Pathogens without borders

Ecological determinants of sexual risk-taking behaviors among international travelers across the life course

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Abstract

Purpose – Drawing insights from the ecological theory, the purpose of this paper is to explore social determinants related to pathways to high-risk sexual behaviors of international travelers across their life span.
Design/methodology/approach – Data were collected from 45 international travelers in Houston, a critical transit point frequented by international visitors.
Findings – Overall, several ecological settings (individuals, interpersonal, institutional and contextual) related to two typologies of international travelers (risk takers vs non-risk takers) and their inclination to engage in high-risk sexual practices in an international or/and local context were identified.
Research limitations/implications – This research calls for the need to assess high-risk sexual behaviors from the ecological perspective to better understand the dynamics of disease transmission among frequent international travelers from diverse backgrounds/life styles and age cohorts.
Practical implications – Prevention and treatment programs developed for at-risk international travelers should target both distal and proximal social factors that predispose travelers to vulnerable situations. To build a reliable health surveillance network, policy makers, health practitioners and educators must focus not only on individual-level determinants but also on other ecological determinants that branch out beyond the personal level (e.g. interpersonal, institutional and contextual levels). Multi-level formal and informal social networks can be developed to promote a global social climate and environment that encourage safe sex and safety precautions.
Social implications – To raise awareness, the public must be constantly reminded that outbreaks of potentially health hazards can lead to unpredictable morbidity/mortality and security risks that place a burden on our nation's economic growth, emergency responsiveness and homeland security infrastructure.
Originality/value – The study is one of very few to address international travelers' health risk, while abroad, from an ecological lens across the life course.

Keywords Ecology theory, High-risk sexual behaviours, International travelers

Paper type Research paper

Background

The USA is home to more international migrants than any country worldwide whilst also being an important travel port and an attractive destination for tourism and migration for people from around the globe[1, 2]. International travelers, regardless of their mode of entry (e.g. air, land or sea), constitute a large and growing proportion of the US population. They also play a significant role in defending national security and public health. In 2017, US citizens alone took close to 88m international trips[3] and witnessed over 76m

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international arrivals into the country[4]. Nevertheless, recent outbreaks of life-threatening diseases such as Ebola and travel-related cases of Zika virus in the USA and its territories have reminded us of how easily pathogens can cross borders and how critically important it is for the general public to predict and prevent these outbreaks[5–7]. Overall, epidemic diseases not only threaten a nation's safety, development and well-being, but also impede population growth and impact medical preparedness through health risks impinged by pathogenic microbial agents (e.g. ailment, disability and death)[8, 9].

The health of international travelers has been the subject of past empirical studies. Nevertheless, theoretical and empirical limitations remained unaddressed in spite of being of central importance in health research. Specific areas of importance are: the life course development of high-risk sexual practices; ecological transactions between different social entities and their adjacent social environment (e.g. macro forces and cultural context) that heighten exposure to sexually transmitted infectious disease; the bidirectionality of disease transmission; and international travelers' susceptibility to high-risk sexual behaviors and the epidemiological risks posed to national security and public health simultaneously over time. There is evidence that high-risk sexual behaviors formed early on in life impacts sexual practices in adulthood, increasing the cumulative risk of disease acquisition/transmission and adverse health/life outcomes[10–13]. In sum, the lack of studies that incorporate an ecological understanding of sexually transmittable health hazards and international travel across an individual's life span can pose a challenge to understanding the health risks, repercussions and disparities among the local residents, immigrants and international travelers in the USA. This gap is addressed by the current paper.

Drawing insights from the ecological theory, this study explored social determinants related to pathways to high-risk sexual behaviors of international travelers. Our research addresses the following questions:

RQ1. How did the participants' personal disposition and histories shape pathways to high-risk sexual behaviors and persistence?

RQ2. What were the ecological factors (laws, policies, customs and social institutions) and life course resources (families, interpersonal ties) that reinforced or hindered healthy practices and reduced or augmented risks of sexually transmitted infections (STIs)?

Using a unique sample recruited from the fourth most populous city in the USA, our study is one of very few, to the best of our knowledge, that addresses international travelers' health risks, while abroad, from an ecological perspective.

Research on how international travel helps facilitate the transmission of sexually transmitted diseases is mostly quantitative and generally focus on the context or nature of travel and the travelers' socio-demographic characteristics[14–17]. Long-term ecological triggers are rarely studied. However, finding new sexual partners and having unprotected sex are not rare occurrences. The estimated pooled prevalence of casual sex and non-condom use abroad among international travelers around the globe using meta-analytic approaches has generally ranged from 20 to 35 percent and from 17 to 49 percent, respectively, with the risk of acquiring STIs especially high among those engaging in casual sex[16, 17]. In the USA, several local social phenomena may intensify these sexual health risks. First, the USA educational system has not been very successful in raising awareness of reducing the risk of these transmittable diseases among its student population, with many students not only lacking access to effective sexual education, but also being provided with erroneous sexual education that promotes fear, shaming and gender stereotypes[18, 19]. Second, the nonexistent or deficient epidemiological control of STIs (including Syphilis, Gonorrhea, HPV and HIV) in many local tourist destinations may promote a sexual culture which personalizes high-risk sexual practices as normative behaviors[20, 21]. Third, many border

cities in the USA frequently serve as critical transit points for business professionals or agricultural workers en route to another country[22, 23]. Additionally, several recent socio-demographic changes that may represent serious implications for America's border security make this current study necessary. Namely, the substantial growth of international migration (e.g. refugees, asylum seekers, unauthorized and authorized immigrants) from over 220 countries[2, 24]; the increased international mobility of immigrants and their descendants who travel abroad to visit family and friends[25]; the shift of US immigrants from predominantly European to Latin American and Asian backgrounds following the Immigration and Naturalization Act of 1965[26, 27] that may lead to increased contact between the USA and less developed countries where STIs are more prevalent or increasing[28]; the continued flow of nonimmigrant admissions/arrivals (e.g. tourists, international students and business travelers)[2]; and the globalization facilitating the dissemination of information and technology, and the emergence of new economies including sex tourism/industries and casual sexual activities[29, 30].

Methods

In total, 45 frequent international travelers were recruited through purposive sampling with help from Houston-based community agencies and institutions to participate in face-to-face in-depth interviews from June till July in the Summer of 2016 aimed at understanding ecological factors facilitating transmission of sexual health risks. As an attractive destination for immigrants and international travelers, the city of Houston in Texas is an appealing setting for this study. Houston is the fourth largest city in the USA and one of the most populous, diverse and rapidly growing metropolitan cities[31]. Further, the CDC reported that a recent case of Zika virus infection in Texas was acquired through sexual intercourse with an infected international traveler[32, 33].

Frequent international travelers in this study were identified as having traveled outside of the USA either by air, road or sea at least two times in the last 12 months. Self-identified higher-risk groups such as younger adults (under 45 years old), military personnel, sex tourists, drug users and expatriates were given greater priority during recruitment. Using a conceptual map (Figure 1) adopted from the ecological theory[34, 35] and an interview guide that assessed varying levels of ecological elements such as family of origin, relatives, peers, schools, culture, neighborhoods/communities, social media, migration history, law, current or former dating partners/significant others/spouses and sexual practices in the States, the participants were asked to compare and illustrate circumstances, settings, contexts and external sources that contributed to their decision-making process, attitudes and beliefs about high-risk sexual practices in the USA and during their international travels.

The interviews, which lasted on average approximately one hour, were held at the University of Houston or an approved community venue using study protocols approved by the institutional review board at the University of Texas at El Paso (IRB ID: 892881) and the University of Houston (IRB ID: 8174-16424-01). With the participants' permission, all interviews except one were audiotaped and transcribed verbatim. To compensate for their time, each participant was reimbursed with a gift card worth $35 upon completion of the study.

Transcribed interviews were uploaded to NVivo® Qualitative Data Analysis Software for coding and analysis. Specifically, using approaches informed by the grounded theory, interview transcripts were examined line by line to identify commonalities, consistency, patterns and recurring themes. Using pre-established coding guidelines, the participants' experiences pertaining to emergent constructs were categorized given their context and relationships with other related constructs[36].

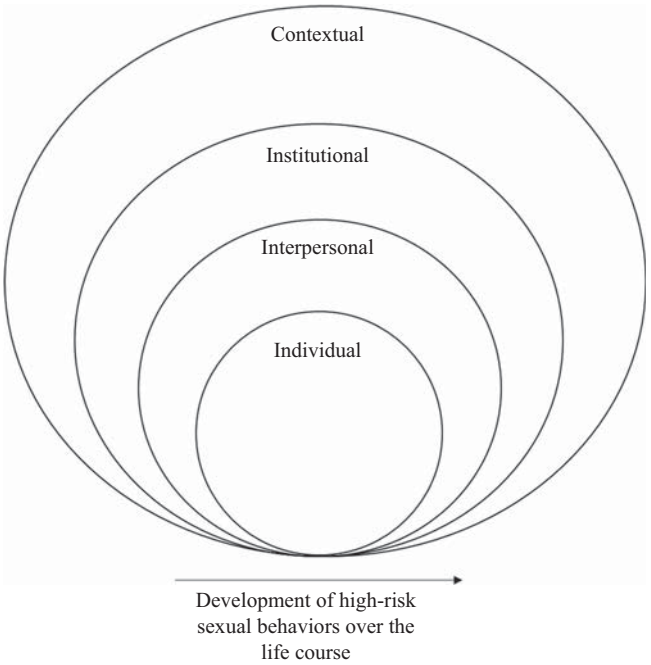

Figure 1.
Conceptual map used to develop interview questions

Sample characteristics

Table I shows the frequency distribution of participant characteristics. Less than half (42.2 percent) were male and two-thirds (66.7 percent) were US citizens. On average, participants made approximately $2,000 per month. Just under half (44.4 percent) self-identified as Asians (e.g. Bruneians, Chinese, Indians, Pakistanis and Vietnamese), a third (33.4 percent) were Hispanics (e.g. Cubans, Mexicans and Peruvians), 17.7 percent were whites, 2.2 percent were blacks/African-Americans and the remaining (2.2 percent) identified as Native Americans. The most common reasons cited by both males and females for their international travel was for tourism, followed by family visits, educational tours and work-related travel. Males were more likely to travel more than twice per year.

Over half acknowledged that they had ever engaged in unsafe sexual practices (53.3 percent), with females endorsing the behavior more frequently (33.3 percent of females vs 20 percent of males). However, more males (13.3 percent) admitted to having unprotected sex while traveling internationally compared to females (8.9 percent). Males were also more likely to know where to find sex services abroad, while females had more knowledge about how to find illegal drugs and medical services abroad. Only 4.4 percent of the participants used sex services while abroad, and slightly over one-fifth used illegal drugs (22.2 percent). Among those who were sexually active, females were more likely to have no or limited knowledge about their partners' sexual histories (43.2 percent for females and 29.7 percent for males) and were more likely to be infected with an STI in the past (10.8 percent for females and 5.4 percent for males).

Results

Figure 2 illustrates the ecological factors linked to two typologies of international travelers: risk takers vs non-risk takers.

Characteristics of the participants	Total	% Male	Females
Had engaged in unsafe sexual practices	53.3	20.0	33.3
Had unprotected sex while abroad	22.2	13.3	8.9
Currently sexually active	82.3	35.6	46.7
Had no/limited knowledge about partners' sexual histories	72.9	29.7	43.2
Infected with an STI in the past	16.2	5.4	10.8
Reasons for travel			
Tourism	75.6	28.9	46.7
Family visit	44.4	20.0	24.4
Educational related	20.0	8.9	11.1
Work related	6.6	4.4	2.2
Travel frequency >2 times	31.1	17.8	13.3
Knew how to find sex services	62.2	33.3	28.9
Used sex services abroad	4.4	4.4	0
Knew how to find illegal drugs	37.7	13.3	24.4
Used illegal drugs abroad	22.2	13.3	8.9
Knew how to find medical services	88.9	40.0	48.9
Race			
White	17.7	13.3	4.4
Black	2.2	0	2.2
Asian	44.4	22.2	22.2
Hispanic	33.4	6.7	26.7
Native American	2.2	0.0	2.2
Male	42.2		
Age	29.6 years (mean)	29.9	29.3
Legally married	28.9	13.3	15.6
US citizens	66.7	20.0	46.7
Pre-tax salary (monthly)	2,098.6	2,059.8	2,126.9

Table I. Frequency distribution of the participants' characteristics

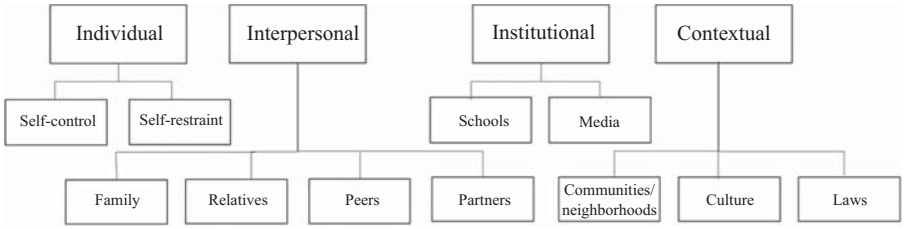

Figure 2. Ecological factors linked to the study themes

Individual

Self-control and self-restraint. Participants' inclination to engage in any high-risk sexual behavior was driven by their perception of danger and reward of such sexual experience. Religious or spiritual participants were more likely to believe that casual sex "compromised" their belief system. The following quotes exemplify this:

- I was very steady with my thoughts […] my values […] and of course […] there was temptation […] because I was with a group of international people […] But I guess my spiritual values […] were what kept me [away from temptation]. (Female, 33-year-old)

- You are coming from a […] very […] conservative culture […] Once you […] go to a liberal culture […] you are more free to do whatever you want […] So it's kind of tempting […] But yet again, I do uphold my values […] And I do […] uphold my religion […] over anything else […] So I try to […] stay true to that (Male, 19-year-old)

The fear of being infected with a potentially lethal sexually transmitted disease and/or involuntarily confined into an unwanted commitment (e.g. pregnancy) were major justifications for the participants who avoided high-risk sexual behaviors, as seen in the following quotes:

- There are a lot of STDs out there […] A lot of people are not really educated about it […] If you get it, it can affect your whole life. (Female, 20-year-old)
- I don't want to have a kid right now […] My parents would kill me […] I probably would not be able to take care of the kid. I can't take care of myself so I can't take care of a kid […] The other thing is people living in America […] have a lot of sex you know […] All it means a lot of diseases can be transferred and the worst of all […] HIV […] So that's also a big deal. (Male, 18-year-old)

Sex under the influence of alcohol or drugs (e.g. heroin, cocaine and marijuana) was a common experience for some high-risk participants who solicited sex services or who found it difficult to resist an unexpected sexual encounter. Alcohol and/or other substances lowered inhibitions to practice safe sex (e.g. not using any protective measures such as condom, not wanting to purchase condoms because it was inconvenient). A few had had many sexual partners throughout their lifetime in which habitual random hookups were entrenched in their sexual exploration and behaviors. The following quotes illustrate these points:

- I was under the influence, it just […] shut down any inhibitions that I had, and I just acted out. (Female, 50-year-old)
- I didn't have it (condom) […] And it was so quick, it was quick [chuckles]. (Male, 34-year-old)
- The main [reason] I would say is […] just kind of rushing, in the spur of the moment or […] the heat of the moment […] And not getting all of the information […] I think speed has a lot to do with it [chuckles]. (Male, 34-year-old)
- I'm a sucker for charmers […] um […] Being in [another] country […] I guess people that I was with, the men that I was with, [if they are] like pushing the right buttons […] Or it was the [right] environment […] alcohol, or just loss of inhibitions. (Female, 33-year-old)

Interpersonal

Family, relatives and peers. Conservative family influences and the presence of family authority figures (e.g. parents, relatives) were cited as forms of social control that shaped the participants' sexual behaviors and attitudes from an early age. Nevertheless, this influence had waned for older participants or participants who had left their family of origin to live independently. Younger participants, who tried to follow their parents' teaching and relatives' expectations closely, acknowledged the pressure to comply with their more traditional cultural expectations in dating, flirting and sexual intercourse as exemplified below:

- Obviously, over time, it (my parents' teaching) has influenced the way I have turned out today […] I have respect for the opposite gender […] I won't cross the line […] That is something that I take from my Pakistani culture. (Male, 22-year-old)
- I think my Vietnamese culture made me […] feel like, you know, education is very important. You have to finish that first […] So [family socialization] in turn […] makes me feel like […] I have to be careful with […] any activity that I do […] Because […] if I'm irresponsible or […] I get pregnant […] it's going to be very hard [for me] to continue my education. (Female, 26-year-old)

- I think […] my family influenced me a lot […] We had discussions with my parents […] They (my parents) influenced me to be careful and take precautions. (Male, 45-year-old)

Not only did family members who served as role models remind the participants of the importance of safe sex practices, but some participants also disclosed that their peers and older siblings helped get them out of trouble or provided them with information that would otherwise not be offered by their parents or teachers. As they celebrated their newfound independence and sexual liberation while attempting to reconcile their mixed emotions, some explained how being away from home altered their sexual practices especially in a liberal environment where dialogue about sex was more open:

- That obviously influenced my sexual practices a lot because I wasn't under […] my parents' eye anymore. (Female, 23-year-old)

- First time I […] just had sex with a random person, the other day I was like "Wow! You just let go of everything! […] Ever since you were a kid, you were taught […] all those things your parents let you know […] You just let it go! And all your religion and everything, you just disobeyed [them]! […] It […] didn't feel good the first time you did it […] It did influence me a lot. (Male, 18-year-old)

- Because […] they're (my family and relatives) older […] I used to [see] them as idols […] And whenever they preached […] I would be listening to them and following it, but now after a while […] I realized […] maybe their set of mind and my set of mind are completely different […] They have seen the world from their perspective and from their generation […] But […] my generation is different now and everything is changing over the period of times. (Male, 23-year-old)

Partners

Contrary to single participants who were more likely to initiate a casual sexual contact during their travel abroad, participants with a committed partner (i.e. married or dating) reported that knowing their spouses shared similar aspirations to stay healthy caused them to make sure meticulous safe sexual practices were adopted if they did engage in sexual encounters while abroad. In the absence of their spouse, commitment and faith deterred some participants from engaging in high-risk behaviors in an international setting that would jeopardize their relationship upon return. This was especially true for the participants upholding strong family values that stressed the importance of family unity:

- Well, I just believe in marriage […] and fidelity to a spouse […] Be faithful […] and supportive of somebody that you […] have vowed to be with. (Female, 66-year-old)

- It influences me because it makes [me] […] faithful […] monogamous […] and being in a closed relationship […] That was something different […] [but] […] that has been helpful. (Female, 50-year-old)

- My current boyfriend is a med student, so he is […] into being very safe. (Female, 23-year-old)

- I have been faithful to her (my wife) […] I've had many partners before her. (Male, 34-year-old)

Institutional

Schools and media. A great number of participants who grew up in the US reported that its educational system has a mixed record in raising awareness and reducing risks for STIs. Many of these participants reported not having access to effective sex education and being provided with erroneous or biased sexual education that promoted fear, shaming and gender stereotypes (e.g. instilling the idea that virginity is superior for females, or

keeping pregnant students secluded from the main student population). Not only did this remind participants to refrain from potentially high-risk sexual practices in their early years, but it also led them to become more self-reliant in order to stay informed. This included conducting their own research to self-educate themselves about what it takes to be safe sexually:

- They (the school) showed us it was worth the wait […] they showed all these scary pictures of STDs. (Female, 26-year-old)
- It was [sic] mostly scary tactics […] it does motivate me to not want to incur these diseases. But it also means that I had to do most of my own learning about […] birth control methods, and how to get them you know outside of class. (Male, 23-year-old)

Some participants exposed to courses geared toward abstinence as the only practice considered this form of education unrealistic or inadequate given the environment they were embedded in, surrounded by mass and social media, peer pressure and/or parents who were poor role models. Sex education, however, was also deemed not applicable to participants who either were not sexually active or were in a monogamous relationship. For some participants, it was challenging to reconcile past high school abstinence-only experiences that condemned sexual practices with their present sexual freedom. Some participants chose to distance themselves from abstinence education:

- I've just grown to […] I guess distance myself from it (sex education) […] I've never really […] agreed with it in the first place […] So I thought this doesn't really line up with how […] kids think, just completely repressing sexual desires. (Male, 18-year-old)
- I guess it was sexual education, but it wasn't sexual education. It was mostly like "Ok, this is what's going to happen if you have sex with the wrong person." (Female, 21-year-old)
- They told us that […] the only safest and the most secure way for you not to have STDs, not to get pregnant […] if you don't do it (sexual intercourse), you can't get it. (Female, 21-year-old)
- Teenagers actually know a lot more than what the teacher is teaching them […] So it's kinda like "oh whatever!" […] Because of their environment […] I mean being on Facebook, and […] just things that they're allowed to see at home. (Female, 48-year-old)
- I've done […] more research than they taught us in health class. (Male, 27-year-old)
- Uh, they don't teach us about you know sexual education […] Nowadays […] there's [sic] internet pages, everyone knows whatever is happening. You don't need to be taught about sex ed. That's how I feel about it […] Everything can be found on internet nowadays […] Just get the phone, everyone has phones. (Male, 18-year-old)
- Well yes, but you know at those ages, they (the school) told you about it but am I going to follow them? No […] [Laughs] You're gonna do whatever you want to do. (Female, 35-year-old)

A few participants, however, reported that they benefited from sex education offered in the form of health education, sexual harassment training and human sexuality courses in college, and a minority of them made use of the information they learned from sex education in high school (e.g. physiological changes, disease progression, birth control and preventive measures) that was otherwise not available elsewhere:

- Um, my school taught me a lot of things […] I don't think my parents would necessarily have taught me unless I asked them. (Female, 21-year-old)
- They definitely taught me a lot about, uh, STD's and, uh, some of the risks and things like that. (Male, 20-year-old)

- In high school, they talked about all the sexually transmitted diseases. Then, of course, you're careful and then if you see […] anything um you kinda look up whether your body has anything wrong […] So in that sense, it influences me so that I could be more open to ask [about] those things. (Male, 41-year-old)

Contextual

Neighborhood/Community. Traveling aboard alone, especially, made it simpler to use sex services such as strip clubs and red light districts. According to one participant, visiting commercial sex workers was common in military culture for those stationed in a foreign country, even when they had no history of soliciting services from commercial sex workers as civilians. The participant spoke of his first sexual encounter with a commercial sex worker in a red light district in Japan:

- So […] ok the first time […] you get frustrated and say you'll first time, you'll um see a prostitute […] Uh, that's because […] I don't have to take her out […] you know […] I don't have to organize dinner […] Yeah yeah […] I don't have to spend you know a hundred dollars on her […] you know. I don't have to do all these things […] I can just go have sex and leave. And it's […] [chuckles] like a convenient thing. (Male, 34-year-old)

Here is another quote from a foreign traveler:

- In the U.S., I feel like […] people are very open about talking about it (sexual encounters), they actually [get] excited when they have sex with a man and they would tell everyone about it […] So that's why I think it's so normalized for people here. (Female, 33-year-old)

While not directly influencing their experience abroad, some participants talked about how growing up in a family-oriented community, living in a college community where sex discussion was open, volunteering with the non-profit community and socializing with the scientific/educational community made them more cognizant of disease infection and thus they preferred to avoid high-risk sexual contact:

- I keep in contact with […] my church community; it […] solidifies my own beliefs. Because […] there is a congruence in what they believe and what I believe. (Male, 32-year-old)

- Yeah, so once I started getting into […] science oriented community, I started learning about sex and I think safe sex and STIs from a medical perspective […] That definitely informed me a lot more. (Male, 30-year-old)

- I have a big community […] of friends in recovery […] I attend 12-step meetings […] I sponsor a lot of girls […] I do a lot of service work […] I go to prisons, I talk about recovery […] I talk about complete abstinence […] So […] that is a pretty big part of my life. (Female, 50-year-old)

Law and culture. Nonexistent or deficient epidemiological surveillance and medical control of STIs, locally or abroad, promoted a sexual culture which characterized high-risk sexual practices as normative behaviors. Furthermore, the cultural incongruence between participants' culture and the culture abroad influenced their decision making in sexual practices that involved their interactions with the opposite sex, public displays of affection and even selection of attire, as exemplified by the quotes below:

- Some places that we've been to […] you have to be more […] discrete in what you are wearing […] your attire […] And I'm more flashy, you know, I like to flash boobs […] I have cleavage […] In other countries, you have to be respectful and mindful […] [So] cover up! (Female, 48-year-old)

- It's a little bit […] different in the USA to get in touch with a woman […] Because there is this issue of sexual harassment […] which it's a little bit exaggerated here […] which it's not in France and in Greece […] It's the mentality here […] So whatever seems a little bit […] not right

> […] a woman may call a lawyer […] to say […] "Ok, this guy harassed me!" This doesn't happen in France or in Greece […] so easily. (Male, 45-year-old)

This experience, however, was different for the participants who came from a more culturally restricted country where interactions between males and females were more restricted:

- I think you can talk with a girl […] there are more chances over here (US) that she will give you a number and you guys can go home and something will go on. (Male, 23-year-old)
- In the U.S, […] it's quite open and unrestrictive […] you're technically free to do whatever you want […] I tried to observe it (the law) quite well, so I didn't get harassed or […] jailed for it. (Male, 20-year-old)

Crucially, the evolution of social media (e.g. the emergence of dating websites and hook-up phone applications) also promoted the cultural shift in dating and made random hookups more appealing locally and abroad:

- Everything is so sex driven […] I can understand why a lot of people can get lost. On one hand, you have people […] saying to restore the values […] vow for celibacy […] and on the other […] people are getting exposed to very sexually-oriented stuff way too soon. (Female, 55-year-old)

Discussion and conclusion

This study explored ecological determinants associated with high-risk sexual behaviors among international travelers. The goals of this study were twofold: to explore the relationship between the socio-historical context, personal histories, ecological determinants and pathways to high-risk sexual behaviors from the local setting to an international travel context; and to identify the ecological factors related to the risks of STIs during international travel across the life span. Data were collected from 45 international travelers in Houston, a critical transit point frequented by many international visitors. Throughout the paper, we pointed out several ecological settings related to the participants' inclination to engage in risky sexual practices in a local and/or international context. We noted that participants' risk-taking experiences varied based on age cohort and life experiences. Exploratory findings from this qualitative epidemiological study can be used in prevention efforts, and can also aid in prediction and control of disease transmission. Our findings are in support of other studies that found male and younger participants to be more at risk during international travel[15, 17], but we also offer some preliminary findings in areas that are yet to be investigated by contemporary research. Prevention and treatment programs developed for at-risk international travelers should target both distal and proximal social factors that predispose travelers to vulnerable situations. To build a reliable health surveillance network, policy makers, health practitioners and educators must focus not only on individual-level determinants but also on other ecological determinants that branch out beyond the personal level (e.g. interpersonal, institutional and contextual levels). Multi-level formal and informal social networks can be developed to promote a global social climate and environment that encourages safe sex and safety precautions.

This research highlights the need to assess high-risk sexual behaviors from the ecological perspective to better understand the dynamics of disease transmission among frequent international travelers. To raise awareness, the public must be constantly reminded that outbreaks of potential health hazards can lead to unpredictable morbidity/mortality and security risks that place a burden on a nation's economic growth, emergency responsiveness and homeland security infrastructure[9]. Research findings from this study can offer social scientists, health care providers and policy makers preliminary findings to enforce preventive measures and intervention for international travelers in different settings (individuals,

interpersonal, institutional and contextual), promote reliable health surveillance networks and provide a basis for drafting future health care, public health, international travel and immigration policies that strengthen national security and public health.

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