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E. Roberto Orellana

Portland State University, orellana@pdx.edu

Isaac E. Alva

Universidad Peruana Cayetano Heredia

Cesar P. Cárcamo

Universidad Peruana Cayetano Heredia

Patricia J. García

Universidad Peruana Cayetano Heredia

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Structural Factors That Increase HIV/STI Vulnerability Among Indigenous People in the Peruvian Amazon

E. Roberto Orellana¹, Isaac E. Alva², Cesar P. Cárcamo², and Patricia J. García²

¹Portland State University, Portland, Oregon, USA

²Universidad Peruana Cayetano Heredia, Lima, Peru

Abstract

We examined structural factors—social, political, economic, and environmental—that increase vulnerability to HIV among indigenous people in the Peruvian Amazon. Indigenous adults belonging to 12 different ethnic groups were purposively recruited in four Amazonian river ports and 16 indigenous villages. Qualitative data revealed a complex set of structural factors that give rise to environments of risk where health is constantly challenged. Ferryboats that cross Amazonian rivers are settings where unprotected sex—including transactional sex between passengers and boat crew and commercial sex work—often take place. Population mobility and mixing also occurs in settings like the river docks, mining sites, and other resource extraction camps, where heavy drinking and unprotected sex work are common. Multilevel, combination prevention strategies that integrate empirically based interventions with indigenous knowledge are urgently needed, not only to reduce vulnerability to HIV transmission, but also to eliminate the structural determinants of indigenous people’s health.

Keywords

America; South; HIV/AIDS; marginalized populations; risk; behaviors; sexuality/sexual health

For the past three decades, researchers have attempted to characterize the nature of the human immunodeficiency virus (HIV) epidemic in Latin America. It has become well established that the burden of HIV infection is disproportionately carried by men who have sex with men (MSM), among whom the HIV epidemic is concentrated, as well as other socially marginalized groups, such as female sex workers (FSW), transsexual sex workers, people who inject drugs, and migrant populations (Bastos, Caceres, Galvao, Veras, & Castilho, 2008; García & Blas, 2007; United States Agency for International Development [USAID], 2010). Common to populations heavily affected by HIV and other sexually transmitted infections (STIs) is exposure to structural factors that increase their vulnerability

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Corresponding Author: E. Roberto Orellana, Portland State University, 1800 SW 6th Ave. Suite #600, Portland, OR 97202, USA. orellana@pdx.edu.

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to HIV/STI transmission (Blankenship, Friedman, Dworkin, & Mantell, 2006; Marshall, Kerr, Shoveller, Montaner, & Wood, 2009).

Drawing from the HIV prevention literature, we define structural factors as social, economic, political, and physical forces that “structure” the contexts in which the risks for HIV/STI acquisition are produced (Gupta, Parkhurst, Ogden, Aggleton, & Mahal, 2008; Marshall et al., 2009). Structural factors operate at different ecosocial levels (individual, interpersonal, and community) and shape the interactions between social forces and individual behaviors and practices (Strathdee et al., 2010). Despite increased awareness of the impact of structural factors on individual HIV-risk practices and the recognition that behavior change interventions work better when the broader structural factors are also addressed (Coates, Richter, & Caceres, 2008), most HIV prevention efforts continue to overlook the underlying context where risks take place. To extend the research on structural factors that increase HIV risks among vulnerable populations, and to help inform contextually appropriate prevention programs, we describe in this article how sociocultural practices interact with structural forces (i.e., lack of HIV information/knowledge, lack of health services, population mobility and mixing, and river transportation systems) to increase the risk for HIV/STI acquisition among indigenous people in the Peruvian Amazon.

Background

Over the past decade, Peru has experienced a dramatic improvement in its economy, fast becoming one of the top economic performers in Latin America (World Bank, 2011). However, the country continues to face challenges to reduce poverty and protect its vast ecosystem. Currently, more than 36% of the population lives on less than US\$2.00 per day. Almost 13% live in extreme poverty on less than US\$1.00 per day (USAID, 2010; World Food Programme [WFP], 2011). In rural Peru, extreme poverty is more than double the national average (25.7%; WFP).

As of 2009, the United Nations Joint Programme on HIV/AIDS (UNAIDS) estimated that 76,000 people were living with HIV and/or the acquired immune deficiency syndrome (AIDS) in Peru. With an adult HIV prevalence estimated to be less than 1% (UNAIDS, 2010), Peru’s epidemic remains concentrated in MSM. Research studies show that the HIV prevalence among MSM ranges from 11% to 32%, with Lima and river port cities in the Amazon basin being the most affected (Beyrer et al., 2010; Caceres & Mendoza, 2009; Cárcamo et al., 2012). There is also an increased public health concern in the region because of research findings that show high levels of untreated STIs among men and women, a factor well known to increase the risk for HIV transmission (USAID, 2010).

HIV and STIs Among Peruvian Indigenous People

Overlooked in most research reports about HIV and STIs in Latin America, including Peru, is information on indigenous people. A recent literature search revealed a handful of articles reporting STI-related research with indigenous groups in the Peruvian Amazon. In one article, García, Chavez, et al. (2004) described a study of reproductive tract infections (RTIs) among Peruvian women in rural areas, which included indigenous participants from the Amazon region. They found that 70% of rural women had evidence of one or more

RTIs, including several STIs such as trichomoniasis, chlamydia, gonorrhea, and syphilis. Recently, HIV and syphilis were reported among members of an indigenous group, the Shawi, in the Peruvian Amazon. A team of public health researchers conducted two studies with this group. In the first study, Zavaleta et al. (2007) found a seroprevalence of 7.5% and 6.3% for HIV and syphilis, respectively, among adults in one indigenous village. In a second study with a larger sample of Shawi villages, the investigators found prevalence estimates of 0.7% for HIV and 3.2% for syphilis (Bartlett et al., 2008). Risky behaviors identified in the two latter studies included high rates of unprotected sex, early sexual initiation, and sex between men.

Indigenous People in The Peruvian Amazon

Despite the paucity of HIV-related research among indigenous people, the existing research suggests that HIV/STI transmission could become a major public health problem if unchecked. It is estimated that more than 400 different indigenous groups live within Latin America, constituting a substantial proportion of the continent's population. In Peru, indigenous people are estimated to account for up to 45% of the population (Montenegro & Stephens, 2006). In the Peruvian Amazon region there are 13 linguistic families and more than 60 ethnic groups (Instituto Nacional de Estadística e Informática [INEI], 2008). Social research findings indicate that indigenous people remain some of the most marginalized populations in the hemisphere, thus increasing the levels of extreme poverty, low educational attainment, and lack of access to health care and social services—structural factors well known in the research literature to increase the risks of HIV/STI transmission (Auerbach, Parkhurst, & Caceres, 2011; Stephens, Nettleton, Porter, Willis, & Clark, 2005).

Given the large and diverse indigenous population in the Peruvian Amazon, and the recognition of the region as a high-HIV epidemic zone (Paris et al., 1999; Paris et al., 2001; UNAIDS, 2004), strategies to prevent the spread of HIV/STIs into indigenous communities are urgently needed. Our objective is to describe structural factors that might increase the vulnerability for HIV/STI acquisition among indigenous people in this region. We posit that the interaction of different structural factors creates risk environments from which risks for HIV/STI transmission emerge. We used a qualitative research approach to identify structural factors that in turn might be used to inform contextually appropriate HIV-prevention programs among indigenous people in the Peruvian Amazon.

Methods

We employed a participatory action research design to conduct focus groups and in-depth interviews in the Peruvian Amazon in 2007–2008. The study was an extension of a large community-randomized controlled trial of STI prevention conducted in 24 cities throughout Peru (García et al., 2012). We used principles of participatory research (Minkler, 2003, 2005), because they offer a framework to partner with communities in a way that can improve the quality of research and help the communities to address problems related to HIV and other STIs (Morin, Maiorana, Koester, Sheon, & Richards, 2003).

Four community advisory boards (CABs) were established in four different river port cities in the Amazon region. CAB members were recruited from indigenous communities,

indigenous organizations, the health sector, local government, and community-based organizations. CABs also included individuals living with HIV/AIDS, MSM, FSW, and river transportation workers. Building on the strengths and resources of the CABs and the research team, a collaborative partnership was established to develop interview guides; recruitment strategies; data analysis strategies, including member checking; and local dissemination plans.

Study Location

We conducted this study in the Peruvian Amazon region. Peru has the second largest territory of Amazonia after Brazil, and is considered the fourth-largest country in tropical forest extension on Earth (Orta-Martinez & Finer, 2010). The Amazon region is characterized by vast areas of jungle territory, and extensive transportation networks that rely heavily on the Amazon River and its tributaries. The region has been subjected to constant migration of poor people from the Pacific coast and the Andes Mountains to the west, and to ever-increasing resource extraction (Swenson, Carter, Domec, & Delgado, 2011). Medium-sized towns have grown along the major rivers and serve as ports for the movement of people and goods. The new settlers join a highly diverse indigenous population who inhabit more than 1,786 distinct villages throughout the Amazon basin (INEI, 2008). Based on previously established relationships from the parent study, we conducted the study in four river port cities: two in the Loreto region, one in the Ucayali region, and one in the Madre de Dios region. These river ports were accessible via airplane flights over the Andes Mountains from Lima.

In each port city, CAB members recommended three to five different indigenous villages that we could travel to for several days each to conduct our fieldwork. Villages were purposively selected by the CAB and the research team based on accessibility, available transportation, and having a reliable way to contact them to ask permission to visit. Additionally, we sought to maximize the ethnic diversity of the participants by selecting villages belonging to different ethnic groups. A total of 16 indigenous villages were included in the study. Most villages were accessible only by boat, and ranged between 1 and 12 hours in distance from the river ports. To visit these villages we relied on our indigenous partners, who would relay messages of the purpose of our work to the village leaders. All visits were approved by the *Apu*, the village chief, who would arrange for the whole village to be present on the accorded day of arrival. The names of the villages are omitted to protect their privacy, and to avoid any possible risk of stigma and discrimination based on the results of this study.

Sample

We recruited participants purposively based on CAB contacts and participant referrals in two settings: indigenous villages and river ports. Women and men were eligible to participate if they self-identified as indigenous, were 18 years of age or older, were conversant in Spanish, and were able to consent to participate in the study. We were unable to ascertain exact data on the percentage of people in each indigenous village who did not speak Spanish, but most people in the selected villages were bilingual (Spanish and the native language), and no one was excluded because of language barriers.

In general, participants' livelihoods depended on small-scale agriculture, fishing, other natural resource extraction, and commerce. Several men worked as laborers in large-scale timber extraction and in the river transportation system as deck hands and boat loaders. A total of 40 individual in-depth interviews and nine focus groups ($n = 98$) were conducted. Women's ages ranged from 18 to 37 years, with a mean of 25 years. Men's ages ranged from 20 to 50 years, with a mean of 33 years. The sample included 12 different ethnic groups: Shipibo-Konibo ($n = 55$); Murui ($n = 22$); Ese'Eja ($n = 14$); Cocama/Cocamilla ($n = 12$); Yagua ($n = 11$); Shawi ($n = 11$); Awajun ($n = 7$); Amarakaeri ($n = 2$); Bora ($n = 1$); Kichua ($n = 1$); Achuar ($n = 1$); and Ticuna ($n = 1$).

Data Collection

We met with each potential participant for a brief screening to assess for impairment related to substance use or cognitive ability and language. We read the informed consent aloud for the participant to make sure that every section was reviewed and understood. To ensure that the participant understood the information given in the consent process, we asked if any clarification was needed after each section was read. The protocol, instruments, and consents were reviewed and approved by the ethics committee of the Institutional Review Board at the Universidad Peruana Cayetano Heredia in Lima, Peru.

We used CAB-informed semistructured questionnaires, or interview guides, that were modified throughout the study to address emerging themes. The interview guides included open-ended questions about sociocultural aspects of the community, community strengths and needs, health in general, sexual health, and knowledge, attitudes, and perceptions about HIV/STIs. Interviews and focus groups were conducted in Spanish by members of the research team, all health professionals with extensive experience working with diverse groups in Peru and trained in qualitative interviewing. Several key members of the team grew up in the Amazon region or in rural areas of the Andes and were intimately familiar with some of the cultural underpinnings of the region. With the consent of the participants, all interviews were recorded and transcribed verbatim. To triangulate the information obtained through in-depth interviews and focus groups, we also conducted systematic observations in all study settings, took ample field notes, and conducted informal interviews with key informants.

Data Analysis

We began data analysis on the first day of fieldwork. At the end of each day, we met to discuss the themes that emerged during interviews, focus groups, and systematic observation. As transcripts became available, they were distributed among the researchers for thematic analysis and subtheme formation, in a model adapted from Glaser and Strauss' grounded theory (1967) and Padgett's approach for content analysis (2008). Thematic categories produced codes that provided guidance for additional analysis and were used to modify or add questions to new recruits.

Key to this analysis was the interdisciplinary triangulation offered by the broad spectrum of professional perspectives from the researchers. Our team included public health practitioners, social workers, physicians, and nurses. In the process of identifying themes

and codes, we also attended to form. In what resembled a narrative analysis, stories embedded in the text were identified and discussed. Similarly, we analyzed colloquial phrases for the meaning-making they implied. Additionally, preliminary findings were also presented at meetings with the four CABs, a process that allowed for further discussion and analysis of themes, and served as a form of member checking, especially from indigenous members. All aspects of data analysis were conducted in Spanish by members of the research team, for whom Spanish was their first language. Data were processed using the qualitative data analysis software NVivo 8 (QSR International, 2008) to further review and organize the themes identified in the field. The quotations presented herein were translated to English by the authors, all of whom are fluent in English.

Results

Sociocultural Factors That Shape Sexuality and HIV Risk

Early sexual initiation—Participants reported that early sexual initiation was common among indigenous youth and often led to teen pregnancy, and that compared to earlier generations, STIs were becoming more common among youth. Marriage at an early age is still common, and in some parts of the Ucayali region, for example, the tradition of *la entrega* (betrothing) is still practiced. The *entrega* is a traditional practice in which a teenage girl is pledged into marriage to an older man by her parents. In discussing this topic, an indigenous woman in Ucayali commented, “My sister-in-law was betrothed. Her father gave her away.” Regarding teenagers’ early sexual debut, an indigenous leader explained, “There are some lucky ones who are still virgin at fifteen, but the majority start having sexual relationships by age twelve.”

Sexual identity—It was reported that in some communities it was not uncommon for boys to initiate sexually with another man. Often this same-sex sexual debut was with a man from a different community who was considered to be gay. In most instances the village boy, who was the insertive partner, was not considered gay. Indigenous young men used local slang terms such as *mapero* or *maparete* to refer to boys who had sex with other men, but did not consider their behavior homosexual. In referring to *maperos*, a gay-identified indigenous man stated, “Of course they’re not gay; they’re machos who like to have sex with both women and gays. Besides, we don’t like to have sex with gays, we like to have sex with straight men.”

This apparent acceptance of same-sex behavior was not observed throughout the region. Additional exploration of homosexual behavior elucidated the existence of homophobia experienced at different levels, depending on ethnic group and distance from the more urban river ports. Comments related to the social marginalization of gay men appeared to be stronger in villages farther away from the ports. A man who identified himself as gay in a town near a major river port in Madre de Dios commented on this topic: “In [a village far away], they don’t tolerate *maricones* [faggots], but here in [city] it’s normal because we’re nearby [the river port].” As discussed in a CAB meeting with experts on the northern tip of the Peruvian Amazon, indigenous groups near the Ecuadorian border were said to be more homophobic than other groups.

The social marginalization of men who are indigenous and gay is compounded, and results in even less educational and employment opportunities. Many of the gay men we met in the river ports (we never met anyone identified as gay in the indigenous villages) were employed, if at all, in two occupations: hairdressers and cooks. As described below, the majority of the kitchen staff on large ferryboats was comprised of gay men, both indigenous and *mestizos* (people of mixed indigenous and European descent). Resource-extraction camps (i.e., logging and oil camps, mining) also hired gay men as their kitchen help. Similar to many mining towns, logging camps were also known for sex trading and heavy alcohol consumption. A gay-identified indigenous man who had worked in a logging camp reported that in addition to kitchen duties, they were also expected to provide sexual favors to the loggers. If they resisted, the participant said, they were forced to have sex anyway: “There are times when they force us to do it [have sex], but that is something nobody ever talks about anywhere.”

Gender roles—Overall, both men and women reported that men enjoyed a more permissive sexual behavior, such that having more sexual partners, both before and after marriage, is a socially acceptable behavior for men. Often these reports were accompanied by a discussion of gender roles, in which both men and women acknowledged that men were the decision makers and overall had more options in life, not only in regard to sexual partners, but also in social mobility opportunities, such as schooling and professional development. When asked about who would make the decision to have protected sex, the majority responded that men would.

One exception to the prominence of men in positions of power throughout the Amazon is the case of the Shipibo-Konibo people, among whom women were active participants in producing traditional arts and crafts and selling them in markets and plazas throughout the region. Because of these activities, in some families women were the primary money earners. Additionally, Shipibo-Konibo women could be traditional healers or *shamans*, a role traditionally held only by men in most other Amazonian groups. As explained by participants, and also reported in ethnographic literature (de Rios, 2005; Gonzalez, 2002), Shipibo-Konibo women who were shamans enjoyed a higher social status in their communities. This special status, however, was not afforded to the majority of Shipibo-Konibo women.

HIV/STI Knowledge

General knowledge about HIV and other STIs was limited. AIDS was seen as a new disease, and in several villages participants reported knowing someone who had died of AIDS, in most cases a gay man who had decided to *remontar* (go back to his village of origin) after living in the river port or other big cities where he was diagnosed as HIV positive. Thus, AIDS was mostly understood as a disease of gay men, a factor that plays an important role in the stigmatization of gay-identified men. A man from a village in Loreto commented about one such case: “He’d been in Yurimaguas, in Tarapoto, in Lima too, working in those cities, and then he got infected, so he came back to his village.”

When asked about other STIs, most participants reported that they had heard about or knew of someone who had had the more common STIs, such as gonorrhea and syphilis. Although not asked directly about the presence of the human papillomavirus (HPV), many respondents talked about cervical cancer as a common disease in their villages. In this regard, the etiology of the diseases was often misunderstood. For example, heat was mentioned in relation to many aspects of life, including as a cause of STIs. Participants from different ethnic groups reported that people might become ill with an STI if they worked all day under the sun, or if they bathed in overheated water. This replicated findings previously reported by García, Cárcamo and Holmes (2004) in a study with women in rural Peru.

Modes of HIV/STI transmission were poorly understood, and in many cases unknown. Although most people knew of the role of unprotected sex in the transmission of HIV/STIs, many other conceptions of how these diseases are transmitted were based on experiences with endemic diseases such as malaria, and on traditional beliefs. For example, mosquito bites were feared as possible routes for HIV transmission, as well as drinking from the same cup or sharing dining utensils with an infected person. Traditional beliefs related to disease transmission were also considered in regard to HIV/STIs. For example, in one village in Loreto, participants talked about how diseases can be transmitted through verbal communication. When asked directly about HIV transmission, one man commented, "People say that it [HIV] can be transmitted through the voice [of an infected person].... Through talking, apparently."

Since 2004, The Peruvian National Program, supported by the Ministry of Health and the Global Fund to Fight AIDS, Tuberculosis and Malaria, has offered free antiretroviral (ARV) drugs for the treatment of HIV (Echevarria, de Castilla, Seas, Verdonek, & Gotuzzo, 2006). Most participants, however, did not know about the availability ARV drugs. Although many described HIV as a death sentence of rapid effect, many others believed that HIV and STIs could be cured with traditional medicinal plants. Most respondents reported that they knew about medications, such as antibiotics, for the treatment of some STIs. Participants also said that often those medications were not available because most villages did not have an operational health post or clinic. Thus, most people relied on traditional medicine for the treatment of STIs, including HIV. A traditional healer explained one of his treatment procedures for an HIV-positive man:

I prepared him a remedy made with *uña de gato*, *corta-corta*, *hierbamora*, *huasai*, and *azucarguayo* [traditional medicine plants]. After boiling it in a big pot, I buried it for eight days. Then I had him drink it, and with this remedy he's been cured; now that man is strong.

Given this reliance on traditional medicine, as well as long-held beliefs in supernatural forces such as sorcery, it was not surprising to learn that traditional healers or shamans represent the first line of response to diseases, including STIs. Adding to their predilection for traditional medicine and shamanic services is the lack of Western medical services in the villages and a reported history of experiencing discrimination and disrespect at the clinics or public hospitals in the nearest cities (Montenegro & Stephens, 2006; Yanez del Pozo, 2003).

The River as an Environment of Risk

In a region without many roads, rivers provide the main medium for the transportation of goods and people. A wide variety of boats navigate from port to port carrying large amounts of merchandise, livestock, and people. A trip from Iquitos to Pucallpa (two major river ports in the region) on a large ferryboat can take up to a week, depending on river conditions and the weather. The fare for such long trips is expensive, especially for those without a regular income.

CAB members and study participants reported that on long-distance boat trips, sexual activity was not uncommon, especially among heterosexual couples traveling together, and that in all likelihood most sex was unprotected, given the lack of prevention programs and unavailability of condoms on the boats. Most sexual encounters were reported to occur on a hammock (in large, dormitory-style rooms), in the restroom, or on the roof of the boat. Sexual activity between men was also reported, in most cases between male passengers and male cooks. In discussing this topic aboard a large ferryboat, a gay-identified cook stated,

People think the captain is in charge here, but is not like that; those with access to the food are in charge, we are in charge. If we see an attractive man we give them bigger portions or an extra drumstick; that's how we convince them to have sex with us.

Transactional sex was also reported as a common occurrence. Several respondents talked about how the boat captain, or crewmembers, would have sex with poor women in exchange for fare. A crewmember from a large ferryboat recalled seeing this type of transaction: "You see it all the time, in the middle of night, when they collect the fare. You see women go to the captain's cabin for a few hours." Another cook commented on the assorted nature of transactional sex by boat crewmembers: "They [the crew] don't care if they're ugly, short, fat, native, Shipibo, Shipiba [in reference to men and women from the Shipibo-Konibo ethnic group]; they'll take anybody." Participants also reported that FSW engaged in sexual activities on trips on the different Amazonian rivers. Even though large ferryboats did not openly operate as sex-work venues, FSW utilized these boats for their own transportation, as they traveled from port to port to work, especially during the elaborate patron saints' celebrations in different towns. Thus, FSW often found customers on the boat.

Despite the reports that unprotected sex was common on many large ferryboats, no HIV-prevention programs had targeted these vessels. During our boat trips throughout the Amazon region and on our visits to different boats, we noticed that they all had a general store where food, alcohol, and cigarettes were available. However, none of the boats we studied had condoms available for sale or free distribution. When asked about whether they knew of any HIV/STI-prevention efforts targeting boats, participants reported never hearing of any prevention programs.

Population Mobility and Mixing

Additional possible sources of HIV/STI transmission were attributed to outsiders coming into indigenous villages. For example, nonindigenous loggers on their way to illegal logging camps deep in the jungle often stop in the villages to rest for the night. In exchange for

shelter and food, loggers often share part of their alcohol. We witnessed one such visit during our stay in a village off the Amazon River. About a dozen loggers carried beer and liquor into one of the bigger shelters in the community, and with a petroleum power generator proceeded to play loud music all night, turning the otherwise quiet village into a jungle discotheque.

Other outsiders, such as middlemen, called *rematistas* (wholesalers) and *regatones* (river merchants); immigrants from neighboring countries; and gay hairdressers were often blamed for bringing STIs into the community. A villager in the Ucayali region commented on the possibility of foreigners bringing diseases: “In a nearby village we have a family that has taken in a Brazilian man... That’s how diseases can come [into the community].” Another villager near the Amazon River stated,

Groups of three or four gays come from time to time to cut hair and stay in the villages for a few days. At night, they buy beer for everyone and sometimes after they get drunk they have sex with young men.

The artisanal gold mining industry had also increased the number of outsiders traveling through villages in the Amazon, especially in the Madre de Dios region. Small groups of outsiders, as well as groups of indigenous men, set up floating gold-mining camps along the river. Of increased concern were the newly sprung towns along the riverbanks, where the gold nuggets were sold. These were lawless towns with rampant prostitution and heavy alcohol drinking, where gold was the main currency. One respondent explained how gold was used in sex trading: “One gram [of gold] is what the girls [FSW] charge. That’s how you pay the girls, in grams.”

Respondents also explicated that poverty and lack of opportunities in their own villages led many young people to leave their communities and migrate to the larger river port cities in search of work and education. For example, as reported by villagers and observed by us, some indigenous men worked in and around the ports, often as boat laborers or deck hands. After work, some of these men spent their free time and money drinking alcohol and having unprotected sex with sex workers. Additionally, among the respondents who had migrated to the river port cities for educational purposes, some reported that indigenous teenage boys would trade sex for money or food.

Discussion

We examined structural factors that increase vulnerability for HIV/STIs among indigenous people in the Peruvian Amazon. We found that the combination of poverty, cultural beliefs related to health and sexual behaviors, gender inequality, lack of educational and employment opportunities, resource-extraction activities, and population mobility and mixing along Amazonian rivers give rise to environments of risk where HIV/STI-prevention knowledge is minimal and the opportunities for disease transmission are abundant. The findings provide important insights, not only into the pernicious social and contextual circumstances in which a marginalized population struggles for health and wellness, but also into factors that might be amenable to HIV-prevention strategies that are culturally and contextually grounded in the local situation.

The findings that many indigenous youth had an early sexual initiation are of concern because of the long-term health risks associated with an early sexual debut. In this study, participants reported that in some instances sexual debut began at age 12. Research in other settings has shown that having sex earlier than the age of 15 is associated with a greater number of sexual partners and increased risk for STIs (Sandfort, Orr, Hirsch, & Santelli, 2008). Early sexual debut also increases the risk of teenage pregnancy, which can substantially alter the course of life for the parents, especially the mother, and place the child at risk of experiencing negative long-term health outcomes (O'Donnell, O'Donnell, & Stueve, 2001).

Even though the delay of sexual initiation, along with other family planning methods, are important strategies for HIV prevention, special considerations should be taken in regard to the social and cultural aspects surrounding early marriage and family planning among this population. Family planning remains a controversial issue in rural Peru because of past experiences with government-sponsored forced sterilizations that occurred in the 1990s (Vasquez del Aguila, 2002). Additionally, for some smaller indigenous groups, condom use and other family planning strategies might also appear as threats to their demographic viability, especially among groups who were heavily affected by the internal armed conflict that killed large proportions of their population (Montenegro & Stephens, 2006; Strong, 1992). Although more research is needed on this topic to promptly design culturally appropriate prevention strategies, educational programs that include sex education, partner limitation, appropriate contraception, and information on abstinence should be piloted and evaluated.

The findings that in some communities same-sex behaviors were accepted, especially as a form of sexual debut for boys, is important for research and prevention purposes. Indeed, in a few villages it appeared to be acceptable for a "straight" man to have sex with a gay man, as long as his masculinity was not threatened. Similar findings have been shown in research in Latin America and with Latino MSM in the United States, where self-identified heterosexual men who have sex with other men do not consider themselves gay as long as they are the insertive partners (Katz et al., 2005). This is an important factor in designing targeted prevention strategies for men who have sex with both women and men. In most communities, however, any sexual relationship between men was not acceptable. Reports from MSM that the rejection from their communities led them to migrate to the port cities, where they faced stigma and discrimination for being gay and indigenous, is an extremely important finding for prevention efforts aimed at increasing social support, reducing stigma and discrimination, and providing opportunities for upward social mobility for indigenous MSM.

Existing research has established that gender inequality is a major social driver of HIV around the world (Wingood & DiClemente, 2000; World Health Organization, 2009). Our findings suggest that in the Peruvian Amazon gender norms were related to increased vulnerability. Norms related to masculinity encourage men to leave their villages in search of upward social opportunities. Migration to port cities for educational or employment purposes, or in some cases for military service, increases men's exposure to risky environments and situations, including unprotected sex with FSW or MSM. Also, as

reported by the majority of participants, the fact that men have more sexual partners before and after marriage directly increases the risks for HIV/STI transmission to women back in the village.

Gender norms related to femininity prevent women from social mobility, educational advancement, and access to information. Additionally, women have less power to make decisions about HIV preventive methods, because in most cases men are the ones who decide whether to use condoms (Bant & Girard, 2008). Structural approaches to address gender inequality by promoting social change and the empowerment of women have shown promising results. For example, in rural South Africa a microfinance program that aimed at reducing women's HIV vulnerability by enhancing their economic opportunities, while offering HIV education and providing opportunities to discuss and mobilize local action against gender-based violence, saw significant improvements. In a 2-year period, levels of intimate partner violence were reduced by more than half among women who received the intervention. Additionally, they found improvement in women's household well-being, social capital, and empowerment (Pronyk et al., 2006).

It is clear that structural factors such as poverty and lack of adequate educational opportunities have a tremendous effect on HIV/STI knowledge. The fact that most indigenous villages were located in isolated rural areas, lacked appropriate social and health services, including health promotion activities, and that, for the most part, education was available only at the elementary level, makes it difficult to expect that indigenous individuals would be familiar with the etiology, ways of transmission, and prevention of HIV/STIs. Prevention strategies that deliver HIV-related information through mass communication campaigns (Noar, Palmgreen, Chabot, Dobransky, & Zimmerman, 2009), as well as educational programs at the individual, group, and community levels, have shown effectiveness in increasing HIV-related knowledge, and reductions in HIV-related risk behaviors (Kirby, Laris, & Rolleri, 2007).

The findings about the role that the Amazon River and its tributaries play in increasing the vulnerability for HIV/STIs among indigenous people is extremely important for the HIV-prevention community. As a physical or environmental force, the rivers provide the means for the transport of people and goods from rural to urban settings, and vice versa, which allows for the iterative formation of risky settings and situations. Our study demonstrated that sex work was readily available in most settings related to the rivers, such as the port cities, where land-based and floating brothels operate day and night. Most indigenous men who worked at the ports were by themselves (having left their families in the village) and lacked meaningful social support. They often engaged in the normative activities of the setting, such as heavy alcohol consumption and unprotected sex with sex workers. Additionally, the finding that unprotected sex among boat passengers and crew occurred regularly, and that no prevention programs were in place, is alarming and requires urgent action from the prevention community.

The direct and ever-increasing contact between indigenous people and outsiders in the Peruvian Amazon, as a result of the resource-extraction industries and in- and out-migration to and from port cities, presents a complex risk environment that might help fuel the spread

of HIV/STIs in this impoverished region. HIV-related research in other aquatic environments throughout the globe has found similar results (Allison & Seeley, 2004). In Goa, on the coastline of India, fishermen migrate out of their villages for work at the docks, often leaving their wives and family behind. At the port cities, they engage in unprotected sex with sex workers and nonspousal partners (Bailey, 2011). In Kenya, a study among fishermen on the shores of Lake Victoria showed that the majority of the fishermen reported extramarital sex and low levels of condom use (Kwena et al., 2010).

A study of the characteristics of the HIV epidemic in French Guinea suggests that boatmen on the Maroni River might have contributed to the rapid increase of HIV among rural women along the river because of their high mobility and multiple sexual partnerships (Nacher et al., 2010). The thread among these different populations is their vulnerability to HIV and other STIs stemming from the complex interactions of structural factors such as poverty, migration, and environments of risk where commercial sex, heavy alcohol consumption, and risk taking are commonplace.

This study has some limitations. The study sample was comprised of 12 different ethnic groups (out of more than 60) located in four regions of the Peruvian Amazon; thus, the results of this study should not be interpreted as representative of all indigenous people in the region. However, to our knowledge this study represents the first examination of such a diverse sample of indigenous people in communities in the northern, central, and lowland jungle regions of Peru that provide a rich mix of perspectives. Additionally, interview data relied on self-report, which carries the potential for recall and social desirability bias, and the possibility of participants withholding information or providing inaccurate information. However, we minimized these possible biases through the triangulation of data collection.

Our study joins recent calls for the contextualization of HIV-related research to better understand how different social, behavioral, and biomedical prevention strategies can be combined to more effectively address the complex dynamics of HIV transmission (Coates et al., 2008; de Wit, Aggleton, Myers, & Crewe, 2011). Even though behavioral interventions, ARVs, and more recent biomedical treatments represent important life-saving options, many marginalized populations continue to have limited or no access to them.

To conclude, for indigenous people in the Peruvian Amazon, and quite possibly in the rest of Latin America, current HIV/STI-prevention efforts are unlikely to be effective if the structural factors that increase their vulnerability for disease are not identified and rapidly addressed. Multilevel, human-rights-based, combination prevention strategies that integrate state-of-the-art interventions with traditional indigenous knowledge and practices have the potential to not only reduce vulnerability to HIV transmission, but also to make long-lasting improvements to people's lives as they comprehensively address the structural determinants of indigenous people's health.

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Biographies

E. Roberto Orellana, PhD, MPH, MSW, is an assistant professor at the Portland State University School of Social Work in Portland, Oregon, USA.

Isaac E. Alva, MD, MPH, is a research scientist in the Epidemiology, STD/AIDS Unit at Universidad Peruana Cayetano Heredia School of Public Health and Administration in Lima, Peru.

Cesar P. Cárcamo, MD, PhD, is an associate professor in the Epidemiology, STD/AIDS Unit at Universidad Peruana Cayetano Heredia School of Public Health and Administration in Lima, Peru.

Patricia J. García, MD, MPH, is a professor in the Epidemiology, STD/AIDS Unit, and Dean of the Universidad Peruana Cayetano Heredia, School of Public Health and Administration in Lima, Peru.