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# HIV Prevalence and Predictors of Infection in Sex-Trafficked Nepalese Girls and Women

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**T**RAFFICKING ACROSS OR WITHIN national borders for purposes of sexual exploitation including forced prostitution, ie, sex trafficking, is recognized as a major gender-based human rights violation with significant individual and public health consequences<sup>1,2</sup> and is increasingly discussed as a potentially critical mechanism in the spread of human immunodeficiency virus (HIV) across developing nations.<sup>2-8</sup> Approximately 80% of the estimated 600 000 to 800 000 individuals trafficked annually are girls and women.<sup>2</sup>

An estimated 150 000 girls and women are trafficked each year within and across the countries of South Asia.<sup>9</sup> India's commercial sex industry is the primary recipient of sex-trafficked girls and women in the region,<sup>2,10</sup> with many Nepalese girls and women trafficked to this neighboring nation.<sup>2,10,11</sup> Approximately a decade ago, international human rights organizations calculated that between 5000 and 7000 Nepalese girls and women were sex trafficked to India each year.<sup>10</sup> Nepal's protracted civil conflict is thought to have led to a significant escalation in this form of gender-based forced migration.<sup>12</sup>

Among the most significant potential health consequences of sex trafficking is the risk of HIV infection.<sup>3,6,11,13,14</sup> India's HIV epidemic is overshadowed in scope only by those of South Africa and Nigeria regarding the total number of

**Context** Sex trafficking of girls and women is widespread across South Asia and is recognized as both a violent gender-based crime and major human rights violation. Inadequate empirical data exist to characterize this phenomenon and its related health consequences, such as human immunodeficiency virus (HIV) infection.

**Objective** To determine the prevalence of HIV infection among repatriated sex-trafficked Nepalese girls and women and to identify trafficking-related predictors of such infection.

**Design** Medical and case records of 287 repatriated girls and women reporting being trafficked from Nepal for sexual exploitation and receiving rehabilitative services between January 1997 and December 2005 at a major nongovernmental organization were systematically reviewed in January 2006.

**Setting** Major Nepalese nongovernmental organization providing shelter and care to repatriated survivors of sex trafficking.

**Main Outcome Measures** Prevalence of and risk for HIV based on demographic characteristics and on trafficking- and prostitution-related experiences.

**Results** Among 287 repatriated Nepalese sex-trafficked girls and women, 109 (38.0%) tested positive for HIV. Among those with complete documentation of trafficking experiences (n=225), median age at time of trafficking was 17.0 years, with 33 (14.7%) trafficked prior to age 15 years. Compared with those trafficked at 18 years or older, girls trafficked prior to age 15 years were at increased risk for HIV (adjusted odds ratio [AOR], 3.70; 95% confidence interval [CI], 1.32-10.34), with 20 of 33 (60.6%) infected among this youngest age group. Additional factors associated with HIV positivity included being trafficked to Mumbai (AOR, 4.85; 95% CI, 2.16-10.89) and longer duration of forced prostitution (AOR, 1.02; 95% CI, 1.01-1.03; indicating increased risk per additional month of brothel servitude). In post hoc analyses, girls trafficked prior to age 15 years had increased odds of having been detained in multiple brothels (odds ratio [OR], 5.03; 95% CI, 1.96-12.93) and in brothels for a duration of 1 year or more (OR, 2.67; 95% CI, 1.12-6.33) vs those trafficked at 18 years or older.

**Conclusions** In this study, repatriated Nepalese sex-trafficked girls and women were found to have a high prevalence of HIV infection, with increased risk among those trafficked prior to age 15 years. Present findings demonstrate the need for greater attention to reducing and intervening in sex trafficking in South Asia, particularly among the very young.

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persons infected with HIV.<sup>15,16</sup> Inconsistent use of condoms demonstrated among men seeking commercial sex,<sup>11,17-21</sup> coupled with sex trafficking survivors' experiences of sexual abuse,<sup>2,10</sup> including forced unprotected sex,<sup>11,22</sup>

constitute 2 distinct sources of HIV risk for this population. Exposure to commercial sex work in higher-prevalence urban centers serving as major trafficking destinations (eg, Mumbai) may confer additional HIV risk.<sup>4</sup>

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Empirical investigation to date into HIV prevalence among survivors of sex trafficking and roles of trafficking-related exposures in HIV infection has been limited. One previous study of HIV among survivors involved a sample of individuals rescued from a single Indian city,<sup>13</sup> limiting inference concerning HIV risk among those trafficked across a broader geographic range of exposure to forced prostitution. A high infection rate (23%) was documented<sup>13</sup>; however, this examination likely underestimated HIV prevalence due to inadequate time for seroconversion (ie, less than 2 months between exposure and testing).

The repatriation (ie, return to countries of origin) of girls and women sex trafficked to India has been recognized as a barrier to HIV control in neighboring lower-prevalence nations such as Nepal.<sup>4,5</sup> While HIV rates in Nepal have historically been lower than those in India,<sup>5</sup> the return of sex trafficking survivors from India is considered a critical factor in the recent increase in Nepal's HIV prevalence.<sup>4,5</sup> Returned survivors demonstrate limited knowledge of HIV as well as limited access to medical care due to social stigma,<sup>23</sup> likely rendering these individuals unaware of their HIV status. Ostracization, common among repatriated survivors, also may heighten their risk for being re-trafficked or for otherwise re-engaging in prostitution or other risky sexual behaviors.<sup>11,24</sup> The confluence of these factors likely facilitates postrepatriation HIV transmission via heterosexual and mother-to-child mechanisms and may constrain receipt of HIV-related care among survivors of trafficking. Despite these concerns, to date, HIV prevalence and risk factors for infection among repatriated Nepalese survivors of sex trafficking remains unexamined.

The present investigation aims to assess the prevalence of HIV infection among repatriated Nepalese girls and women sex trafficked to brothels in India, as well as the role of trafficking-related experiences (eg, age at trafficking, trafficking destination, and duration of prostitution) in predicting such infection.

## METHODS

Deidentified medical documentation and case record materials for all survivors of sex trafficking presenting to Maiti Nepal (Kathmandu, Nepal) between January 1997 and December 2005 were collected by the investigative team in January 2006.

Maiti Nepal is a large nongovernmental organization (NGO) providing shelter and care to repatriated Nepalese sex trafficking survivors. It is part of a network of NGOs across South Asia providing trafficking prevention and intervention services for individuals detained in brothels and other venues for prostitution against their will. When sex-trafficked individuals exit brothels, mostly via rescue efforts of individual agencies within this network, they are brought to NGOs near or within their trafficking destination city for protection from brothel owners and for temporary shelter, counseling, legal assistance, and required health care. Survivors are then repatriated to longer-term rehabilitation facilities located in their state or nation of origin (eg, Maiti Nepal in Kathmandu for those trafficked from Nepal). In addition to serving female survivors of sex trafficking, Maiti Nepal also assists nontrafficked women and children deemed in need based on a range of other circumstances such as abandonment, mental illness, escape from violent families, and domestic violence or sexual assault.

The current sample is limited to those individuals documented by police authorities in Indian destination cities and by the proximal shorter-term care NGO as having been trafficked for sexual exploitation and held against their will in brothels. After intake and pending verbal consent, all sex trafficking survivors presenting to Maiti Nepal receive routine services that include a basic medical examination and testing for HIV, regardless of whether testing was conducted at initial rescue by another agency. Testing for HIV (assessed via enzyme-linked immunosorbent assay, Western blot, or rapid testing for HIV-1 and HIV-2) usually took place 2 to 3 days after arriving at Maiti Nepal; the

mean time from brothel servitude to HIV testing for this study was 8.7 months (median, 6 months), with a minimum time from exposure to testing of 2 months, thereby allowing for sufficient time for postexposure seroconversion. The documentation of testing results indicated seropositivity for HIV without distinguishing between HIV-1 and HIV-2; however, prevalence of HIV-2 is considered low in this region.<sup>25,26</sup> The HIV test results, as recorded by hospital-based laboratories, are retained within the medical records. The NGO staff also conducted interviews of all residents at the time of intake to evaluate and systematically record the individual's trafficking history (eg, age at trafficking) and features of forced prostitution (eg, duration in brothel) in the case records.

All case and medical records for sex-trafficked individuals (ie, those self-reporting to NGO staff a history of being coerced or forced into prostitution) arriving at the participating NGO between January 1997 and December 2005 were reviewed (N=448). The current analyses involved records of girls and women who indicated a history of being trafficked for sexual exploitation and whose records included results of HIV laboratory testing. Of the 448 records originally collected, 53 were excluded because of an individual residing at the NGO for causes other than sex trafficking (eg, runaway, homeless youth). Of the 395 records remaining, 102 did not include HIV laboratory testing results, and an additional 6 survivors were identified as having been tested less than 2 months postexposure and were removed from the sample based on seroconversion concerns, ultimately yielding a sample size of 287; ie, a 72.7% inclusion rate among identified trafficking cases.

A series of Fisher exact tests revealed no differences between those cases with documentation of HIV testing and those without documentation of test results at  $P < .05$  based either on demographic or on experiential variables (ie, current age, age at trafficking, duration in brothel, city of

destination, or servitude in multiple brothels).

On arrival, the 287 girls and women verbally indicated to NGO staff a history of having been coerced or forced into prostitution. In-depth case record documentation concerning trafficking experiences was not complete for the entire sample; thus, analyses pertaining to demographics and detailed experiences of trafficking involved only those cases having full documentation of these data elements ( $n=225$ , or 78.4% of the total assessed for HIV). Cases with complete trafficking-related data did not differ from the larger sample regarding HIV prevalence (84/225 [37.3%] vs 109/287 [38.0%]).

For use in the analyses herein, between March 2006 and August 2006 data were abstracted by investigators on demographics, trafficking- and prostitution-related experiences, and HIV status for repatriated survivors of sex trafficking, as recorded during intake in case and medical records by NGO staff during the period of January 1997 through December 2005. Data on demographics (ie, age at trafficking and marital status), experiences of trafficking and prostitution (ie, destination city, duration in brothel, and servitude in multiple brothels), and recruitment mechanisms (ie, recruitment tactic and relationship to trafficker) were derived from case records. For cases in which a range was reported within case records regarding duration of service in brothel, a mean value was calculated. For cases in which age at trafficking was not directly reported, it was calculated based on duration of brothel stay and age at rescue. Protocols described entailed no direct contact with human participants, as the study was limited to retrospective review of medical and case records, resulting in a deidentified database; as such, a waiver of informed consent was approved within the described study protocol by the Harvard School of Public Health Human Subjects Committee.

Calculation of descriptive statistics was performed for all demographic

characteristics and variables related to experiences of sex trafficking and prostitution; specifically, age at trafficking, marital status, trafficking destination, duration in brothel, servitude in multiple brothels, recruitment tactic, and relationship to trafficker. The HIV infection prevalence for the sample was calculated. Variation in HIV status related to demographic characteristics and experiences of sex trafficking and prostitution was initially assessed via bivariate logistic regression. Because all women trafficked to multiple destinations had experiences of prostitution in Mumbai, and based on the high prevalence of HIV among prostituted women in Mumbai,<sup>27</sup> destination city was recoded into a dichotomous variable for bivariate and multivariate logistic analyses reflecting Mumbai exposure vs no Mumbai exposure (ie, trafficked to Pune, Delhi, Kolkata, or other less commonly reported destinations).

To assess differences in HIV infection based on age, a 3-level categorical variable was created, with 14 years and younger reflecting very young age, 15 to 17 years reflecting older adolescent age, and 18 years and older reflecting adult age. Age was coded in this manner based on substantive interest in examining differential vulnerability to HIV infection based on very young age; prior research has described differences in prostitution-related experiences based on young age (eg, greater client demand for younger girls vs older girls<sup>11</sup>), which may confer increased risk for HIV infection. Duration of brothel servitude was examined as a categorical variable in descriptive analyses to illustrate its distribution and related rates of HIV infection within discrete periods; it was considered as a continuous variable in regression analyses to reflect true variation in the data. Categorical predictor variables were dummy coded for logistic regression analyses.

All variables found to be significantly related to HIV status at  $P \leq .05$  in bivariate analyses were simultaneously entered into a multivariate logistic regression model. Although duration of

brothel servitude demonstrated collinearity with age at trafficking, destination city, and servitude in multiple brothels, it was included in the multivariate model based on the exploratory nature of this analysis and the lack of a priori hypotheses on which to base decisions regarding variable exclusion. Estimates generated via logistic regression were evaluated for statistical significance based on 95% confidence intervals (CIs) not crossing 1.0 (ie,  $P < .05$ ). Reported odds ratios (ORs) should not be misinterpreted as relative risks.<sup>28</sup>

Based on findings of high HIV infection rates among those trafficked at age 14 and younger, post hoc analyses were performed to assess how trafficking experiences (destination city, duration of brothel servitude, and servitude in multiple brothels) for these individuals might have differed from those of older survivors of trafficking. All analyses were conducted using SAS version 9.1 (SAS Institute Inc, Cary, North Carolina).

## RESULTS

Among 287 sex-trafficked and repatriated Nepalese girls and women receiving services at Maiti Nepal between January 1997 and December 2005 and tested for HIV, 109 (38.0%) were found to be infected (TABLE 1). Among those cases including complete data on demographics and experiences of trafficking and prostitution ( $n=225$  [78.4%]), age at time of trafficking ranged from 7 to 32 years (mean, 17.8 years; median, 17.0 years). At the time of trafficking, 33 individuals (14.7%) were 14 years or younger, 76 (33.8%) were aged 15 to 17 years, and 100 (44.4%) were 18 years or older.

More than half of the girls and women in this sample were trafficked to Mumbai (131 [58.2%]). The next largest destination city within India was Pune (45 [20.0%]), followed by Delhi (28 [12.4%]), and Kolkata (5 [2.2%]). Fewer individuals were trafficked to multiple cities (4 [1.8%]), all of which included Mumbai as a destination.

Approximately two-thirds (150 [66.7%]) reported being unmarried,

with 38 (16.8%) reporting being widowed, divorced, separated, or abandoned at the time of trafficking. The mean time served in brothels was 25.8 months (median, 12.0 months). More than one-quarter (65 [28.9%]) reported brothel servitude of 2 years or more, and 39 (17.3%) reported being forced to work in multiple brothels.

Regarding mechanisms by which this sample was trafficked into prostitution, girls and women most often described being enticed through false assurances of economic opportunity, eg, domestic or restaurant work in India (105 [46.7%]). Other tactics used by traffickers included inviting girls or women to accompany them for benign purposes, eg, visiting a relative or attending a social or religious event (53 [23.6%]), drugging and kidnapping (37 [16.4%]), and false promises of marriage (16 [7.1%]). Slightly less than half of the girls and women in the sample (104 [46.2%]) were trafficked by strangers or persons unknown to them, 66 (29.3%) by friends or acquaintances, and 27 (12.0%) by intimate partners (ie, husbands or boyfriends); relatives or family members acted as traffickers in 20 cases (8.9%).

In bivariate analyses, very young age (14 years or younger) at time of trafficking was associated with increased risk for HIV infection relative to trafficking at 18 years or older (OR, 3.42; 95% CI, 1.51-7.75), with 20 of 33 (60.6%) girls in this youngest age group infected. No significant differences in HIV prevalence were detected between older adolescent survivors of trafficking (ie, those aged 15 to 17 years) and those trafficked at 18 years and older. Girls and women trafficked to Mumbai were more likely to test positive for HIV than those trafficked to other destinations (OR, 6.27; 95% CI, 3.04-12.90).

Duration of forced prostitution was positively associated with HIV infection; each additional month of brothel servitude appeared to increase the risk of HIV infection (OR, 1.02; 95% CI, 1.01-1.04). Being forced to work in multiple brothels vs a single brothel was also

related to increased risk for HIV (OR, 2.02; 95% CI, 1.00-4.09).

Variables found to be bivariately related to HIV status at  $P \leq .05$  were considered simultaneously in a multivariate logistic regression equation predicting this outcome (TABLE 2). Conditional on all parameters in the model, significant independent predictors of HIV infection included very

young age at trafficking (14 years or younger) vs being trafficked as an adult (18 years or older) (adjusted odds ratio [AOR], 3.70; 95% CI, 1.32-10.34), being trafficked to Mumbai vs other major Indian cities (AOR, 4.85; 95% CI, 2.16-10.89), and longer duration of brothel servitude (increased risk per month: AOR, 1.02; 95% CI, 1.01-1.03).

**Table 1.** Demographics, Trafficking Experiences, and Human Immunodeficiency Virus (HIV) Status Among Sex-Trafficked Nepalese Girls and Women (N = 287)<sup>a</sup>

Characteristic	No. (%) <sup>b</sup>	HIV Infected, %	OR (95% CI) <sup>c</sup>	P Value <sup>d</sup>
Total	287	109 (38.0)		
Age at time of trafficking, y				
7-14	33 (14.7)	20 (60.6)	3.42 (1.51-7.75)	.003
15-17	76 (33.8)	30 (39.5)	1.45 (0.78-2.71)	.24
18-32	100 (44.4)	31 (31.0)	1 [Reference]	
Missing	16 (7.1)	3 (18.8)		
Marital status at time of trafficking				
Never married	150 (66.7)	60 (40.0)	1.45 (0.80-2.62)	.22
Ever married	73 (32.4)	23 (31.5)	1 [Reference]	
Married	35 (15.6)			
Separated	20 (8.9)			
Abandoned	16 (7.1)			
Widowed	1 (0.4)			
Divorced	1 (0.4)			
Missing	2 (0.9)	1 (50.0)		
Destination city				
Mumbai <sup>e</sup>	131 (58.2)	65 (49.6)	6.27 (3.04-12.90)	<.001
Other cities	81 (36.0)	11 (13.6)	1 [Reference]	
Pune	45 (20.0)			
Delhi	28 (12.4)			
Kolkata	5 (2.2)			
Other	3 (1.3)			
Missing	13 (5.8)	8 (61.5)		
Duration of brothel servitude, mo			1.02 (1.01-1.04) <sup>f</sup>	<.001
<1	28 (12.4)	8 (28.6)		
1-6	47 (20.9)	10 (21.3)		
7-12	28 (12.4)	4 (14.3)		
13-24	35 (15.6)	15 (42.9)		
25-72	50 (22.2)	34 (68.0)		
>72	15 (6.7)	10 (66.7)		
Missing	22 (9.8)	3 (13.6)		
Servitude in multiple brothels				
Yes	39 (17.3)	21 (53.9)	2.02 (1.00-4.09)	.05
No	164 (72.9)	60 (36.6)	1 [Reference]	
Missing	22 (9.8)	3 (13.6)		

Abbreviations: CI, confidence interval; OR, odds ratio.

<sup>a</sup>Sex-trafficked Nepalese girls and women whose records contained HIV testing information.

<sup>b</sup>Except for analyses in the first row ("Total"), for which the denominator is 287, the denominator for other analyses represents 225 records that included both demographic and HIV testing information.

<sup>c</sup>Simple logistic regression analyses used to compute crude ORs. Missing values are excluded from simple logistic regression models. Reported ORs should not be misinterpreted as relative risks.<sup>26</sup> Confidence intervals are Wald CIs.

<sup>d</sup>Wald  $\chi^2$  P values.

<sup>e</sup>Includes 4 observations in which girls and women were sex trafficked to Mumbai and another Indian city.

<sup>f</sup>No referent because modeled as a continuous variable; statistic indicates increased risk per additional month of brothel detention.

**Table 2.** Risk for Human Immunodeficiency Virus Infection Among Sex-Trafficked Nepalese Girls and Women (Multivariate Logistic Regression Analysis of Bivariate Predictors [n = 184])<sup>a</sup>

Variable	Adjusted OR (95% CI) <sup>b</sup>	P Value <sup>c</sup>
Age at time of trafficking, y		
<15	3.70 (1.32-10.34)	.01
15-17	1.19 (0.57-2.47)	.65
≥18	1 [Reference]	
Destination city		
Mumbai	4.85 (2.16-10.89)	<.001
Other city	1 [Reference]	
Duration of brothel servitude, per additional mo	1.02 (1.01-1.03)	.005
Servitude in multiple brothels		
Yes	0.86 (0.35-2.10)	.74
No	1 [Reference]	

Abbreviations: CI, confidence interval; OR, odds ratio.

<sup>a</sup>Bivariate predictors only include variables that were significant in Table 1 (marital status is not included).

<sup>b</sup>Odds ratios are adjusted for all other variables in the multivariate model shown in this table. Reported ORs should not be misinterpreted as relative risks.<sup>28</sup> Confidence intervals are Wald CIs.

<sup>c</sup>Wald  $\chi^2$  P values.

Based on the significantly increased HIV infection rates observed among girls trafficked at very young ages (14 years or younger), post hoc analyses were conducted to assess ways in which trafficking experiences (ie, destination city, duration of brothel servitude, and servitude in multiple brothels) of the youngest girls may have differed from those trafficked at 18 years or older. Several differences were detected: more than one-third (13/30 [43.3%]) of those trafficked at younger than 15 years were prostituted in multiple brothels, vs 12 of 91 (13.2%) of those trafficked at 18 years or older (OR, 5.03; 95% CI, 1.96-12.93). Two-thirds (20/30 [66.7%]) of girls trafficked at 14 years or younger were detained in brothels for 1 year or more, vs 39 of 91 (42.9%) of those trafficked as adults (OR, 2.67; 95% CI, 1.12-6.33). No differences based on age were observed for trafficking destination city, and no differences in any experiences of trafficking or prostitution were found for those trafficked at ages 15 to 17 years vs those trafficked as adults.

## COMMENT

A high rate of HIV infection (38.0%) was found among this sample of repatriated Nepalese sex-trafficked girls and

women. Within this high-risk group, risk for HIV was further increased among girls trafficked at 14 years or younger (60.6% HIV-positive), those trafficked to Mumbai (49.6% HIV-positive), and those reporting longer duration in brothels. The observation that 1 in 7 (14.7%) survivors of sex trafficking were 14 years or younger at the time of trafficking, coupled with the high rates of HIV infection seen among these youngest survivors, indicates a need for greater attention from the public health community to this population and to prevention of this violent gender-based crime and human rights violation.

Similar to findings from a prior study of HIV among survivors of sex trafficking,<sup>13</sup> a positive association was observed between duration of brothel servitude and HIV status. This finding demonstrates that intervention to release sex-trafficked girls and women from forced prostitution and to ensure their continued safety from trafficking agents may be considered an important HIV prevention strategy.

Advancing prior research indicating higher risk of HIV infection among prostituted individuals younger than 18 years, both generally<sup>22</sup> and among survivors of sex trafficking,<sup>13</sup> the findings herein indicate that individuals traf-

ficked at 14 years or younger may be at greater risk for infection. Furthermore, those trafficked at ages 15 to 17 years were not seen to differ as a group regarding HIV status compared with those trafficked at 18 years and older, indicating that high infection rates among girls of very young age may be responsible for prior findings in which broader groupings of minors in prostitution were found to be at increased risk for HIV compared with older individuals.<sup>13,22</sup>

Possible mechanisms that may be responsible for increased HIV risk among girls trafficked at very young ages include biological vulnerability due to larger areas of cervical ectopy resulting from repeated sexual trauma to the immature genital tract, leading to increased vulnerability to HIV and other sexually transmitted infections.<sup>22</sup> Younger girls also may have more limited knowledge concerning sexual protection and risk for HIV and may be less able to negotiate condom use.<sup>3,11,13,14</sup>

Differences in experiences of trafficking and prostitution also may relate to the increased risk for HIV observed among very young survivors of trafficking. Post hoc analyses demonstrated multiple relevant differences in such experiences, including a significant relationship between serving in multiple brothels and very young age; 43.3% of those trafficked prior to age 15 years were prostituted in multiple brothels. These youngest survivors were much more likely to be re-trafficked in this way vs those trafficked at 18 years and older. This association may be partly responsible for the finding that being prostituted in multiple brothels was not an independent predictor of HIV infection in the multivariate model, as this model included age at trafficking (in Table 2, all variables appearing to be related to HIV based on bivariate analyses [ie, age, destination, duration of brothel servitude, and servitude in multiple brothels] were entered into a single multivariate model. When considering those other variables, working in multiple brothels was not significant). Second, girls who were

trafficked before age 15 years were more likely to be detained in brothels for 1 year or longer compared with those trafficked as adults, consistent with prior research.<sup>13</sup> These findings of differential treatment based on young age may relate to the increased value placed on young girls by brothel owners, which is thought to result in their being moved between brothels to avoid discovery and removal by police.<sup>11</sup> Findings from a large-scale survey conducted in India of the preferences and perceptions of male brothel clients may explain the relatively high monetary value of young trafficked girls to brothel owners; specifically, male clients demonstrated preferences for younger girls and virgins based on fear of HIV and other infections and the myth that sex with virgins may cure such maladies.<sup>11</sup> Furthermore, compensation to traffickers from brothel owners for young girls is described as greater than twice that for older trafficked individuals.<sup>11</sup> Additional research involving larger and more diverse samples is needed to further illuminate such issues of differential treatment based on age and how these issues may relate to risk for HIV among young survivors of trafficking.

Findings herein of increased HIV infection rates and apparent intensity of prostitution among sex-trafficked young girls provide support for targeting male clients, both in trafficking and in HIV prevention efforts.<sup>3,23</sup> Demand from male clients is consistently described as the major driver of sex trafficking<sup>2,23</sup> and likely also underlies HIV infection and transmission among the survivors of this criminal enterprise. In light of concerns regarding the diminished ability of young prostituted girls to negotiate sexual protection,<sup>3,11,13,14</sup> and of findings herein of high levels of HIV infection among this population (particularly among the youngest individuals), HIV-prevention approaches relying on prostituted girls to enact increased condom use should perhaps be reconsidered.<sup>8</sup> Approaches to HIV risk reduction that are oriented toward male clients, including reducing demand for sex from young prosti-

tuted girls, should receive greater emphasis. Unfortunately, investigation into potentially modifiable risk factors in men's demand for commercial sex is lacking. Further research is needed to inform development of such intervention efforts. In addition to the reduction of demand from male clients, increased efforts are needed to support NGOs working to prevent and intervene in sex trafficking. Beyond provision of basic medical care and shelter following rescue, these NGOs typically offer vocational training, job placement assistance, and basic education to trafficked girls and women. Such organizations also often maintain broad community awareness efforts as well as border surveillance programs to identify and intervene in instances of trafficking. Unfortunately, relatively few programs of this type for the prevention or intervention of sex trafficking exist in South Asia.<sup>2</sup> Those that do exist remain relatively small in scale and poorly funded, and none have been formally evaluated. If evaluations suggest these efforts are effective in reducing trafficking and improving the lives of trafficking survivors, these programs should be supported and greatly expanded.

The findings herein should be considered in the context of several notable limitations. The current study did not allow for assessment of pre-trafficking HIV infection; investigation to assess rates of HIV infection prior to trafficking may be important to consider, given evidence of high rates of factors related to risk for HIV, such as marital violence reported among survivors of sex trafficking.<sup>29</sup> However, regardless of temporal ambiguity, the high rates of HIV demonstrated among this repatriated sample should inform the need for medical and social support services among this vulnerable population. Documentation of testing results did not allow discrimination between HIV-1 and HIV-2. However, as prevalence of HIV-2 in both India and Nepal is low,<sup>25,26</sup> it is unlikely to have been substantially represented in this sample. The cur-

rent study relied on a repatriated sample; those trafficked and remaining in brothels and thus not repatriated, or those leaving brothels and not repatriated, may differ in experiences of prostitution and HIV risk compared with individuals in the current sample. For example, it is possible that those most ill are more likely to pursue or accept repatriation, perhaps based on their inability to care for themselves or to return to prostitution. However, given the illegality of this issue, it is not clear how investigations involving trafficked individuals still held in sexual servitude would be possible or ethically permissible. Additionally, data from case reports may have been subject to errors in caseworker documentation or survivor recall. The analysis herein is reliant on a sample from a single NGO in Nepal, thus potentially limiting generalizability; studies of larger samples and of individuals trafficked from other countries and/or being served by additional NGOs and government agencies are needed. The small sample size, especially for subgroup comparisons, along with wide CIs for some estimates, as well as post hoc analyses, warrant caution in interpretation of findings. Finally, the current investigation was limited in scope, due to the minimal data available for analysis concerning other posited physical, sexual, and mental health consequences of sex trafficking<sup>13,14</sup>; greater assessment and consequent inquiry into such outcomes is needed.<sup>13</sup>

Findings of the present study emphasize the critical need to strengthen efforts to prevent sex trafficking and to intervene to protect trafficking survivors so as to shield young girls and women, both from this form of sexual violence and from the high risk of HIV infection. Currently, relatively few such efforts exist, and organizations that do engage in this work often lack adequate political or financial support. Furthermore, the high rates of HIV documented herein support concerns that sex trafficking may be a significant factor in the expansion of the South

Asian HIV epidemic,<sup>4,5</sup> both within higher-prevalence nations such as India and also from such nations to their lower-prevalence neighbors (eg, Nepal). Moreover, the current demonstration of the very young age of many of those trafficked and sexually exploited, and the further harm to these young lives through high rates of HIV infection, requires attention from public health researchers and strategists to better understand and reduce the demand for sexual services from prostituted girls and women.

Interventions and policies to reduce demand by male clients for young prostituted women are likely essential to reducing both sex trafficking and the further spread of HIV across the region and should be considered public health priorities. Increased efforts are urgently needed to expand the work of existing sex trafficking prevention and intervention programs, as well as those that seek to reduce gender-based disparities in social status in South Asia through educational and economic opportunities directed at girls and women. Through empirically based development, implementation, and evaluation of such efforts, we may build a foundation of knowledge to advocate for and enact effective legal and public health strategies for reducing the related epidemics of sex trafficking and HIV, both in South Asia and across the globe.

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