmental Organization, NIDCU = National Infectious Disease Control Unit, SIV = Simian Immunodeficiency Virus, STI = sexually transmitted infection, UN = United Nations, UNGASS = United Nations General Assembly Special Session, WHO = World Health Organization.

Keywords: behavior, Grenada, GrenCHAP, HIV, STD, West Indies

1. Introduction

HIV/AIDS is caused by viral strains HIV-1 and HIV-2, the latter having almost negligible implications in the transmission and prevalence of the disease in the human population.^[1] Viral strain, HIV-1, is highlighted for its high pathogenicity and prevalence associated with human infections. Furthermore, researchers have determined an underlying zoonotic component between HIV-1 and Simian Immunodeficiency Virus (SIV) seen in wild chimpanzees and gorillas (SIVcpz and SIVgro) found in West Central Africa

as remnants of SIV have been found in humans infected with HIV-1 due to striking similarities in the viral strains.^[2] It is therefore believed that humans have acquired HIV-1 from primates through the process of cross-species transmission, which has led to zoonotic implications for HIV/AIDS, the direct mechanism of which remains unclear. It has been surmised that cross-species transmission of SIVcpz and SIVgro to HIV-1 seen in humans has stemmed from traditional practices of hunting bush meat, exposure to blood of infected chimpanzees and gorillas along with viral transmission resulting from primate bites.

Researchers have yet to unfold the mystery behind the epidemic spread of HIV-1-associated HIV/AIDS from the ground zero West Central region of Sub-Saharan Africa to the rest of the world. Studies suggest the possibility of continuous SIVcpz and SIVgro cross-species transmission greatly contributing to the global incidence and prevalence of HIV/AIDS.^[2] Undoubtedly, a combination of increased globalization and unsafe sexual practices has also been contributing to the global epidemic spread of HIV/AIDS, including that which is seen in the Caribbean.^[3]

There is an estimated adult HIV prevalence of 1.6% in the Caribbean, making it the most affected region in the world outside of Sub-Saharan Africa.^[4] Grenada is located within the South-eastern Caribbean region. The country is an archipelago nation that includes the islands of Grenada, Carriacou, and Petit Martinique. The HIV/AIDS prevalence in Grenada has steadily been increasing since surveillance began in 1984. The estimated HIV prevalence in the country was 0.59% in 2012.^[4] The total number of cases is 570 by the end of 2015.^[5] Despite the HIV/AIDS mortality having stabilized, the incident cases are continually increasing. These figures only represent the documented and

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confirmed cases of HIV/AIDS in Grenada, whereas the actual number in the community may be significantly higher.^[6] The stigma and discrimination surrounding HIV within Grenada vastly limits the testing rates as well as hampers prevention and outreach efforts. The cumulative male-to-female ratio of HIV prevalence is 1.8:1 in Grenada, and per National Infectious Disease Control Unit (NIDCU), a total of 54 individuals with HIV received antiretroviral therapy (ART) in 2015.

The National AIDS Directorate (NAD) was the program that managed HIV in Grenada until 2009, when it disbanded after the cessation of World Bank funding. Currently, NIDCU and the Epidemiology and Health Information Unit in the Ministry of Health conduct the country's HIV surveillance and management. HIV/AIDS counseling and testing is provided by community clinics in Grenada. In addition, ART is given to HIV-positive patients at no charge.

GrenCHAP is the local Grenadian chapter of the Caribbean HIV/AIDS Partnership (CHAP), and the only NGO in Grenada that is involved in HIV/AIDS outreach and advocacy.^[7] As an NGO, GrenCHAP can lobby the government if current policies against the HIV epidemic are faulty, and in addition to partnering with other regional NGO's to effectively reduce the HIV infection rate.^[8] GrenCHAP advocates for individuals at risk for contracting HIV such as men who have sex with men or MSM and those in poverty.^[9] The potential that GrenCHAP has in augmenting the health system in Grenada against the HIV epidemic is promising and vital as HIV burden in the nation increases.

2. Methods

A cross-sectional study design was selected to best determine the relationship between willingness to share information regarding HIV and the method used to collect the data.^[10] The participants were limited to Grenadian men and women that are of or older than the legal age of sexual consent, 16 years old.^[7] The data were collected over a period of 2 months using a survey that consisted of 35 questions. There were 2 cohorts in this study; an online group that responded to the survey hosted by SurveyMonkey and an in-person group that responded to the survey directly hosted by GrenCHAP. The participants were all invited to complete the surveys via email or *Facebook*. Participants were informed of the confidentiality of all their responses and of their right to withdraw from the survey at any time. The sample size was determined simply by the amount of people that were able and chose to complete the survey.

The survey was adapted and modified with permission (C. Eaton, personal communication, October 8, 2012) from the Dudley Group Sexual Health (DGSH) Clinic in the West Midlands, UK, and with components from the WHO STEPwise survey.^[11] This study has written approval from the Institutional Review Board as well as from GrenCHAP. The questions focused on demographics, HIV diagnosis, sexual behavior, sexually transmitted infection (STI) history, and STI testing. In addition, there were questions specific to the role of GrenCHAP and how willing participants are to use the services provided by the organization. The main dependent factor was the self-reported HIV status of the participant. This factor was measured against independent factors such as age, location, sexual orientation, and condom use. For the statistical analyses between groups, ANOVA was performed as to compare the values of the dependent variable against multiple independent variables of the 2 groups of participants. In addition, linear regression was used to measure relationships between

certain behaviors and likelihood of having HIV and/or seeking help from GrenCHAP. All statistical analysis was done using SPSS Statistics (Version 24, IBM).

The only significant potential type of bias that may have affected the survey responses is selection bias. This is because the survey may have not been accessible to people around Grenada that do not have access to Internet or transportation to GrenCHAP. To minimize selection bias, the survey was available for an extended period of time and advertised by personnel at GrenCHAP. In addition, the main confounding variables were location and age. These confounding variables were controlled while performing ANOVA and linear regression for the analyses. The majority of the missing data were random and recovered using regression substitution on SPSS to predict quantitative values from the other responses. For qualitative data, the participants who had any missing values were not included in the results.

3. Results

There was a total of 49 participants who responded to the survey. Of them, 29 online participants and 20 in-person participants physically went to GrenCHAP. The majority of respondents were from St. George parish, accounting for 61.2% of the total number of participants who responded to the survey. All but 7 participants who came into GrenCHAP in person were from St. George, whereas 32.7% of the participants were from other parishes in Grenada on the main island. Only 6.1% of the participants were from Carriacou and Petit Martinique, all of who responded to the online survey. Approximately 25% of the participants were women, and this was constant in both cohorts. Ages ranged from 17 to 66 in the online cohort, whereas in the in-person cohort ages ranged from 17 to 40. There were no instances of participants ending their input early or during the survey collection period. Age and location were confounding variables because they had a significant impact on participant surveys regarding sexual behavior. These variables were included as confounders because each one has the ability to change how participants respond. Adjusting for age was important because Grenadians receive sexual education at a delayed age in schooling and as a result, familiarity with sexual behavior is often limited until adulthood. Adjusting for location was important because it compensated for a potential lack of access to sexual education or sexual health services.

There were a few significant variations between the populations that responded online versus in-person. First, online surveys showed approximately 55.2% of people identified as homosexual or bisexual, whereas 40% of in-person participants identified as homosexual or bisexual. Approximately 51.7% of the online participants mentioned not being sexually active, whereas only 30% of in-person participants said they were not sexually active. Only 15% of in-person participants admitted to practicing unprotected sex, whereas 37.9% of online participants admitted to not using a condom. The results of the study are summarized in Table 1.

Men in both groups had a higher likelihood ratio (+9.21) of having HIV than women ($P < .05$, 95% confidence interval [95% CI]). Homosexual participants ($n=10$) and bisexual men and women ($n=13$) were less likely to have HIV ($P < .05$, 95% CI), and they were more inclined to use condoms. Overall, among all participants, increased condom use did decrease chances of being HIV positive ($P < .05$, 95% CI). There was a positive correlation (0.305) between increasing age and HIV prevalence in both groups. Online and in-person participants both reported engaging in proportional values of genital, oral, and anal sex.

Table 1
Summary of results.

	Online respondents	In-person respondents
Total	29	20
Sex		
Male	16 (55.2%)	13 (65%)
Female	13 (44.8%)	7 (35%)
Age		
17–25	16 (55.2%)	10 (50%)
26–39	9 (31%)	8 (40%)
40+	4 (13.8%)	2 (10%)
Location		
Saint George	17 (58.7%)	13 (65%)
Saint Andrew	4 (13.8%)	3 (15%)
Saint David	2 (6.9%)	1 (5%)
Saint Patrick	3 (10.3%)	0 (0%)
Saint John	0 (0%)	1 (5%)
Saint Mark	0 (0%)	2 (10%)
Carriacou and Petit Martinique	3 (10.3%)	0 (0%)
Sexual orientation		
Heterosexual	13 (44.8%)	12 (60%)
Homosexual/bisexual	16 (55.2%)	8 (40%)
Sexual behavior		
Not Sexually active	15 (51.7%)	6 (30%)
Engage in unprotected sex	11 (37.9%)	3 (15%)
Sexual health		
Tested for STI	18 (62.1%)	12 (60%)
Positive for STI	5 (17.2%)	2 (10%)
Tested for HIV	18 (62.1%)	14 (70%)
Positive for HIV	1 (3.4%)	1 (5%)

Those that engaged in genital sex alone or along with other types of sexual behavior reported having more positive HIV results ($P < .05$, 95% CI). Location made an impact on participant responses; participants from St. George ($n = 30$) reported having more HIV. The sample sizes for all other parishes were < 8 , and statistically insignificant.

There was a significant correlation between high-risk behavior and HIV prevalence in both groups; however, it was stronger in the online cohort ($R^2 = 0.622$) as opposed to the in-person cohort ($R^2 = 0.383$). More participants were likely to disclose decreased condom use, more openness in sexual relationships, and homosexual or bisexual sexual orientation in the online participants. Conversely, more participants admitted to an increased number of sexual partners, increased stability in relationships, and decreased HIV/STI testing in the in-person participants ($P < .05$, 95% CI). The online and in-person participants declined to have any significant worry of contracting HIV. Out of the 49 participants, 31 of them that had a desire to visit GrenCHAP did so because they were either interested in obtaining condoms or gaining sexual health information. The variation between the online and in-person groups in this regard was unremarkable.

4. Discussion

4.1. Strengths and limitations

There are certain strengths and limitations that are present due to the nature of the study and methodology used. The selected sample size was nationwide in Grenada and nonspecific for any factors. The sample size is small but well above the minimum sample size needed by statistical power ($\beta = 0.05$). Relative to the

population of Grenada (~107,000) and the subset high-risk population (which is sexually active and/or seeking counsel on sexual health), the study is generalizable to the country.

Although this is useful in obtaining an overall status of HIV prevalence, evaluating sexual behavior trends and identifying how Grenadians respond to questions regarding sex creates certain limitations. These include applicability of survey results to any one specific demographic group, especially those that have a low ($n < 10$) response rate. An uncontrollable factor and limitation is dishonesty and/or partial truth when participants responded to certain questions. This may be due to participants being uncomfortable with responding because of potential societal or legal issues (e.g., commercial sex work or drug use) which are discussed further in the next section.

As a result of using SurveyMonkey to collect online data, a high level of internal validity was maintained because there is control over duplicate or suspicious entries. Aside from the option for skipping a few questions, responses for all the participants were constant. Online surveys helped to collect data throughout the nation and from regions with people that may typically have difficulty reaching the GrenCHAP office. Qualified GrenCHAP personnel maintained quality of in-person data collection.

4.2. Analysis of results

The most prominent difference between the online and in-person participants was that there was a larger amount of diversity in demographics concerning location, age, and sexual orientation in the online cohort. Due to the online nature, the survey was easily accessible to people all around the main island of Grenada as well as Petit Martinique and Carriacou. In-person participants were mostly from St. George because of their proximity and ability to go to the GrenCHAP office. More participants who responded online identified as homosexual or bisexual. This may be because of the social stigmas present in Grenada due to the illegality of same-sex relationships. Online surveys also allowed for older participants to participate more easily.

There was a significant correlation between engaging in certain high-risk sexual behaviors and responding online. This may be due to the stigmas associated with these behaviors or a simple fear of admitting to them in-person. Online participants admitted to using condoms less frequently. They also had less stable, and more open, sexual relationships. Participants may have felt more comfortable in responding with the sense of anonymity an online survey provided, as they seemed hesitant to be as open as they were when compared with the in-person participants. In-person participants had more sexual partners and more stable relationships. This may be due to a certain societal proclivity that leads to Grenadians (especially men) wanting to impress or prove their sexual prowess or “manliness.”^[12]

The stigma surrounding HIV/AIDS and sexual behavior is highly prominent in Grenada and is a limiting factor to adequate surveillance and management. Grenada has a small and highly religious population where same-sex relationships are not only illegal but also punishable by lengthy prison sentences. Individuals are therefore unwilling to be open about their sexual orientation, behavior, and STI status due to fear of societal judgment and social stigma.

Online and in-person participants showed interest in GrenCHAP and utilizing resources that the NGO could provide. GrenCHAP has the opportunity in lobbying at the Ministry of Health for increased HIV/AIDS advocacy, prevention, and

management. GrenCHAP can also contribute to the collection of valuable health data if there is a scheduled or routine conduction of surveys regarding sexual behavior or STIs in Grenada. This can help to gain insights into the trends of HIV and other STIs in Grenada and elucidate the disease burden within the tri-island nation. In addition, this health data can help to create policies that support HIV management and prevention programs as well as implement specific educational reforms aimed at minimizing the incidence of HIV. As an NGO, GrenCHAP has the added opportunity to cater to certain stigmatized populations in Grenada, such as MSM, commercial sex workers, drug users, and prisoners. The prevalence of HIV for prisoners is 2.2%, which is significantly higher than the national prevalence in Grenada.^[13] GrenCHAP should work with the Ministry of Health to allocate some time and funding to help manage the disease in prisons. Finally, GrenCHAP can support NIDCU and the Epidemiology and Health Information Unit by conducting thorough sentinel surveillance throughout the country so that the Ministry of Health can properly allocate funds in regions and populations with the greatest need. These surveys can be conducted on a routine basis to determine the effectiveness and impact of any health policies implemented within the country.

Homosexuality and commercial sex work are highly disapproved of by the Grenadian government and the religiously conservative society at large. These at-risk groups have a greater risk of being underserved and they are typically not the beneficiaries of most faith-based health intervention programs in Grenada^[14] as they tend to frown upon premarital sex and same-sex partnerships. Instead of providing resources on management of STIs and prevention, they promote abstinence and cater only to a segment of population that abides to their traditional values and standards. As a result, there are a large number of people who do not receive these preventative services. GrenCHAP can provide access to these stigmatized or marginalized populations by anonymously providing information and augment STI management policies via disease surveillance, sexual health promotion, and education. Further research needs to be done to determine the best methods in which GrenCHAP can help Grenadians reduce the incidence of HIV and other STIs in addition to aiding the Ministry of Health in filling the gaps of essential health data. Similar studies can be done in other Caribbean nations because of the regional influence of GrenCHAP and generalizability of the survey throughout the region.

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