Prevalence, Risk Behaviours, and HIV Knowledge in an Indigenous Community in Colombia

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Abstract

There are 87 Indigenous ethnic groups in Colombia, representing 3.4% of the country's population. Poverty, forced displacement, and social and health inequities place Indigenous communities at increased risk of HIV/AIDS. However, little is known about the prevalence of HIV in this population. The objectives of this study were to estimate the prevalence of HIV and other sexually transmitted infections in an Indigenous community in Colombia, and to assess community members' knowledge about the disease and its risk factors. The study, conducted in 2010, was initiated at the request of the leadership of the community of Cristianía and involved community members in all stages of the project. HIV prevalence data were gathered through rapid testing of a random sample of 295 community members between the ages of 15 and 49 years. As well, researchers administered a survey related to sexual behaviours and knowledge about HIV. Findings revealed 3 cases of HIV, a prevalence of 1.02%, 95% CI [0.21, 2.94]. The 3 cases were women. The majority of individuals sampled had heard of HIV or AIDS, but their level of knowledge about the mechanisms of virus transmission varied substantially. The results of this study, the first to explore the prevalence of HIV among Indigenous people within a community in Colombia, suggest a need to investigate HIV prevalence within other Indigenous communities in Colombia.

Keywords

HIV/AIDS, Indigenous communities, Colombia, HIV prevalence, community-based HIV research, HIV knowledge

Authors

Carlos Rojas is a professor at the School of Public Health, Universidad de Antioquia, Colombia. His areas of interest are the prevention and control of infectious diseases of public health importance. He has been working with Colombian Indigenous communities affected by HIV since 2005. He designed the study, wrote the Colciencias grant, and wrote the first version of this article.

Diana Castro is an associate researcher at the School of Public Health, Universidad de Antioquia, Colombia. Her areas of interest are the conduction of socioeducative process and the empowerment of deprived communities. She has been working with Colombian Indigenous communities affected by HIV since 2010. She reviewed the Colciencias grant and designed and managed the project activities in the community.

Natalia Gómez is an associate researcher at the School of Public Health, Universidad de Antioquia, Colombia. Her areas of interest are health information systems and data managing and analysis. She has been working with Colombian Indigenous communities affected by HIV since 2010. She collected and analyzed data for this study.

Mauricio Lozano is a former associate researcher at the School of Public Health, Universidad de Antioquia, Colombia. His areas of interest are the diagnosis and treatment of

HIV and sexually transmitted infections. He conducted the rapid testing and was responsible for the medical aspects of the study, as well as working on drafts of the article.

Jhojandrelli Congote is a former research assistant at the School of Public Health, Universidad de Antioquia, Colombia. His areas of interest are health information systems and data managing and analysis. He collected and analyzed data for this study.

Sara Paris is a retired professor from the School of Medicine, Universidad de Antioquia, Colombia. Her areas of interest are the immunology of tuberculosis and the diagnosis of infectious diseases. She advised in the design of project activities and conducted the rapid testing.

Mónica Soto is a professor at the School of Public Health, Universidad de Antioquia, Colombia. Her areas of interest are the prevention and control of infectious diseases of public health importance and occupational epidemiology. She advised in the design of project activities and medical aspects and conducted the rapid testing.

Gladis Yagarí is a member of the Indigenous community of Cristianía. Her areas of interest are the arts, health education, and community development. She advised in the design and planning of the study, assisted with research activities, collected data, and discussed findings.

Javier Mignone is an associate professor at the University of Manitoba, Canada. His areas of research are Indigenous health, HIV/AIDS, social epidemiology, social development, and program evaluation. He has been working with Colombian Indigenous communities since 2006. He assisted with the design of study, advised with project activities in the community, and worked on several versions of the article.

Correspondence should be directed to Javier Mignone, Faculty of Health Sciences, University of Manitoba, Winnipeg, Canada. Phone: 204-474-8065, email: Javier.mignone@umanitoba.ca

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Introduction

According to the United Nations program on HIV/AIDS (UNAIDS, or Spanish ONUSIDA, 2014), by the end of 2013 there were 35.3 million people in the world living with HIV. That same year, 2.1 million new cases were reported, and 1.5 million people died of AIDS-related illnesses. These figures reveal a decrease in the epidemic, mainly due to the increase in access to antiretroviral therapies (ONUSIDA, 2014).

In 2011, the estimated HIV prevalence rate within the general population of Colombia was 0.52%, representing 152,620 people living with HIV, many of them unaware of their infection due to barriers to diagnosis. The prevalence in Colombia appears to be stable and displays the pattern of a concentrated epidemic, as it is below 1% in the general population, with rates among men having sex with men reaching more than 5% (Ministerio de Salud y Protección Social, 2012).

Although reports on the global and national spread of HIV are timely and informative, they often overlook specific ethnic populations. For instance, UNAIDS provides data by region and country, while Colombian governments report only by department (similar to a state or province) and city. Consequently, there is a gap in our knowledge about how HIV is affecting the Indigenous Peoples of Colombia.

Since 1996, international literature has drawn attention to the emergence of HIV within North American Indigenous populations, who represent approximately 4.3% of the overall population in Canada and 2% in the United States (Duncan et al., 2011; Kaufman et al., 2007; Mill et al., 2011; Tseng, 1996). Yet in Latin America, home to almost 50 million Indigenous people, much less is known about HIV within this population, even though "some authors believe HIV will have the same effect on Indigenous peoples as the original epidemics brought by the conquistadores" (Montenegro & Stephens, 2006, p. 1864). Indeed, the emergence of HIV within Indigenous populations in Brazil (Wiik, 2001), Mexico (Hernández-Rosete, Maya, Bernal, Castañeda, & Lemp, 2008), and Peru (Bartlett et al., 2008) supports this prediction. In a study of risk for HIV and other sexually transmitted infections (STIs) among Indigenous communities in the Peruvian Amazon, Orellana, Alva, Cárcamo, and García (2013) highlight a number of structural factors. Similarly, Negin, Aspin, Gadsden, and Reading (2015) identify colonialism and racism as embedded in the social and economic determinants that increase the risk of HIV among Indigenous Peoples.

There are currently 87 Indigenous ethnic groups in Colombia, with a total population of 1.4 million people, accounting for 3.4% of the national population (Organización Nacional Indígena de Colombia [ONIC], 2012). Indigenous people live in 27 of the 32 departments of the country, with roughly 80% residing in *resguardos* (Indigenous communal lands that have constitutional recognition of territorial integrity and autonomy, akin but not identical to First Nations reserves in Canada or American Indian reservations in the United States; ONIC, 2012). Despite progress in recent years, access to healthcare remains difficult for most Indigenous groups in Colombia (Montenegro & Stephens, 2006). National public health surveillance systems do not report by ethnicity, and consequently there are no reliable statistics on the national health status of the Indigenous population.

According to the Indigenous Organization of Antioquia (OIA), the first case of an Indigenous person with HIV was reported in 2000 in the Cristianía *resguardo* in the Antioquia department (personal communication with G. Tascón, former president of OIA, June 2006). Between 2000 and 2009 (before the study reported here was conducted) a total of seven cases of HIV were reported in Cristianía, of which three persons are deceased. A recent review of the

literature revealed only three previous studies about HIV in Colombia, one in an Indigenous *resguardo* in the northern Cauca region, which explored beliefs and perceptions of HIV (Consejo Regional Indígena del Cauca [CRIC], 2004). The second was part of the 2007 Colombian National Health Survey, which revealed an overrepresentation of Indigenous people among those reporting having a STI in the past year, yet this disparity did not exist among those previously diagnosed with HIV (Soto & Rojas, 2010). The third study examined HIV risk factors within the Indigenous population of Colombia (Betancourt & Pinilla, 2011). None of these studies provided sufficient information about the characteristics of HIV among Indigenous people in Colombia. This study proposed to fill that gap in knowledge.

Methods

Population and Research Area

Cristianía is an Indigenous *resguardo* of the Embera Chami ethnic group located in the southwestern department of Antioquia, in the municipality of Jardín. The first Indigenous people settled in this region in 1874, making it one of the oldest Indigenous *resguardos* in the department, located on 400 acres with a population of 1,749 people, 55.6% between 15 and 49 years and 48.4% female (Cataño et al., 2015). The *resguardo* is in a mountainous area, with low population density. Given the proximity to and contact with Medellín and other municipalities of Antioquia, most of the inhabitants of Cristianía speak Spanish and have similar customs and lifestyle to that of the general peasant population. It is a low-income community with few stable jobs, except for temporary work. The main economic activity of the inhabitants of Cristianía, particularly men, is coffee harvesting. Younger women also are employed in coffee harvesting, and older women often work creating handicrafts that are sold to visitors. Women are responsible for most of the work in homes, associated with a traditional maternal role in the family. All of the inhabitants are affiliated with the national health social security system, with about 90% of them being members of an Indigenous EPS (health promotion entities that provide health insurance; Mignone, Nállim, & Gómez Vargas, 2011).

The leadership of Cristianía approached academics from Universidad of Antioquia with their concern about the number of community members who had been diagnosed with HIV/AIDS. After several conversations, a partnership was established to conduct a community-based participatory research project. As such, a community committee, including representation from Elders, leadership, men, women, and youth, was established to oversee the project and make key decisions. Community members were employed by and/or volunteered to work with the project, and the initiative involved active participation of youth, as well as traditional healers.

Sampling and Recruitment

A sample size of 300 people was calculated to estimate an HIV prevalence of 1%, with a confidence interval of 95% and a margin of error of 1%. A stratified random sample was used, representative of sex, age group (15–17, 18–24, and 25–49 years), and area of residence within the *resguardo*. The sampling frame was based on the 2010 community census. Those selected were invited to participate by written communication delivered personally to their homes by two Indigenous community leaders. In the case of minors, invitation to participate was given initially to the parent or guardian. People who did not respond to the first invitation were invited once or twice more. Those who did not respond to any of the invitations or failed to meet all the inclusion criteria were replaced with people from a second random sample of 223 participants.

Design

This prevalence study of HIV infection was conducted on a stratified random sample of the population aged 15 to 49 years. Researchers also administered a survey regarding sexual behaviour and HIV knowledge. Participants' first contact was with a community member of the research team who assigned them a time for their survey interview. Participants went to the local health centre for the interviews, where a member of the research team conducted each interview in a private workstation.

Before beginning the survey interview, participants signed a consent form in front of two witnesses. In order to help participants feel more comfortable, the gender of the interviewer was matched to the gender of the interviewee. After the survey was administered, each participant had the rapid tests performed by two members of the research team, preceded by a short counselling session. The result, which took approximately 30 minutes to receive, was provided in private by one member of the research team, followed by further counselling. Participants who received negative results were asked by a community member of the research team to evaluate the experience. Those who received positive results were referred, following counselling, for confirmatory testing at the hospital. All surveys were conducted in private settings at the health centre and, in the case of minors, were conducted by a researcher who is also a psychologist, to ensure their emotional safety.

Inclusion Criteria

To be included in the study sample, individuals had to be between 15 and 49 years of age, reside in Cristianía, have been sexually active for at least six months, speak Spanish, and agree to sign the informed consent form before participating in the study. Participants' age during data collection was calculated from the date of birth recorded in the community census of 2010, which was also used for verifying the community residence criterion.

Rapid Tests

The Determine HIV-1/2 rapid test by Inverness-Orgenics was used to measure the presence of antibodies to HIV-1 and HIV-2 (sensitivity 100%, specificity 100%). The Determine Syphilis TP test was used to measure the presence of antibodies against *Treponema pallidum* (92.3% sensitivity, 100% specificity). Finally, the Determine HBsAg test was used to measure the presence of the hepatitis B surface antigen (sensitivity 98.4%, specificity 100%). Trained professionals (two doctors, two bacteriologists, and a nurse) conducted the tests individually, in private, and following the protocol described by the manufacturer. The research team had no connection with the manufacturer; the test kits were purchased with grant funding.

Survey

The survey included a total of 60 items relating to (a) sexual behaviour that impacts HIV risk and (b) knowledge about HIV. Most of the items were validated nationally (Ministerio de Protección Social, 2009); some were not validated but were included as they are relevant to the community context. The survey was administered face to face by a researcher from outside the community and lasted approximately 20 minutes. The questions and response options were read aloud by the researcher, who also completed the written form according to the participant's responses. The survey did not include questions that would elicit responses likely to identify any of the participants.

Confirmation of Positive Results

All participants with a positive HIV rapid test result were referred to the laboratory at Jardín's hospital, where they underwent confirmatory testing, the cost of which was covered by the study. New confirmed cases of HIV, syphilis, and hepatitis B were referred to the participants' respective healthcare providers. The research team followed the cases and sometimes accompanied participants to verify that they were properly attended.

Data Analysis

Quantitative data were analyzed using the SPSS software package. Frequencies and proportions were calculated for categorical variables, and measures of central tendency and dispersion for continuous variables. For prevalence estimates 95% confidence intervals were calculated, and for comparing proportions chi-square and *p* values were calculated.

Ethical Considerations

Indigenous leaders of Cristianía and the Ethics Committee of the National School of Public Health at the University of Antioquia provided formal approval for this study. Participation in project activities was voluntary, and all participants signed informed consent forms before two community witnesses prior to participating in the rapid tests and the survey. In order to protect their privacy, researchers had minors (15–17 years) who met the inclusion criteria sign their own consent forms (rather than their parents).

Results

Participants

In June and July of 2010, 523 community residents between 15 and 49 years of age were randomly selected and invited to participate in this study. Three hundred eighty-two (382) people responded (73%), of which 87 were excluded as they had not yet initiated sexual practices and were mainly minors. The main reason cited for not accepting the invitation was absence from the *resguardo* on data collection days, mainly for work reasons.

A total of 295 people participated in both the rapid HIV test and the survey. Table 1 presents participants' demographic characteristics and rapid test results. The sample corresponds to the community's profile for the age group of 15 to 49 years.

Table 1
Demographic Characteristics of the Study Participants and Positive Rapid Test Results for HIV, Syphilis, and Hepatitis B, by Gender

Variable	Men			Women			Total		
	(*n* = 140)			(*n* = 155)			(*N* = 295)		
	n	%	95% CI	*n*	%	95% CI	*n*	%	95% CI
Age group									
15–17	8	6		11	7		19	6	
18–24	39	28		36	23		75	25	
25–49	93	66		108	70		201	68	
Positive rapid test results									
HIV	0	0	[0.00, 2.60]	3	1.94	[0.40, 5.55]	3	1.02	[0.21, 2.94]
Syphilis	2	1.43	[0.17, 5.07]	6	3.87	[0.51, 7.23]	8	2.71	[0.69, 4.74]
Hepatitis B	0	0	[0.00, 2.60]	0	0	[0.00, 2.35]	0	0	[0.00, 1.24]

Rapid Test Results

Three people were found to be HIV positive, which corresponds to a general prevalence for the population aged 15 to 49 years of 1.02%, 95% CI [0.21, 2.94] (Table 1). All positive cases were women, two of whom already knew they were HIV positive and were receiving antiretroviral treatment. The third woman's status was confirmed by the ELISA and Western blot tests, and she was referred to her healthcare provider to start medical treatment. The prevalence in women was 1.94%, 95% CI [0.40, 5.55]. The woman's sexual partner was an incidental case that was not part of the sample and was not considered in the prevalence calculation, but was tested and found to be HIV positive.

Eight people tested positive for syphilis, which corresponds to a general prevalence for the population aged 15 to 49 years of 2.71%, 95% CI [0.69, 4.74] (Table 1). All cases confirmed by VDRL and FTA-ABS tests received antibiotic treatment provided by the study, with the appropriate response. Six of these cases occurred in women, corresponding to a prevalence of 3.87%, 95% CI [0.51, 7.23]. Two of the positive cases for syphilis were also HIV positive. None of the participants tested positive for the surface antigen of hepatitis B. No technical difficulties occurred in the delivery of the rapid testing process in the community. The tests were well accepted and no adverse effects were associated with their use.

Genitourinary Symptoms

During the survey, 72 participants (24.4%) reported the presence of at least one symptom suggestive of an STI (complete results not presented). The most common were nonspecific symptoms such as burning during urination (14.9%), lower abdominal pain (11.9%), and genital pruritus (9.1%). Other, less frequently occurring symptoms included genital secretion (eight cases), genital warts (four cases), and genital ulcer (one case). All symptoms occurred more frequently in women, with the exception of genital warts (three cases in men) and a genital injury case. In all of these cases the presence of infection was ruled out during follow-up by a medical doctor, and all participants' symptoms disappeared spontaneously without treatment. None of the participants with a positive test result for syphilis reported genitourinary symptoms.

Sexual Behaviour

The average sexual initiation age for men and women was 16 years. Numbers of affirmative answers to yes/no survey questions regarding sexual behaviour are shown in Table 2. The majority of respondents reported that, in the past year, they had one sexual partner. Most of the participants reported being sexually active during the data collection period, but 54% never used condoms, and significantly more women (63%) than men (43%) never used them, $p < .05$. History of sexually transmitted infections was reported in a small proportion of both men and women. A higher proportion of women (74%) reported having had a prior HIV test, compared to men (39%), $p < .001$. Almost half the men mentioned having had sex under the influence of alcohol. Finally, a history of sex between men was reported by five male respondents.

Not shown in the table, but a relevant result, is that none of the participants interviewed reported injection drug use.

Table 2
Sexual Behaviours by Gender

Sexual behaviour	**Men (*n* = 140)**		**Women (*n* = 155)**		***p*[a]**
	n	%[b]	*n*	%	
Currently you have a sexual partner	101	72.1	126	81.3	.085*
You never use a condom when you are having sex	60	42.9	98	63.2	.0007**
You have had sex while under the influence of alcohol	60	44.8	28	18.1	.0000**
You have had a sexually transmitted disease	5	3.6	4	2.6	.88
You have been HIV tested before	55	39.3	115	74.2	.0000**
You have had sex with other men	5	3.6			[1.17, 8.14][c]

Note. Only affirmative/agree responses are reported.
[a] Chi-square test
[b] Percentages may vary despite similar n due to differences in the denominator (i.e., some items were not answered by 100% of the sample)
[C] Confidence interval calculated for the proportion of men who have had sex with other men.
*Statistically significant at 10%. **Statistically significant at 5%.
+

HIV Knowledge

Numbers of affirmative answers to yes/no survey questions regarding HIV knowledge are shown in Table 3. Almost all participants had heard of HIV or AIDS prior to this study, and 69% reported knowing someone living with HIV or who had died from AIDS. Respondents showed average level of knowledge about the major routes of HIV transmission, including unprotected sex, intravenous drug use or blood transfusions, and vertical transmission from a pregnant woman to the fetus. However, participants showed lower levels of knowledge about the ways HIV cannot be transmitted; this lack of understanding was more pronounced in men than in

women. Finally, it is worth noting that all but three respondents indicated that HIV/AIDS is a "fatal" disease (Table 3).

Table 3
Sexual Knowledge by Gender

Knowledge statement	**Men (*n* = 140)**		**Women (*n* = 155)**		***p***
	n	%[a]	*n*	%[a]	
You have heard of HIV/AIDS	130	92.9	146	94.2	.82
You know someone who has HIV/AIDS or who has died from this cause	93	66.4	112	72.3	.34
You have heard of sexually transmitted infections	99	70.7	109	70.3	.96
HIV is transmitted by having sex without a condom with an infected person	127	94.8	139	91.5	.78
HIV is only transmitted by having oral sex	70	52.2	80	52.6	.96
HIV is not transmitted by hugging or shaking hands with an infected person	83	61.9	120	78.9	.002*
HIV is transmitted using infected sharp objects	122	91.0	136	89.5	0.80
HIV is not transmitted through a mosquito bite	29	21.6	38	25.0	0.60
HIV is transmitted through the transfusion of infected blood	125	93.9	140	92.1	0.70
HIV is not transmitted by sharing a meal with someone who is infected	35	26.1	81	53.3	0.000*
HIV is transmitted when injected with needles that have been previously used by an infected person	130	97.0	137	90.0	0.04*
HIV is not transmitted when using public restrooms	35	26.1	51	33.6	0.22
HIV is transmitted from an infected woman during pregnancy to her baby	112	83.6	125	82.2	0.89
HIV is not transmitted by kissing an infected person	36	26.9	54	35.5	0.15
HIV is transmitted from a mother to her baby through breast milk	100	74.6	100	65.8	0.13
HIV/AIDS is not a fatal disease	1	0.8	2	1.3	0.93

Note. Only affirmative/agree responses are reported.

a Percentages may vary despite similar n due to differences in the denominator (i.e., some items were not answered by 100% of the sample)
*Statistically significant at 5%.

Limitations

Response accuracy to questions about sexual behaviour may have been affected through either nonresponse or underreporting, as these questions are often considered intimate and sensitive. In particular, we cannot rule out social desirability bias.

Using validated questions from previous studies conducted with non-Indigenous populations could represent a potential limitation of the study, as it implies that this Indigenous community had similar concepts of sexuality, which may not be the case (Organización Panamericana de la Salud [OPS], 2003). A future study exploring Indigenous concepts of sexuality is warranted but was outside the scope of this study. However, findings from several focus groups conducted during the data collection period (unpublished results at present) suggest that concepts of sexuality among individuals in this community do not differ significantly from those in neighbouring non-Indigenous communities.

Another potential bias created by the sampling strategy relates to participation by those who were not harvesting coffee during the time of the study, as there might be differences in sexual behaviour between those who work in this industry and those who do not.

Discussion

This is the first study to report on the prevalence of HIV in an Indigenous community in Colombia. The community of Cristianía was fully involved in all stages of the project, and a particular strength of the study was that it was community-driven. In fact, a central feature of this study is its initiation at the request of community leadership. The commitment of this Indigenous community is demonstrated not only by its awareness of HIV but by its strength and cohesion in confronting a potentially serious community health concern.

Previous research has referred to the occurrence of HIV among Indigenous people or drawn attention to the vulnerability of Indigenous people and the potential impact of the epidemic in this population (Betancourt & Pinilla, 2011; CRIC, 2004; Ministerio de Protección Social, 2009). Yet the results of this study reveal a prevalence in the population aged 15 to 49 years (1.02%) that is higher than the estimated general prevalence for this age group in Colombia in 2010 (0.57%; Ministerio de Salud y Protección Social, 2012).

Another key finding is the disproportionate number of women testing positive for HIV—all of the cases in our sample. While this may be the result of random sampling, it is unlikely. This finding supports as yet unpublished research that indicates that women account for 50% of the total HIV cases reported in this community. This contrasts with 2011 figures for Colombia, where women accounted for only 28% of cases (Ministerio de Salud y Protección Social, 2012). Similar findings to those of this study have been reported in studies within Canada (Roger, Migliardi, & Mignone, 2012). It is unclear why women are overrepresented in HIV cases among Indigenous communities. However, we suspect that many are infected by a male partner who does not use condoms and who has other sexual partners (female or male). As well, as shown in our findings, a smaller proportion of women use condoms when compared to men. Other aspects related to this situation are "machismo," alcohol abuse of the male partner, and domestic violence against women. Studies conducted in Mexico among Indigenous women suggest that they are at increased risk of HIV as a result of having partners who are migrants who cyclically

return to the home (Hernández-Rosete et al., 2008; Maier, 2007). This aspect of risk among Indigenous women merits further research in Colombia.

Almost all of the study participants indicated that they had heard of HIV and/or knew someone with HIV. This is not surprising as, during the last decade, an average of one new case of HIV was reported each year in this community of only 1,749 inhabitants. In addition, several educational activities to promote health and prevent disease have increased knowledge regarding the main mechanisms of HIV transmission.

There is drug use among some community members, yet it is mainly through smoking or aspirating marijuana and crack. Therefore, sexual intercourse appears to be the main mode of HIV transmission. Although no substantial differences in sexual behaviour risk were found between women in this study and those from the last national demographic and health survey in 2010 (Ministerio de la Protección Social, 2011a), having these data is useful in guiding the design and evaluation of future community educational interventions.

With the exception of the eight syphilis cases identified (two of them with HIV co-infection), results from rapid tests (as well as from studying people who reported the presence of genitourinary symptoms) failed to identify the presence of other STIs. However, this study did not test for chlamydia or gonorrhea, which have been reported in other Indigenous populations such as American Indians and Alaska Natives (Kaufman et al., 2007) and are of key public health concern in Colombia. Exploration of genitourinary symptoms did not reveal new STI cases, likely because the symptoms were general and unspecified and could have been caused by other general health issues. It is also possible that participants did not fully understand the meaning of the symptoms. Furthermore, the questions prompted for the presence of symptoms, which may elicit different responses than when patients visit a doctor's office with specific concerns about symptoms. This has been shown to be the case with the syndromic approach to sexually transmitted infections, which has been successful in many regions of the world (Choudhry, Ramachandran, Das, Bhattacharya, & Mogha, 2010).

Of the published studies on HIV among Latin American Indigenous populations, the only comparable study is that of Bartlett et al. (2008) in Peru. They engaged 282 Indigenous people in four remote communities of the Peruvian Amazon and reported a prevalence of 0.7% (2 cases) and 3.2% (9 cases) for HIV and syphilis respectively. These findings reveal lower rates of HIV but higher rates of syphilis than in Cristianía. The two HIV cases in Peru were men, both with a history of having sex with other men, while all three cases of HIV in Cristianía were women. Syphilis was found in men and women in both studies, yet no cases of HIV co-infection were reported in Peru, while in Cristianía there were two.

Although there are similarities in the findings of these two studies, results may not be comparable as the Cristianía study was restricted to people aged 15 to 49 years and these participants were randomly selected, while the Peru study included a larger age range (15–75 years) and participants were selected among people who attended a community meeting in a local health centre. Nonetheless, both studies clearly demonstrate that HIV is present in some Indigenous communities in South America and therefore is an important public health concern. Similarly, studies involving Indigenous people in other countries provide additional evidence of an emerging epidemic. For instance, in Canada, Indigenous people represent only 4% of the country's population yet are overrepresented in new HIV cases, accounting for 27% (Duncan et al., 2011). In particular, Indigenous women have been identified as having one of the highest rates of HIV infection in Canada (Roger et al., 2012).

Conclusions

A unique contribution of the Cristianía study is made through survey findings of a randomly selected sample of Indigenous people aged 15 to 49 years, in HIV prevalence studies, as the use of random selection in these types of studies has been very uncommon. Moreover, this study sampled a relatively small community, which was geographically concentrated and had recent available census data, which was used to create the sampling frame (Silva, 2000). Researchers also gained experience in the use of rapid tests, which provides evidence of test reliability as well as wider acceptance by the population, and the feasibility for usage at the community level.

The findings of this study have implications for the Indigenous community of Cristianía, as they more accurately represent the extent of HIV in the community. They also serve as a baseline for evaluating interventions to reduce transmission and improve HIV knowledge. As well, the rapid testing with pre and post counselling had a beneficial effect on participants; the in counselling in particular which can be a powerful educational strategy (Ministerio de la Protección Social, 2011b). At the national level, the findings help raise awareness about the exposure of Indigenous peoples to HIV and the importance of including an ethnicity variable in national HIV observatories (Ministerio de la Protección Social, 2008). Currently an ethnicity variable is not recorded, thus hindering the government's capacity to monitor and address HIV within Indigenous, Afro-descendant, and other ethnic minority groups.

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