

Understanding the Social and Cultural Contexts of Female Sex Workers in Karnataka, India: Implications for Prevention of HIV Infection

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Background. The objective of the present study was to compare the sociodemographic characteristics and sex work patterns of women involved in the traditional *Devadasi* form of sex work with those of women involved in other types of sex work, in the Indian state of Karnataka.

Methods. Data were gathered through in-person interviews. Sampling was stratified by district and by type of sex work.

Results. Of 1588 female sex workers (FSWs) interviewed, 414 (26%) reported that they entered sex work through the *Devadasi* tradition. *Devadasi* FSWs were more likely than other FSWs to work in rural areas (47.3% vs. 8.9%, respectively) and to be illiterate (92.8% vs. 76.9%, respectively). *Devadasi* FSWs had initiated sex work at a much younger age (mean, 15.7 vs. 21.8 years), were more likely to be home based (68.6% vs. 14.9%), had more clients in the past week (average, 9.0 vs. 6.4), and were less likely to migrate for work within the state (4.6% vs. 18.6%) but more likely to have worked outside the state (19.6% vs. 13.1%). *Devadasi* FSWs were less likely to report client-initiated violence during the past year (13.3% vs. 35.8%) or police harassment (11.6% vs. 44.3%).

Conclusion. Differences in sociobehavioral characteristics and practice patterns between *Devadasi* and other FSWs necessitate different individual and structural interventions for the prevention of sexually transmitted infections, including human immunodeficiency virus infection.

Reducing the vulnerability of female sex workers (FSWs) to sexually transmitted infections (STIs), including HIV infection, is a global public health imperative, owing to both the obligation to protect and promote the health of FSWs and the strategic importance of interrupting transmission to and from this subpopulation as a means of controlling epidemics of STIs and HIV infection [1–3]. Various program strategies have been successful for STI/HIV infection prevention among FSWs. Some of these strategies were designed as individual/cognitive interventions through peer outreach and education [4, 5]. Other strategies have placed emphasis on structural interventions, which focus more on changing population-level factors, such as the or-

ganization of sex work and the prevailing behavioral norms. Perhaps the most notable example of this approach is the 100% condom campaign instituted in Thailand [6]. Increasingly, the use of structural/environmental interventions to complement individual-level approaches is being advocated [7, 8]. Accordingly, several frameworks have been developed to characterize factors at the individual and structural/environmental levels that influence vulnerability and risk behaviors [9–11]. Bourcier et al. [12] developed a framework that refers to multiple levels of “risk causation,” by adapting the concept from Sweat and Denison [10]. In this context, they specify 4 levels of risk causation in sex work: societal (superstructural), community (structural), institutional (infrastructure/environment), and individual. Overs [13] has categorized 3 levels of intervention strategies for FSWs: individual/cognitive, participation and empowerment, and structural/environmental. This formulation is perhaps less theoretical but still emphasizes the importance of designing programs that address factors at both the individual and the structural/environmental levels, to reduce the vulnerability of FSWs. A

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review of these frameworks and of experiences from programs for STI/HIV infection prevention among FSWs still has not resolved why certain program strategies work well in some settings and populations but not in others. Specifically, whether variations in the results are due to differences in the organization of sex work (i.e., controlling structures) and the prevailing political and economic situation, the social and cultural characteristics of the FSWs, the implementation process of the prevention program, or a combination of these factors is often unclear [14–17]. This highlights the need to develop a more detailed understanding of how the interactions between individual, community, and societal factors shape sex work patterns and the vulnerability of FSWs.

Our project in the Indian state of Karnataka (the India-Canada Collaborative HIV/AIDS Project) faces this challenge: we are in the process of designing and implementing program models for the prevention of HIV infection and AIDS among FSWs. Our formative ethnographic research has clearly shown that a great diversity in the patterns of sex work exists in Karnataka. In addition to differences in the organization of sex work, a long history and current widespread practice of “traditional” sex work by women are present in the state. We define traditional sex work as having a prolonged history within the society and as having acquired and retained a degree of social and cultural sanction. In Karnataka, the most common form of traditional sex work is associated with the *Devadasi* system. The *Devadasi* tradition in India extends back several centuries: the term has been found in written records from as far back as the twelfth century [18]. In brief, the *Devadasi* tradition involves a religious rite in which girls and women are dedicated, through marriage, to different gods and goddesses, after which they become the wives or servants of the deities and perform various temple duties [19]. Over time, these duties have come to include provision of sexual services to priests and patrons of the temples, and, owing to the sacred setting and the view that *Devadasi* women embody a form of divinity, this activity has been referred to by some as “sacred prostitution” [20]. Today, the *Devadasi* tradition is widespread in northern Karnataka, and the sex work associated with it is socially and culturally embedded in many communities. Therefore, as an example of a particular type of interaction between structural/environmental and individual factors, we surmised that this traditional form of sex work would be associated with a distinct sex work pattern and environment and, therefore, would require suitably tailored intervention strategies. In this article, we describe the results of a mapping study and a sociobehavioral survey of FSWs in Karnataka, with a particular emphasis on comparing the sex work patterns and environment associated with the *Devadasi* system with those of other forms of sex work.

METHODS

Study setting. The study was conducted in the southern Indian state of Karnataka, which has a population of ~55 million. Karnataka ranks among the top 4 states in India with regard to the severity of the HIV infection epidemic. In 2002, the overall prevalence of HIV infection was 1.7% among women tested at antenatal clinics from every district in the state. Among those attending sexually transmitted disease clinics, the prevalence of HIV infection ranged from 10% to >20%. The difference in the prevalences of HIV infection in urban and rural populations was small. The districts with the highest prevalences of HIV infection are in the northern region of the state, where the prevalence of HIV infection is >3% in several of the districts.

Mapping and survey of FSWs. The survey was conducted under the auspices of the India-Canada Collaborative HIV/AIDS Project, which is an AIDS/HIV infection prevention and control project funded by the Canadian International Development Agency (Hull, Quebec) and implemented by a consortium of 3 organizations led by the University of Manitoba (Winnipeg, Canada). Partner organizations for the implementation of the survey included the Population Research Centre (Dharwad, Karnataka), which was the lead agency for planning and implementation, 3 nongovernmental organizations (NGOs) that are implementing prevention programs for FSWs (Belgaum Integrated Rural Development Society [Gokak, Karnataka, India], Samraksha [Bangalore, Karnataka, India], and the Society for People’s Action in Development [Bangalore, Karnataka, India]), and the Federation of Sex Worker Collectives in Karnataka (Sahabhagini). With these partner organizations, an advisory committee was formed to develop and agree on the design of the survey, the questionnaire structure and content, and the implementation strategy. The survey was designed to be implemented in 18 of the 27 districts of Karnataka, to coincide with districts where either an existing prevention program for FSWs that was run by one of the partner NGOs or a sex worker collective was in place. The 18 districts selected for the survey broadly covered all geographic areas of the state, including the city of Bangalore.

In preparation for the survey, we conducted a mapping exercise for the 18 districts, to develop a sampling frame based on the district, the locale (urban vs. rural), and the type of sex work. The mapping was done during a 3-day workshop with peer coordinators, peer educators, and counselors from sex worker collectives and partner NGOs. Overall, 72 persons, representing all 18 districts, participated in the mapping workshop, in which they were asked to estimate the total number of FSWs in each locality within a district according to the type of sex work practiced. Since the purpose of the mapping was primarily to develop the sampling strategy for the subsequent survey,

Table 1. Reasons for entering sex work, stated by female sex workers (FSWs) in Karnataka, India, 2002.

Reason	Total	Only reason stated	Single additional reason stated					>2 Reasons stated
			<i>Devadasi</i> tradition	Marital or family discord	Financial need	Coerced or lured	Other	
<i>Devadasi</i> tradition	414	274	...	2	15	14	84	25
Marital or family discord	476	158	2	...	200	52	33	31
Financial need	574	142	21	200	...	46	122	43
Coerced or lured	316	134	14	52	46	...	39	31
Other	453	140	85	33	122	39	...	34

NOTE. Data are no. of FSWs.

participants in the mapping workshop were asked to give estimates based on the number of easily identifiable FSWs. Therefore, the mapping almost certainly resulted in an underestimation of the number of part-time FSWs. Furthermore, estimates for some districts were likely to be more complete than those for others, depending on the extent of the local knowledge of local peer educators and counselors.

The surveys were conducted in person by trained interviewers using a standardized questionnaire. The questionnaire was developed in close coordination with representatives from the sex worker community and was pretested among 20 FSWs (10 from northern and 10 from southern Karnataka). Peer educators in the districts acted as guides in identifying and helping to approach FSWs for interviewing. In each district, the target sample was predetermined according to the type of sex work and urban or rural residence. The sampling of respondents was not strictly random, but interview teams in the field ensured that selection was conducted at different times of the day and on different days of the week, to try to eliminate systematic bias based on local sex work patterns. Thus, for a given field of operation, a list was made of the various locations where sex work takes place (e.g., lodges/brothels or areas of home-based sex work), and field teams were instructed to select respondents from as many different locations as possible, to minimize the “clustering” of responses from specific sex work sites. Since a sampling frame of individuals at a given site was not available, selection of respondents at a given site and time was opportunistic rather than systematic. When field interviewers approached potential participants, they first explained the purpose and processes of the survey. Interviews only proceeded if informed consent was obtained. In most cases, the interview was conducted in Kannada (the main language of Karnataka). However, if a respondent was unable to speak Kannada, the interviewer conducted the interview by means of language interpretation, whenever possible. The study was approved by the Health Research Ethics Board of the University of Manitoba.

Statistical analysis. Data analysis was performed by using SAS software (version 8.02; SAS Institute). Two types of multivariate analyses were used to assess the relationship between

the sociodemographic characteristics of FSWs and the sex work pattern and environment. For each continuous dependent variable, such as age and number of clients, we used a generalized linear model to calculate the adjusted (least squares) mean. For each dichotomous dependent variable (e.g., whether sex work was performed mostly at home), we used a separate logistic regression model to compute the adjusted odds ratio.

RESULTS

The mapping exercise resulted in an estimate of 11,366 readily identifiable FSWs in the 18 districts. Of these, we estimated that 29% were based at home, 12% at brothels, 5% at lodges, and 2% at *dhabas* (small restaurants and rest stops along highways) and that 8% worked along highways and 44% in public places (i.e., streets, train stations, and bus stands).

A total of 1588 FSWs were interviewed, which represented a response rate of 94% of those approached for an interview. The distribution of those interviewed was comparable to that in the mapping results, with regard to geographic area and type of sex work, with the major exception being a smaller sample of highway-based FSWs (4%) than was projected in the mapping (8%).

Sociodemographic characteristics. Participants gave diverse reasons for entering sex work (table 1). Overall, 414 FSWs (26%) stated that induction into the *Devadasi* tradition was at least 1 reason that they entered sex work, and 274 (66%) of these FSWs listed it as the only reason that they entered sex work. Other stated reasons for entering sex work included financial need (36% of FSWs), marital or family discord or dissolution (30%), and being coerced or lured (20%). Interestingly, the majority of the women who stated these reasons also stated at least 1 other reason for entering sex work. For example, 200 (42%) of the women who stated marital or family discord as a reason for entering sex work also listed financial need, whereas only 21 (5%) of the women who entered through the *Devadasi* tradition also mentioned financial need.

Table 2 summarizes the sociodemographic characteristics of the study participants. The mean current age of respondents

Table 2. A comparison of the sociodemographic characteristics of *Devadasi* and non-*Devadasi* female sex workers (FSWs) in Karnataka, India, 2002.

Characteristic	<i>Devadasi</i> FSWs (n = 414)	Non- <i>Devadasi</i> FSWs (n = 1174)	Total
Current age, mean (SD), years	26.4 (6.5) ^a	29.5 (8.0)	28.7 (7.8)
Rural residence	47.3 ^a	8.9	19.0
Marital status			
Never married	51.2 ^a	11.3	21.8
Currently married	1.0	23.0	17.2
Separated/divorced	1.2	35.1	26.3
Widowed	0.2	12.7	9.4
Cohabiting	46.4	18.0	25.3
At least 1 child at home	68.8	67.8	68.1
Illiterate	92.8 ^a	76.9	81.1
Age at initiation of sex work			
<15 years	40.3 ^a	9.9	17.8
15–19 years	49.5	31.8	36.4
20–24 years	7.7	24.0	19.7
≥25 years	2.4	34.3	26.0
Age at initiation of sex work, mean (SD), years	15.7 (2.9) ^a	21.8 (6.6)	20.2 (6.4)
Owned a home	80.2 ^a	36.4	47.8
Had other source(s) of income	38.7	39.6	39.3
Sex work contributed more than half of income	75.6	75.1	75.2
Owed any money	49.8 ^a	55.8	54.2
Had any savings	17.4	17.0	17.1

NOTE. Data are percentage of FSWs, except where indicated otherwise.

^a $P < .01$, *Devadasi* vs. non-*Devadasi* FSWs.

was 28.7 years, with *Devadasi* FSWs being significantly younger than non-*Devadasi* FSWs. The majority of participants were located in urban areas, but *Devadasi* FSWs were significantly more likely to live in rural areas than were non-*Devadasi* FSWs. Only 17.2% of participants were currently married, 25.3% were currently cohabiting, and 21.8% were never married. *Devadasi* FSWs were much more likely than non-*Devadasi* FSWs to have never been married and to be currently cohabiting with a partner who is not a spouse. Most participants had at least 1 child living with them. More than 80% of all FSWs were illiterate (unable to read or write), and illiteracy was significantly more common among *Devadasi* FSWs. The mean age at initiation of sex work was much lower among *Devadasi* FSWs than among non-*Devadasi* FSWs, with 40.3% of *Devadasi* FSWs having initiated sex work at <15 years of age. This clearly reflects the tradition of initiation into sex work shortly after menarche among the *Devadasi* FSWs. *Devadasi* FSWs were much more likely than non-*Devadasi* FSWs to own a home. Similarities in the other aspects of financial status between *Devadasi* and non-*Devadasi* FSWs were striking.

Sex work pattern and environment. Differences between *Devadasi* and non-*Devadasi* FSWs with regard to the pattern and environment of sex work were substantial (table 3). *Devadasi* FSWs were much more likely to entertain clients at home, reported a higher average number of sex partners in the

past week, and charged less on average to each client. *Devadasi* FSWs were less likely to migrate to work at another location within the state of Karnataka but were somewhat more likely to have migrated to another state for work. *Devadasi* FSWs were more likely to accept every client and reported client-initiated violence much less often than did non-*Devadasi* FSWs. *Devadasi* FSWs also were significantly less likely to report having ever been harassed by the police.

Since observed differences between *Devadasi* and non-*Devadasi* FSWs could have been influenced by the location and type of sex work practiced, we conducted separate multivariate analyses to better assess the associations between the socio-demographic characteristics of FSWs and sex work pattern (table 4) and environment (table 5). With regard to sex work pattern (table 4), being a *Devadasi* FSW was independently associated with initiation of sex work at a younger age, entertaining clients at home, and a lower likelihood of previous migration within the state of Karnataka. After adjusting for other factors, *Devadasi* FSWs were not more likely than other FSWs to migrate to another state for sex work. Rural location of residence also was independently associated with home-based sex work and a lower propensity for within-state migration. Rural-based FSWs also were significantly more likely than urban-based FSWs to report out-of-state migration, suggesting that rural location of residence is a key determinant of out-of-

Table 3. Comparison of the pattern and environment of sex work between *Devadasi* and non-*Devadasi* female sex workers (FSWs) in Karnataka, India, 2002.

Sex work pattern	<i>Devadasi</i> FSWs (n = 414)	Non- <i>Devadasi</i> FSWs (n = 1174)
Place where most clients entertained		
Home	68.6 ^a	14.9
Brothel	13.8	14.7
Lodge/hotel	3.1	28.2
Public place	13.0	26.9
Other	1.5	15.3
Average no. of sex partners in past week	9.0 ^b	6.4
Average charge per client, rupees	83.4 ^a	123.2
Migration		
Ever worked in another district in state	4.6 ^a	18.6
Ever worked in another state	19.6 ^a	13.1
Accepted every client	17.8 ^a	7.1
Client used violence to force sex in past year	13.3 ^a	35.8
Ever harassed by police	11.6 ^a	44.3

NOTE. Data are percentage of FSWs, except where indicated otherwise.

^a $P < .01$, *Devadasi* vs. non-*Devadasi* FSWs.

^b $P < .05$, *Devadasi* vs. non-*Devadasi* FSWs.

state migration. Not surprisingly, FSWs who were older at the time of the interview were more likely to report previous migration, either within or out of the state.

Table 5 shows the results of multivariate analyses to assess the association between the sociodemographic characteristics of FSWs and the sex work environment. In these analyses, *Devadasi* FSWs reported a significantly higher number of sex partners in the past week and a lower charge per client. They

were significantly less likely than non-*Devadasi* FSWs to report client-initiated violence or police harassment. Urban location of residence was significantly associated with an increase in the reporting of police harassment. Neither age nor marital status was associated with significant differences in the variables for sex work environment. Illiterate FSWs reported a significantly lower charge per client and a greater prevalence of client-initiated violence. Home-based FSWs were significantly less likely

Table 4. Association between sociodemographic characteristics of female sex workers and selected aspects of sex work patterns in Karnataka, India, 2002.

Characteristic	Mean age at initiation of sex work, years	Most clients entertained at home, OR (95% CI)	Within-state migration for sex work, OR (95% CI)	Out-of-state migration for sex work, OR (95% CI)
Reason for initiation of sex work				
Other than <i>Devadasi</i> tradition	18.5	Reference	Reference	Reference
<i>Devadasi</i> tradition	13.8 ^a	5.4 (4.0–7.4)	0.21 (0.12–0.37)	1.10 (0.73–1.65)
Residence				
Urban	16.3	Reference	Reference	Reference
Rural	16.0	4.17 (3.00–5.88)	0.43 (0.24–0.77)	2.27 (1.56–3.33)
Current age				
<25 years	13.8	Reference	Reference	Reference
≥25 years	18.5 ^a	1.09 (0.80–1.47)	1.51 (1.05–2.16)	1.87 (1.33–2.64)
Marital status				
Single, divorced, or widowed	16.8	Reference	Reference	Reference
Married or cohabiting	15.5 ^a	0.94 (0.71–1.23)	1.38 (1.02–1.86)	0.61 (0.45–0.83)
Literacy				
Can read and write	16.3	Reference	Reference	Reference
Illiterate	16.0	1.11 (0.76–1.61)	0.58 (0.41–0.82)	1.24 (0.82–1.86)

NOTE. Associations estimated by means of multivariate analyses using a generalized linear model (for least-squares mean for age at initiation of sex work) and logistic regression; all variables listed were included in the multivariate models. CI, confidence interval; OR, odds ratio.

^a $P < .001$.

Table 5. Association between sociodemographic characteristics of female sex workers and selected aspects of sex work environment in Karnataka, India, 2002.

Characteristic	Average no. of sex partners in past week	Average charge per client, rupees	Client used violence to force sex in past year, OR (95% CI)	Ever harassed by police, OR (95% CI)
Reason for initiation of sex work				
Other than <i>Devadasi</i> tradition	5.8	125	Reference	Reference
<i>Devadasi</i> tradition	8.5 ^a	109 ^b	0.41 (0.28–0.61)	0.40 (0.27–0.60)
Residence				
Urban	7.7	122	Reference	Reference
Rural	6.6	112	1.06 (0.70–1.61)	0.34 (0.21–0.56)
Current age				
<25 years	7.3	120	Reference	Reference
≥25 years	7.0	114	1.11 (0.83–1.48)	1.12 (0.84–1.49)
Marital status				
Single, divorced, or widowed	7.7	111	Reference	Reference
Married or cohabiting	6.6	122	0.89 (0.69–1.16)	0.93 (0.71–1.21)
Literacy				
Can read and write	6.6	134	Reference	Reference
Illiterate	7.7	100 ^a	1.44 (1.03–2.00)	0.74 (0.53–1.02)
Location of sex work				
Brothel, lodge, or public place	7.1	121	Reference	Reference
Home	7.2	113	0.44 (0.30–0.63)	0.36 (0.25–0.52)

NOTE. Associations estimated by means of multivariate analyses using a generalized linear model (for least-squares means for no. of clients in past week and charge per client) and logistic regression; all variables listed were included in the multivariate models. CI, confidence interval; OR, odds ratio.

^a $P < .001$.

^b $P < .05$.

to report client-initiated violence or police harassment than were those based in brothels, lodges, or public places.

DISCUSSION

In Karnataka, sex work by women is widespread and highly diversified. We have shown that the traditional *Devadasi* form of sex work is common in Karnataka, with >25% of all FSWs being part of the *Devadasi* system; thus, the development of specific programs for STI/HIV infection prevention are warranted for this population. We may have possibly overestimated the proportion of sex work related to the *Devadasi* system, since it tends to be more visible than other forms of sex work. Furthermore, since our survey was conducted only in the 18 districts where NGO programs or sex worker collectives had some presence, our sample might not be representative of the overall distribution of FSWs. However, many *Devadasi* FSWs live in very small villages in northern Karnataka and are likely to have been underrepresented in our mapping and survey sample.

Most *Devadasi* FSWs did not mention financial need as a reason for entering sex work, whereas this was a common reason reported by other FSWs for initiating sex work. However, to de-emphasize the economic incentive for sex work among the *Devadasi* FSWs probably is somewhat misleading. Instead, ethnographic work by our group suggests that an economic

incentive for initiation into sex work exists at the level of the mother or other close relatives [21]. Since dedication and initiation into the *Devadasi* tradition occurs at a young age, the girl has little scope for individual decision making. In fact, our ethnographic research in northern Karnataka has revealed that it is now not uncommon for non-*Devadasi* women to dedicate their daughters to the *Devadasi* tradition as a somewhat-sanctioned means of deriving economic gain from sex work [21].

Important differences in the sociobehavioral characteristics between *Devadasi* and non-*Devadasi* FSWs were found. The *Devadasi* FSWs were much more likely to live and work in rural areas, reflecting the historical location of the tradition in northern Karnataka. This finding also likely reflects the sufficiency of the rural client base. The social and cultural sanction of sex work in those areas where the *Devadasi* custom is common also may have influenced men's behavior, so that a relatively stable and sufficient supply of local clients has kept village-based sex work viable. Although the initial reasons for entering sex work differ, the current economic importance of sex work does not appear to differ much between *Devadasi* and non-*Devadasi* FSWs. However, *Devadasi* FSWs are much more likely than other FSWs to own their own home, which likely reflects the fact that, in general, *Devadasi* FSWs do not marry (otherwise, the men would be the more likely home owner in a

marital relationship), since they have already been married to a god or goddess [22] and since they are likely to use their home for entertaining clients.

Substantial differences between *Devadasi* and non-*Devadasi* FSWs also were found with regard to the patterns and environment of sex work. Sex work practiced by *Devadasi* FSWs is predominantly home based, whereas home-based sex work is relatively uncommon among non-*Devadasi* FSWs. The finding that sex work in a village would be home based is not surprising, since, other than open spaces and fields, venues for entertaining clients are few. In addition, this pattern highlights that sex work is firmly rooted within the village community. In urban areas, home-based sex work also suggests that, except among young FSWs, *Devadasi* sex work probably does not have high levels of external controls (i.e., by pimps or madams).

We found that *Devadasi* FSWs are much less likely to migrate within the state but more likely to migrate out of the state, compared with other FSWs. However, multivariate analyses indicated that out-of-state migration is not associated with *Devadasi* sex work per se but, instead, is a phenomenon that is strongly associated with residence in a rural location. Since our survey was only conducted within the state, we almost certainly underestimated interstate migration. The low propensity to migrate within the state might indicate that economic opportunities elsewhere in the state are not better than those of the local situation. Instead, migration is more likely to occur to cities in the state of Maharashtra, including Mumbai, where a vibrant sex industry and, therefore, enhanced economic opportunities exist. In fact, reports from both northern Karnataka and Mumbai suggest that substantial migration of FSWs occurs from rural Karnataka to Mumbai [23].

Devadasi FSWs were much less likely to report violence by clients than were non-*Devadasi* FSWs. This phenomenon appears to be partly related to a rural location of sex work, but multivariate analyses indicated that rural location does not fully explain these findings. This possibly indicates that the *Devadasi* FSWs are in a less vulnerable position within their community, perhaps partly owing to their religious status, but also might indicate a difference in client characteristics. If clients of *Devadasi* FSWs are more often local community members, the propensity for them to be abusive possibly is less. The much less frequent reporting of police harassment by *Devadasi* FSWs could have a number of explanations. Since they are home based, visibility and the opportunity for harassment may be less, but our data suggest that this does not fully explain this observation. Another possible explanation is that the community attitudes toward sex work are more permissive and that the police behave in accordance with that community standard.

We believe that the results of the present study demonstrate that both individual and contextual factors influence the organization and practice of sex work and that programs for STI/

HIV infection prevention should be designed accordingly. For example, with regard to individual/cognitive interventions, the fact that much of the *Devadasi* FSW population is dispersed among rural villages poses problems for the logistics and feasibility of individual peer outreach and education. One implication is that the number of peer educators required for a given population of FSWs is greater in rural areas. In addition, peer outreach and education for FSWs based in rural areas might need to be supplemented by the use of local health-care providers (such as village health workers) with whom the village-based FSWs have more-frequent contact and with whom they may have a social connection. With regard to structural interventions, the importance of working with and influencing power structures (such as brothel owners or pimps) is not likely to be as relevant for interventions with *Devadasi* FSWs as for interventions with FSWs for whom more external controls and power structures exist. In addition, work on police advocacy in the context of a *Devadasi* sex work program may be less critical than in other contexts. One strategy that does appear to be effective with *Devadasi* FSWs is the formation of sex worker collectives, which serve as socioeconomic self-help groups aimed at empowering and uniting the women and which provide structures for developing peer education and outreach programs [24]. Unlike elsewhere in India, where collectivization has been hampered by high turnover rates and an unwillingness by FSWs to identify with the sex worker community [25], *Devadasi* FSWs may experience greater levels of stability and lower levels of stigma, thereby facilitating the formation of collectives. Another critical structural intervention with the *Devadasi* system relates to delaying the age of initiation into sex work. This might require diverse strategies, including working with current *Devadasi* FSWs to alter some of the traditions and to devise ways of lessening the economic pressure to initiate daughters at a young age. Strategies also are required to reduce vulnerability to STIs and HIV infection that is related to migration, particularly to Mumbai and other cities out of state. These might include predeparture education programs for those planning to migrate to Mumbai. Specific programs at migration destination points for women from Karnataka also should be considered, including the formation of self-help groups and the provision of peer counseling and health-care services.

We believe that rigorous multilevel research in a variety of settings is needed, to better understand the interactions between individual and structural/environmental factors as they relate to the vulnerability of FSWs to STIs and HIV infection and to the design of effective prevention programs. Specifically, more formal research into the social organization of sex work, the place of sex work within the community, and the larger economic and political contexts is required. In addition, we advocate more detailed research at the individual level, especially to better understand the life course of individual FSWs

and how they interact with their environment at different life phases. Furthermore, these social systems are dynamic; therefore, research will need to address how changes in the social and economic environments influence the organization of sex work and individual responses over time.

Finally, emerging evidence should inform the development and implementation of new intervention models. As we have shown in the present study, the social and cultural contexts of sex work by women are varied, and preventive interventions should vary accordingly. Furthermore, as new intervention models are developed and implemented, they should be more rigorously assessed, with the objective of understanding their particular influence on individual, community, and societal parameters. Without such understanding, the goal of STI/HIV infection prevention among FSWs will remain unfulfilled.

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