

Sex on Amazonian riverboats: A neglected public health problem
that merits innovative HIV/STIs prevention interventions

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TABLE OF CONTENTS

INTRODUCTION	1
BACKGROUND	2
METHODS	4
Study Setting	4
Selection of Subjects	5
Data Analysis	7
RESULTS	7
Riverboats, ports, and people	7
Sex on the riverboats	9
HIV and STIs.....	13
Condom use.....	17
Previous interventions.....	20
DISCUSSION	20
Strengths and limitations	24
Implications of findings	24
REFERENCES	26

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To my wife, Magaly Blas, for her unconditional support in every step in my life.

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Introduction

The far-reaching role of transportation sector in the diffusion of diseases, including HIV and other sexually transmitted infections (STIs), represents a global health concern (Apostolopoulos, 2007). The role of highways in abetting the HIV epidemic is well documented in many parts of the world, especially in Southeast Asia and Sub-Saharan Africa (Apostolopoulos, 2007). In the Americas, research on this topic has been minimal, and most studies have focused on HIV and heterosexual encounters between male truck drivers and women, including female sex workers (FSW). In Brazil, truck drivers have been found to have a low self-perceived HIV risk and inconsistent condom use with partners (Malta, 2006; Villarinho, 2002). In Peru, a study reported that 45% of truck drivers had sex with FSW, 40% had a casual partner, and 1% had sex with other men during the last 3 months (Peceros, 2006). In the U.S., a few ethnographic studies have explored sex among male truck drivers and a subpopulation of gay men who are especially attracted to them (Apostolopoulos, 2011; Apostolopoulos, 2012b). Although there are few studies exploring risk factors for HIV transmission aboard passenger ships, HIV cases among seafarers are considered a public health concern and have been reported since the 1960s (Mouchtouri, 2010; Hansen, 1994). Regarding STIs, studies in Denmark and Norway found an association between frequent casual sexual contacts and Hepatitis B Virus (HBV) markers among seamen (Siebke, 1989; Hansen, 1996). In Denmark, Hepatitis B incidence among male seamen was 3 times the incidence in the general population (Hansen, 1996).

Studies of truck drivers in Peru are scarce (Peceros, 2006) with the only published study about the transport sector and HIV was conducted in Iquitos among local *mototaxistas* (motorcycle taxi drivers), who are a group at risk for STIs (Paris, 2001).

The rivers of the Peruvian Amazon are the “highways” of the jungle and may replicate the problems seen on land in other parts of the world (Orellana, 2013).

Background

HIV and STIs in the Peruvian Amazon region

The HIV epidemic in Peru is not generalized (HIV prevalence in general population is 0.5%) but concentrated in men who have sex with men (MSM), who have a prevalence ranging from 11% to 32%. MSM from Lima and some Amazonian cities including Iquitos and Pucallpa are the most affected by the HIV epidemic (Beyrer, 2010; Caceres, 2009; Carcamo, 2012). Eight percent of Peruvian men report having had sex with other men and this percentage is higher (17%) in the Peruvian Amazon region (Carcamo, 2012). Among *mototaxistas* from Iquitos this percentage is as high as 36% (Paris, 2001). Pucallpa and Iquitos are also riverports where sex work and exploitation are important social problems (Mujica, 2011). Sex work has been reported to be offered by men and women in riverboats traveling along the Amazonian rivers (Nureña, 2011).

A population-based study in 24 cities of Peru found that in three Amazonian cities (Tarapoto, Iquitos, and Pucallpa) the prevalence of HIV and other STIs (genital herpes, syphilis, gonorrhea, chlamydia and trichomoniasis) was notably higher than in other Peruvian cities, particularly in men. For example, the HIV prevalence in Iquitos among men 18-29 years from the general population was 2%, while the combined HIV prevalence among Peruvian men was 0.5% (Carcamo, 2012). Seroprevalence of anti-HBVc, a marker for HBV exposure, in the general population from the Peruvian Amazon region is more than 3 times higher (16.25% vs. 5%) than the national prevalence (Bernabé-Ortiz, 2011). Members of the Shipibo-Konibo ethnic group living around Pucallpa have high HTLV -1 and -2 prevalences (Alva, 2012). HTLV-2 is much

more prevalent among MSM from Iquitos (8.5%) and Pucallpa (2.5%) compared to MSM in Lima (0.4%) (Zunt, 2006).

Riverboats in the Peruvian Amazon region

In the Peruvian Amazon, riverboats are one of the main forms of transportation. Iquitos, the most important city in the area, can be reached only by airplane or riverboat. The Amazon River and its tributaries represent for Iquitos the main medium for transportation of goods and people. There are 12 major routes for passenger transportation on the rivers: Iquitos-Pucallpa, Iquitos-Yurimaguas, Iquitos-Santa Rosa, Iquitos-Angamos, Iquitos-Estrecho, Iquitos-Cabo Pantoja, Iquitos-Saramiriza, Iquitos-Intutu, Iquitos-Trompeteros, Iquitos-Andoas, Iquitos-Sargento Puño, Yurimaguas-Saramiriza. Riverboats traveling to and from Iquitos transport at least two hundred passengers each trip, during trips that often last between 3-7 days, and are often venues for risky sex. According to the Peruvian National Port Authority, during 2012 mixed (passengers and cargo) riverboats arrived in Iquitos 265 times from Pucallpa, and 318 times from Yurimaguas.

In a study conducted in 2007 to assess vulnerability to HIV and STIs among indigenous people in the Peruvian Amazon region, our group interviewed riverboat cooks who reported that 1) boat crewmembers had transactional sex with female passengers; 2) MSM who worked as cooks had unprotected sex with male passengers; and 3) sex work was common in riverboats (Orellana, 2013). The 2007 study did not include systematic observations onboard or interviews of other crewmembers or high-risk populations.

Following up on the 2007 research, we conducted this qualitative study to examine the characteristics (related to risky sex, culture, etc.) of people traveling by riverboats between Iquitos and Pucallpa, as well as the information, motivation and behavioral skills associated with

condom use and HIV testing among crewmembers, cooks, and sex workers traveling in riverboats.

Methods

Study setting

Field sites & surroundings

This study included only mixed riverboats traveling along the Iquitos-Pucallpa route (Figure 1). On every trip from Pucallpa to Iquitos there are about two hundred passengers. In Pucallpa the main ports are Henry, Carrillo and Monte Blanco. In Iquitos the main ports are Masusa and Henry. Masusa is the most important public port in Iquitos where riverports arrive from 11 out of the 12 most important navigable routes of the Peruvian Amazon. Masusa is an informal port with high rates of crime. Henry ports in Pucallpa and Iquitos are private ports that belong to one riverboat company with the same name.

Figure 1. Map of Iquitos and Pucallpa



Boat crew

All riverboats are required by Peruvian regulations to have a minimum of 5 crewmembers for operation: a captain, a boatswain, a pilot, an engine mechanic and a cook. The boatswain is in charge of the administration of the money and cargo. This official crew is trained by the Peruvian navy and must possess an embarkation booklet, which serves as the official permit for river navigation. In addition, riverboat owners hire about 4-8 persons as cargo handlers, assistant cook, fare collector and bar tenders. These persons are usually informally employed and do not receive benefits.

Other key populations

Longshoremen are called *chaucheros* in all Amazonian ports and are not employed by the ports or riverboats. They are independent workers and are considered by riverboat cargo handlers as a threat because some are known to steal products. Other informal port workers include *correccaminos* who wait for *mototaxis* to help passengers carry luggage for a few *nuevos soles* (Peruvian currency). Bars are very common in the riverports and the bartenders are always very young women called *meseritas*. Some of them are underage and victims of sexual exploitation (Mujica, 2011). Food vendors are frequently *chibolitas* (underage women) who walk into the riverboats selling food but also offering *compañía* (escort service) to the riverboat workers (Mujica, 2011).

Selection of subjects

Sampling

From December 2011 to January 2012 and October to November 2012 we conducted systematic observations and 24 in-depth interviews. Interviewees were purposively recruited through convenience sampling.

Initially we identified the best locales to meet key informants. This required walking around the 4 docks (2 in Iquitos and 2 in Pucallpa), taking the riverboats 3 times to observe behaviors on the Iquitos-Pucallpa-Iquitos route, and visiting surrounding dock venues frequented by crewmembers.

The interviews were conducted in Spanish and included 21 workers, all of whom were males (4 pilots, 3 cooks, 3 captains, 3 engine mechanics, 3 cargo handlers, 2 cleaners, 1 bar tender, 1 fare collector, 1 security guard) and 3 key informants (2 gay health promoters and 1 female sex worker) who traveled as passengers. We recruited the riverboat workers by going directly to 4 riverboats in the Iquitos and Pucallpa ports. Gay health promoters and female sex workers were recruited at a local STI center in Iquitos. Participants received an incentive of 10 Peruvian *nuevos soles* for transportation (about \$4 U.S. dollars) for participating in the interviews.

Instruments

An interview guide was developed based on previous research about the different reasons people have reported for not getting tested for HIV or using condom (Blas, 2011). The content validity of the interview guide was established with the assistance of consultants who have worked in HIV prevention and control. During the interviews participants were asked about the main health problems of individuals who work on boats, as well as information, motivation and behavioral skills about HIV and STI, HIV testing and condom use. They were also asked about any previous interventions to encourage HIV testing and condom use aboard riverboats and finally, questions that elicited participant's preferences for how HIV testing information and condom use should be delivered, including questions on the possible use of video-based interventions aboard riverboats to encourage HIV testing and condom use. All interviews were conducted in Spanish by trained interviewers with experience in qualitative research and lasted about one hour. Interviews were

digitally recorded and transcribed verbatim by the research staff. All transcriptions were compared with audio recordings to ensure accuracy.

Data analysis

Data were analyzed following a model adapted from Glaser and Strauss' grounded theory and Padgett's approach for content analysis (Glaser, 1967; Padgett, 2008).

Two researchers reviewed the transcripts to identify emerging concepts and thematic categories. The coding process based on these categories was performed independently by researchers who compared and discussed results of their preliminary analyses until they reached a consensus on the most important themes.

Later, we reviewed the transcripts to confirm our findings and identify quotes that best illustrated common themes. Quotes were translated and edited for ease of reading, but were not substantially altered. Our study was approved by the Institutional Review Boards (IRBs) of the Universidad Peruana Cayetano Heredia in Lima, Peru and the University of Washington in Seattle, United States of America. All participants gave verbal consent prior to their participation in the study. The IRB waived the need for written informed consent from participants.

Results

Riverboats, ports and people.

Study participants ranged in age from 21 to 56 years with an average of 35. All crewmembers were men and all cooks and one cleaner were gay men.

Cargo handlers were typically young men who did not live in Iquitos or in Pucallpa and were mostly illiterate laborers from riverine towns. For these reasons, when working at the riverboat companies they lived in the riverboats for many weeks including the days when the boat was docked in Pucallpa or Iquitos.

The official crew lived either in Iquitos or in Pucallpa, so they could spend around 2 weeks away from home each trip. Captains interviewed take a paternalistic tone when talking about cargo handlers. The crew and some passengers recognized that the boatswain was the worker with most cash during the trip.

Riverboat companies hire supervisors to verify that everyone has paid a fare and check if everything is going according to company's interests. These supervisors can switch among boats even when the boats are traveling.

The largest company has only one educator traveling in the boats whose job is to explain safety rules to passengers and teach them to not throw the garbage into the river or watch their kids so they don't fall into the river.

There are no women working in riverboats. Female cooks are not hired in riverboats because they are considered weak persons for this hard work. It is not common to find heterosexual male cooks in the amazon region. Gay cooks receive training by the Peruvian navy and are part of the official crew. Assistant cooks are usually younger than cooks and are informal workers. They are involved in more risky sex behaviors compared with main cooks. In our field observation we found that some cook's gay friends who needed to travel in riverboats helped the cook in the kitchen as a form of fare payment. Almost all cleaners of riverboats were straight men but it is possible to find some gay cleaners. One gay cleaner we interviewed had been a sex worker in the past. Cargo handlers were informal workers with very low salary - usually young men from

small villages with low levels of education. When cargo handlers have sex with gay cooks, they are called in local terms *tapaollas* (cover pots) or *maparates* (a fish that is believed to eat feces thrown by the riverboat).

While the boat is docked, the crew has easy sexual access to women and gay men. Some women are working as FSW but many of them are food vendors or *refresqueras* (refreshment vendors) who eventually have sex for money. Local names for these women are *ocoteras* if they are older than 18 or *ocoterillas* if they are underage.

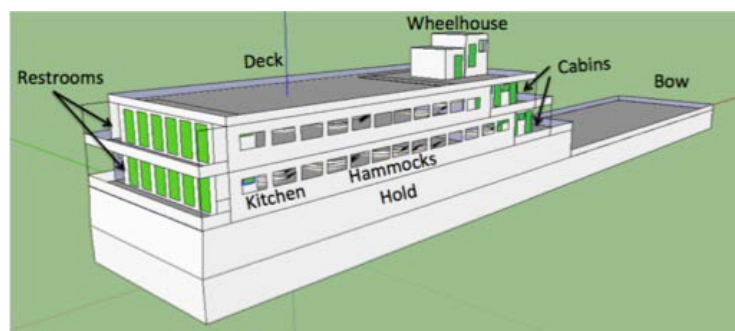
Sex on the Riverboats

All respondents mentioned that having sex in the riverboats is common, either during the trips or when they are docked.

Places for having sex

Most sexual encounters on board were reported to occur on the bunk beds of small cabins, very small public restrooms or, less commonly, in hammocks that are usually hung close to the other. All sexual encounters onshore occur in cabins that belong to the crew (Figure 2).

Figure 2. A model showing different areas of a riverboat.



“[People have sex] anywhere, in cabins, restrooms, hammocks, in the hold, in the wheelhouse, in the bow, [...] in the past people used to look for a private space but now not anymore” (Captain, 56).

Most passengers travel in hammocks because they cannot pay for a cabin (100 dollars) so public restrooms are the main places where they have sex: “It is common that couples traveling many days have sex when they go to take showers in public restrooms every day” (Engine mechanic, 43).

Most workers have their own cabin with private restrooms, so for them it is not necessary to use public restrooms. However, some workers reported having sex in restrooms as well. In referring to passengers having sex in the restrooms, a worker stated: “I saw that [...] and I also tried that [to have sex with a passenger] but always with a condom” (Cargo handler, 22). Most respondents said that having sex in hammocks was not as common as in the restrooms.

Interviewer: How do people have sex in hammocks?

Participant: They cover the hammock with a blanket.

Interviewer: Close to other passenger hammocks?

Participant: Yes, as if nothing was happening.

Interviewer: Is this ok with the other passengers?

Participant: Yes, it is ok. (Assistant cook, 30)

In informal interviews, we heard that some couples who travel in hammocks can “rent” a cabin for short periods of time to have sex.

Sex between workers and passengers

Sex for fare is frequently mentioned as something that happens on every trip. When a woman doesn't have money to pay the fare (US\$ 35 dollars for a space to hang a hammock and three meals a day) the workers pawn her luggage and then if she agrees she can choose to have sex

with one of them as form of payment. A gay cook commented on this topic: “Some captains said: Ok you don’t have fare, let’s go to my cabin” (Assistant cook, 30). Some female passengers who have sex for fare also ask the workers for food: “they request sodas or meals; or maybe they want them to give something like fish or fruits” (Engine mechanic, 43). Fare collection cannot be done in advance because the departure depends on the cargo rather than the passengers. A riverboat will depart when it is full of cargo, at any time. So, the fare collection usually is made after the first midnight when the riverboat is on its way. The collection process is also easier after midnight because everyone is in their hammocks and not walking around. Although there is a specific person assigned to be the fare collector, at the collection time he can be helped by any worker including cargo handlers, bar seller, boatswain or captain.

Sex for food also occurs between gay cooks and male passengers but in a different way. Cooks can offer food to some passengers as a seduction tool: “Cooks sometimes entice passengers with food” (Engine mechanic, 43).

Sex for money between workers and passengers is not frequently mentioned by interviewees. “Cooks have sex with young passengers for food or sometimes for 4 -7 dollars that the cook offers them” (Cargo handler, 22).

Sometimes respondents say that workers have sex with passengers without any type of exchange: “Well, why deny it, sometimes we want a woman and go to bed with her” (Bar tender, 32). Interestingly, some workers say that women are the ones who take the initiative. In discussing this topic a worker commented: “yes [sex is common] among passengers and also among us [...] some female passengers of different ages harass us and that's why we end up having sex with some of them” (Cargo handler, 22). Others think that worker’s behaviors predispose to these

sexual intercours: “My coworkers are *moshacos*, I mean hot persons [...] and some female passengers are available to have sex” (Pilot, 34).

Sex among co-workers

Gay cooks may also give gifts that may include money or food to cargo handlers in order to have sex with them either on board or onshore. This phenomenon in Peruvian gay slang is called “pechar”. A gay cook commented on this topic: “Sometimes [after watching porno] they [cargo handlers] knock on my door saying they want to have sex with me...sometimes they also ask for 4-8 dollars [...] they leave very happy with this” (Assistant cook, 30).

When we talk with non-gay workers they think that this interaction is just for pleasure:

“Cooks have sex with cargo handlers, this happens in many riverboats [...] for everyone’s pleasure” (Pilot, 26).

Sex among passengers

According to interviewees heterosexual couples traveling together have sex in the restrooms, cabins or hammocks. Casual sex is more common in restrooms. Workers usually think that passengers are the ones who have more sex in the riverboats because they have free time to meet other persons, they can travel with their partners and they don't have any task or responsibility for many days. In referring to passengers a worker stated: “here it’s like a whorehouse, among passengers downstairs [...] it is a brothel, they have sex, people get drunk” (Pilot, 37). Another worker commented: “I see passengers going to the restroom (to have sex) at midnight, men, women and gay men” (Cleaner, 21).

Some FSW who travel in riverboats can find customers, especially when they travel in cabins but this is not common. They use the word “*laborar*” (to labor) when they are working as a sex worker. The only FSW we could interview said that she travels to work in other cities but does not work during the trips.

HIV and STIs

Cooks usually consider HIV as a major health risk in the riverboats. Other crewmembers reported that the most common health problems are diarrhea and upper respiratory infections.

Respondents also mentioned other health-related problems such as untreated water consumption, poor hygiene during food preparation and unsanitary disposal of waste.

HIV and STIs Knowledge

Most crewmembers knew about the existence of HIV but didn't fully understand what it is. Basically they only knew that HIV is caused by unprotected sex and the solution is to use condoms to prevent it. Some workers thought HIV is transmitted instantly and infallibly in just one sexual intercourse: “HIV is contagious, from the time that you have sex you're practically already infected” (Fare collector, 41).

The majority of persons we interviewed had a fatalistic conception about HIV. For instance, a worker commented: “I have heard that AIDS is a deadly disease with no cure [...] if you did not get tested you are at risk of ending your life [...] you are already buried” (Pilot, 52). Less commonly, some people didn't know the routes of HIV transmission: “I have heard that AIDS is dangerous [...] and I don't know how it is transmitted” (Engine mechanic, 31). Some workers have misconceptions about this topic: “employers think that HIV can be transmitted by touching

or watching an infected person [...] for this reasons some workers are fired when they are infected with HIV” (Pilot, 52).

Most workers, especially cooks, knew about persons who had worked in the riverboats and who died due to HIV. “This year, 3 cooks who were my friends died of HIV” (Cleaner, 21); “some friends who worked as cooks in many riverboats died of HIV because they didn’t want to go to health centers” (Assistant cook, 30).

Some workers, excluding cooks, didn’t know that HIV treatment is free in Peru since 2004: “People say that it (HIV treatment) is expensive” (Cleaner, 19).

Crewmembers thought that HIV is a problem principally of gay men: “some cargo handlers say: I don’t fuck faggots [...] maybe I can get HIV from them” (Cleaner, 19); “Some people say: Ah! You are being tested for HIV because you are a faggot and you don't feel good” (Cleaner, 19); “viruses are in gay men” (Pilot, 37).

Most crewmembers knew what an STI is. They knew that these infections are transmitted by unprotected sexual intercourse with infected persons. They mentioned gonorrhoea, *mula*, chancres, Syphilis and lice as the most important STIs.

Mula is a local term for inguinal lymphadenopathy that respondents associated with homosexuals: “one guy had sex with a homosexual and he got this disease, people say it is *mula* [...] he had a tumor in here (inguinal area)” (Assistant cook, 30). “*Mula* is a tumor in the pelvic area due to anal sex among men or between a man and a prostitute” (Pilot, 52).

HIV and STIs testing

There are compulsory health controls for embarkation booklet holders (captain, boatswain, cook, pilot and engine mechanic) twice to four times a year that includes HIV testing. They receive a

health certificate when they are tested. This is a requirement to continue working. The Peruvian Navy charges US\$ 120 dollars for these medical exams. Some workers mentioned they are also tested for syphilis. Cargo handlers are not required to be tested for HIV or other STIs because they are informal and temporary workers. No one mentioned any other testing for STIs.

Predisposing factors for STIs

Substance abuse

Passengers and workers buy beer and cigarettes in the bar during the trip, especially at night. Drug consumption among passengers or workers was not reported by interviewees. A common theme mentioned by most interviewees underscored that foreign tourists are reported to smoke marijuana in the deck. In a normal trip about 2% of passengers are foreign tourists.

Porno videos

Crewmembers usually open the doors of their cabin when they are watching porno videos. Some respondents think that this can stimulate the need to have sex. Less frequently, some workers can display porno videos on public television at midnight when most passengers are sleeping.

Occupational stressors

Most respondents say they almost have no free time when they are working. Although pilots have established shifts of 8-12 hours, cargo handlers usually work without any established schedule, and their work depends on the demand.

Geographical factors

The route is not always the same but depends upon the weather. During rainy seasons the boats travel only through the Amazonas and Ucayali River. During dry seasons they travel along an

alternative way that includes the Amazonas, Ucayali, and Puinahua rivers. During rainy seasons entire villages are forced to migrate because of the flood.

A bar seller said that Contamana is a town where many “easy” women and gay men enter in the boats and the nights become more interesting after stopping in this city. Riverboats usually stop 1-2 hours in this city, making this one of the longest stops along the route. Contamana is also the first city where Shipibo-Konibo people, one of the larger indigenous groups in the region, enter the boat along the Iquitos-Pucallpa route.

Protective factors for STIs

Crew as a family

Many interviewees said they take care of themselves as a brotherhood or a family. Some said the captain is like a father and the cook like a mother: “he (captain) is the father of the boat, he advises us about many things when you are new” (Pilot, 26); “The company owner tell us that in the boat the captain is like the father, and the cook is like your mother [...] like the one you have at home, you must respect her [...] the other cargo handlers are like your brothers” (Cargo handler, 32).

Cargo handlers say that when they have no condoms they ask other workers because they are like a family: “Well, I cannot tell you whether passengers use condoms or not but we, who are here like a family, do use condoms” (Bar tender, 32).

Company rules

Drinking beer is prohibited among workers during work hours when they are traveling. They are allowed to drink only during their free hours. Companies restrict the number of beers that

passengers drink because of risk of falls: “When you are in the boat the captain always tells you that you mustn’t drink in the boat because you can fall in the river” (Pilot, 26).

“Some years ago in the Bailón (name of a riverboat company) a young drunk man fell into the river and died, after this case there were other similar cases” (Pilot, 26).

The largest riverboat companies are concerned about sex in the riverboats and the presence of HIV cases among their cooks. They developed some internal informal rules that prohibit workers from having sex. However, these rules are not necessarily obeyed. For instance, a worker stated: “Captains say: sex is prohibited in this boat, but they (captains) ignore this rule and they have sex in the boats” (Cleaner, 19).

If a worker is found having sex in the restroom he and his partner will be locked in for many hours as punishment (restrooms don’t have an air conditioning and can reach very high temperatures). In some cases passengers are also locked in. “I used to lock them in (cooks and passengers having sex in the restrooms) for 1 or 2 days [...] they were desperate from the heat” (Cleaner, 21). Some interviewees consider this phenomenon as a simple joke. The worker is usually fired as soon as they arrive at the last stop. “If they (supervisor or owner) know that a worker is having sex they will fire him, that happened to me once when I was with a woman in my cabin [...] and after a few months they needed me and they asked me to come back” (Cargo handler, 32).

Condom use

Condom use among crewmembers

According to crewmembers, they believe that condoms are useful for STI prevention. Regarding attitudes towards condoms, most crewmembers think that using condoms imply less pleasure:

“they don't feel the satisfaction... the pleasure” (Assistant cook, 30). Most said they always used condoms during casual sex on the trips but never with their main partners: “They [cooks] say he is my partner I cannot use condoms with him” (Cleaner, 19). “When we are with our partners we don't use condoms because we know them, we have lived years with them... but on our trips (with passengers) we use condoms” (Bar tender, 32). Although condoms are perceived as something that lowers pleasure, some workers recognize that when they use condoms frequently they will not notice any difference anymore: “I used to not use condoms until recently because it doesn't feel the same but everything is habit you begin using it and it becomes normal” (Engine mechanic, 43).

Regarding beliefs about how to prevent HIV/STIs, some workers think that condoms are not enough and use other additional methods of “protection”: “Until now I have never had a venereal diseases and I have always, in addition to condoms, cleaned with alcohol around the penis” (Engine mechanic, 43).

Most persons said that the main motivation for using condoms during the trips would be to provide condoms for free or at very low cost.

Regarding self-efficacy, some workers appears to be clear about the importance of condom use:

Interviewer: Have any passengers told you “I don't want you to use condom”?

Participant: oh, yes, yes

Interviewer: and, what did you say?

Participant: No, no, I haven't accepted that.

Interviewer: Ok. And in other cases have you ever accepted?

Participant: No, no, no (Fare collector, 41).

Condom use among passengers

According to crewmembers, passengers are believed to be persons who don't use condoms frequently: “Regarding the crew, I think they use condoms because they ask me questions and I

always advise them to use condoms [...] regarding the passengers, most of them don't use them” (Captain, 41).

Access to condoms in riverboats

Condoms are not available in riverboats, bars don't sell condoms and there are no condom vending machines in the riverboats. In referring to this topic a worker stated: “Many people go to the bar to ask for condoms [...] we need condoms they say [...] but there are no condoms in the bar” (Pilot, 37). Regarding their behavioral skills, workers who use condoms need to buy them in advance in local pharmacies or get them for free at local public medical center: “They buy condoms before departing to be used on board” (Assistant cook, 30). “Now everyone needs to come [to the boat] prepared [with condoms]. You know when you are traveling sometimes it is dangerous” (Fare collector, 41) “I always travel with condoms” (Cleaner, 19).

Cooks as a source of condoms

Cooks are the workers with more access to condoms because they receive free condoms from the Ministry of Health, so they became the main source of condoms onboard. In referring to this topic a gay cook stated: “some passengers ask me, do you have condoms? I give some condoms to them for free because I receive free condoms from the Ministry of Health” (Assistant cook, 30). Another gay cook stated: “There was a captain who always asked if I have condoms and I used to give them to him” (Cook, 21). A non-gay worker mentioned: “the assistant cook has ponchos (condoms) I asked him to lend me a poncho” (Engine mechanic, 43). Condom use appears not to be so common among cargo handlers: “I think they (cargo handlers) don't use condoms because we know they have sex irresponsibly” (Cook, 21).

Cargo handlers because of their daily and constant interaction with people are sometimes asked about condoms: “When they (passengers) need condoms they ask me to sell them condoms” (Cargo handler, 32).

Previous interventions

All respondents said that they have not heard about any specific program for HIV prevention aboard the riverboats. They reported that some peer educators from the STI programs in Iquitos and Pucallpa had invited some workers to be tested but not on a regular basis.

Some workers who had traveled to Manaus, Brazil said that they saw that health education was part of the trip just before the departure. They mentioned that Brazilian government developed videos about HIV prevention to be shown in the riverboats.

Discussion

In this study our interviewees confirmed that sexual behavior aboard the Peruvian Amazon riverboats risky is not uncommon, condoms are not available onboard, HIV has affected some cooks, and there are no intervention programs targeting riverboat workers or passengers. According to some interviewees, this situation is very different in the Brazilian Amazon, where there are HIV educational programs on riverboats traveling along the Amazon River.

Many infectious diseases are reported to be transmitted aboard passenger ships including cholera, cyclosporiasis, diphtheria, *E. coli*, hepatitis A, influenza, Legionnaires disease, measles, meningococcal meningitis, rubella, salmonella, scabies, shigellosis, STIs, trichinosis, tuberculosis, varicella and viral gastroenteritis. Most of these diseases are related to quality of food, water and air, presence of vectors, waste management and human behavior (Moutchouri

2010). In our study we found that most heterosexual workers recognized the major health problems aboard riverboats were related to diarrheal and respiratory diseases. We witnessed in our fieldwork that food was not prepared in hygienic conditions. For instance, we observed a rat in one pot in the kitchen. Our field observation was conducted in the middle of a dengue fever outbreak in Pucallpa.

Many factors (separation from partner and family, peer norms, alcohol use, low perceived vulnerability to HIV, limited access to healthcare, and low levels of education, emptiness, loneliness, and boredom) predispose seafarers to social and sexual behaviors that increase their risk for HIV infection and other STIs (Guevara, 2010; Mouchtouri, 2010; Ford, 2008). Similarly, riverboat workers in the Amazon region are affected by these factors in a unique context that includes informality, riverboat culture, poverty, high rates of STIs and same-sex behavior.

Many cargo handlers are separated from family for many weeks at time. Most of them live in riverine towns where they usually have stable partners. Spending long periods away from home provides opportunities for uncontrolled and unprotected sex that becomes a public health concern for HIV infection. Loneliness coping strategies of crewmembers include unhealthy behaviors like drinking alcohol, especially when they are docked. Although alcohol use is restricted for workers onboard, alcohol consumption offshore is high.

Peer norms in the river transportation system, a predominantly male sector, are characterized by machismo and homophobia in a region where rates of same sex experiences are high. Since riverboat workers think that HIV is a gay problem they don't necessarily think that they are at risk. This is especially important taking into account that their knowledge about HIV and STIs is inadequate. Having sex with people other than their stable partner is common among workers. Peer norms in riverboats also encourage workers for having sex with non-marital or casual

partners in the route. It is a common belief that it is safe to have unprotected sex only with stable partners and it is necessary to use condoms with casual partners. For this reason they carry some condoms on every trip. This behavioral skill is usually not enough for their protection because there is also a strong belief that condoms lower pleasure and this belief is usually predominant when they need to decide to use condoms aboard. They have intentions to get condoms aboard but they prefer to obtain them for free or at very low price.

We confirmed that sex for fare is a phenomenon that happens regularly in the riverboats. A similar phenomenon was described among *mototaxistas* from Iquitos; ten percent had exchanged rides for sexual favors (Paris 2001).

The most frequently mentioned STIs were HIV, gonorrhea, syphilis and *mula*. Gonorrhea and syphilis were the most common STIs in a study of *mototaxistas* (Paris, 2001). It is important to mention that no one mentioned HBV, herpes virus 2 or HTLV-1/-2 infection when we asked about STIs. The lack of knowledge of these infections should be taken into account in future education programs, given their high prevalence in this area. However they mentioned *mula* to describe STIs with inguinal lymphadenopathy. In Brazil, *mula* is a popular term used for Lymphogranuloma venereum (Costa, 2010). This disease appears to be infrequent in MSM from Lima but there is no data about this in the Peruvian Amazon region (Clark, 2008).

Compensated sex is common among the gay population in Peru and *pechar* is a common phenomenon described among gay-identified men (Caceres, 2002; Fernandez Davila, 2008). *Pechar* is a term that refers to the 'purchase' of company or sexual favors of non-gay identified men, in exchange for some type of material or economic compensation (e.g. money, clothes, shoes, food or alcohol). *Pechar* literally refers to breast-feeding. (Fernandez-Davila, 2008). In the riverboat context, cooks (mothers) *pechean* (to nurse) the cargo handlers (children). It has

been reported in previous studies that gay cooks are frequently involved in sexual activities with coworkers in logging camps and riverboats. (Orellana, 2013, Nureña, 2011). It has been also reported that gay men travels in riverboats and frequently have sex aboard (Nureña, 2011). In the American truck sector, gay men who are especially attracted to having sex with truck drivers are called truckchasers (Apostolopoulos, 2011; Apostolopoulos, 2012b). Although there are some gay men who go to docked riverboats to have sex with riverboat workers it is necessary to explore in more detail to determine if there is a phenomenon similar to truckchasers.

Similarly, in the American truck sector, FSW who specialized in sex with truck drivers were called “lot lizards” (Apostolopoulos, 2012a; Apostolopoulos, 2012b). According to our field observations and the literature, prostitution is common in the ports of Pucallpa and Iquitos (Mujica, 2011). Our respondents reported that it was not uncommon that FSW travel in riverboats. In this study we interviewed only one FSW and we could confirm this information. It is necessary to explore in future studies if there is a phenomenon similar to “lot lizards” in the Peruvian riverboats. Although sex among men was reported, no one mentioned male sex workers. In a study conducted in Brazil most drivers mentioned to have sex with FSW only a few drivers mentioned having sex with male sex workers (Malta, 2006).

Along the Iquitos-Pucallpa route there are many indigenous peoples belonging to Cocama-Cocamilla (Puinahua and lower Ucayali river) and Shipibo-Konibo (middle Ucayali river) ethnic groups. According to our interviewees they are not part of the sexual networks on board. However, other authors have reported some Shipibo-Konibo women are part of the sex work and exploitation networks in Pucallpa where they are in close contact with riverboat workers (Mujica, 2011).

Strengths and limitations

This is the second study addressing HIV and STIs in riverboats traveling along the Peruvian Amazon. We conducted this study in one of the main river routes for passenger transportation in the Peruvian Amazon region.

Because of the purposive sampling the interviewees are not necessarily representative of all riverboats workers. We interviewed only 3 persons who didn't work in the riverboats and no one from the Ministry of Health or a NGO who provided health care related to HIV and STIs.

Implications of findings

This study sheds light on the need for innovative public health interventions to prevent HIV and STIs in riverboats in the Peruvian Amazon. In 2012, 51% of arrivals to Iquitos from Pucallpa belonged to the 11 riverboats of one company. The remaining 49 % occurred in 19 riverboats belonging to 14 companies. These percentages are similar to the arrivals from Yurimaguas. (REDEN@VES, 2013) So, even by conducting HIV and STI prevention efforts with only one company we could cover a high percentage of the population traveling along each route.

In the future, it will be important to develop environmental and individual level interventions to prevent STIs among riverboat workers and passengers. At the environmental level we could include a surveillance system to be conducted in riverports and shipboard. There is an interesting experience of a port-based AIDS program in Brazil that could be adapted for the Peruvian Amazon region because it showed a marked behavior change at modest cost (Hearst 1999).

Although Amazonian riverboats are suitable venues for HIV prevention interventions, no studies have been conducted to assess their role as prevention settings. In riverboats, the population

(crew and passengers) is secluded during days with free time available for receiving interventions. The crewmembers and cooks are stable personnel and could be trained as peer educators, and riverboats have TVs and DVD players where educational videos could be viewed. Individual-level interventions could include education, testing and vaccinations against STIs. Educational interventions to increase knowledge of HIV/STIs transmission and sexual behaviors could be useful for decreasing the risk of acquiring HIV infection among riverboats workers. Uniform and accessible HIV testing for everyone is important but it is also necessary to provide testing for other STIs that are more common, such as syphilis and chlamydia. Given the local high prevalences of HSV-2, HBV and HTLV infections, testing for these viruses should also be considered. Vaccinations against HBV could be an effective preventive measure.

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