The Extent and Nature of Fluidity in Typologies of Female Sex Work in Southern India: Implications for HIV Prevention Programs

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These authors examine the nature and extent of fluidity in defining the typology of female sex work based on the place of solicitation or place of sex or both places together, and whether sex workers belonging to a particular typology are at increased risk of HIV in southern India. Data are drawn from a cross-sectional survey conducted during 2007–2008 among mobile female sex workers (N = 5301) in four Indian states. Findings from this study address an important policy issue: Should programmatic prevention interventions be spread to cover all places of sex work or be focused on a few places that cover a large majority of sex workers? Results indicate that most female sex workers, including those who are usually hard to reach such as those who are mobile or who use homes for soliciting clients or sex, can be reached programmatic multiple times by concentrating on a smaller number of categories, such as street-, lodge-, and brothel-based sex workers.

KEYWORDS condom use, female sex workers, HIV, India, typology of sex work

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INTRODUCTION

Female sex workers (FSWs) are at high risk of acquiring and transmitting HIV due to the nature of their work, which includes multiple concurrent partners and inconsistent condom use (Hearst & Chen, 2004; National AIDS Control Organisation [NACO], 2007; Reiss & Leik, 1989). Understanding the nature of female sex work has become central to both research and HIV prevention programs in India and elsewhere (Harcourt & Donovan, 2005; Raj, Saggurti, Lawrence, Balaiah, & Silverman, 2010) because the typology of sex work is found to be associated with differential HIV risk (Buzdugan et al., 2010; Ramesh et al., 2008). Numerous studies reveal that FSWs at high risk of acquiring and transmitting HIV infection can be identified on the basis of characteristics associated with high inconsistent condom use, including reasons for entering sex work (Wawer, Podhisita, Kanungsukkasem, Pramualratana, & McNamara, 1996), such as economic hardship (Hargreaves, 2002; Tladi, 2006; Wojcicki, 2005); consumption of alcohol prior to sex (Fisher, Cook, & Kapiga, 2010; Verma, Saggurti, Singh, & Swain, 2010; Zablotska et al., 2006); or experience of sexual violence (Beattie et al., 2010; Campbell et al., 2008; Kalichman, Williams, Cherry, Belcher, & Nachimson, 1998; Molitor, Ruiz, Klausner, & McFarland, 2000; Zierler, Witbeck, & Mayer, 1996).

It is not useful to categorize and reach FSWs with HIV prevention messages based on these characteristics because this would require first contacting FSWs to collect the required information. For programmatic purposes, one would need to use easily identifiable characteristics, rather than having to contact FSWs to collect the information required for classification. Geographic characteristics like places of solicitation and places used for sex do not require prior contact with FSWs, and once used to create a typology can be used to contact groups of FSWs sharing the same geographic characteristics.

To expand the reach of HIV prevention programs, in 2006 a panel of experts in India recommended using the primary place where clients are solicited as the basis for grouping FSWs into six categories: brothel-based, street-based, home-based, lodge-based (overnight stay hotels), dhaba-based (road side eating places and small hotels), and highway-based (NACO, 2007). A subsequent review of the literature on the organization of sex workers into different typologies, based on research and programmatic studies in India, found the typology developed by the Indian NACO (2007) to be comprehensive (Buzdugan, Halli, & Cowan, 2009). However, it recommended the addition of three categories to provide a complete description of the settings in which women solicit clients: cell phone–based, indirect-primary (e.g., bar-based), and indirect-secondary (e.g., agricultural or construction sites–based). Despite these suggested categorizations, empirical support for this proposed typology is scarce in the literature. The only empirical study published so far on the typology of sex work used data from a cross-sectional survey.
conducted in the state of Karnataka in India (Buzdugan et al., 2010), which may not be applicable to female sex work in other states of India.

The categorization of FSWs based on places where sex is solicited requires regular mapping of sex workers, as such places may change with an increase in the volume of sex work, presence of male migrant workers, organization of jatras (religious gatherings), or changes in the political situation of the city or state. While typologies of sex work in reality are not confined to mutually exclusive categories, past research studies have listed places where sex workers are most likely to solicit clients (Chandrasekaran et al., 2006; Chattopadhyay & McKaig, 2004; Dandona et al., 2006; Harcourt & Donovan, 2005; NACO, 2007; Ramesh et al., 2008). However, few published studies have indicated the specific advantages of considering places where FSWs engage in sex for the implementation of HIV prevention interventions (Blanchard et al., 2005; Halli et al., 2010; Halli, Ramesh, O’Neil, Moses, & Blanchard, 2006).

Previously published work on the typology of sex work has unfortunately raised questions among researchers and program managers on the overall utility of using a single question for defining typology, and its linkages with HIV risk behaviors in other contexts, such as different states and mobile FSWs who travel to different places for sex work. Some important questions include: How does a typology based on the place where clients are solicited differ from one based on the place where FSWs engage in sex? Do these typologies differ from a typology based on places of both solicitation and sex? Do FSWs use two or more places (fluidity) to solicit clients and for sex? If yes, which are the most prevalent combinations of places? How do these typologies and indicators of fluidity vary by state? How does HIV risk vary by fluidity and typology?

We attempt to answer these research questions using data from a cross-sectional survey conducted in four southern states identified as high HIV prevalence states in India. This study specifically examines the extent and nature of fluidity in defining the typology of female sex work based on the place of soliciting clients (referred to as “place of solicitation” in this article) or the place where FSWs engage in sex (referred to also as “place of sex” interchangeably in this article) or both. We also attempt to understand whether sex workers who use multiple places or belong to a particular typology are at increased risk of HIV than others. The exploration of the extent and nature of fluidity in sex work is important in addressing an important policy question: Should programmatic efforts be spread to cover all typologies of sex work, or should such programs focus on a smaller number of places?

METHODS

Sample

This study is based on data from a cross-sectional behavioral survey conducted in 2007–2008 among mobile FSWs (women who regularly sell sex in
exchange for cash/kind) in 22 high in-migration districts across four states in southern India (Andhra Pradesh, Karnataka, Tamil Nadu, and Maharashtra), identified as high epidemic states by NACO prior to 2005 (Karnataka Health Promotion Trust & Population Council, 2008; Population Council, 2008a, 2008b, 2008c). These study districts were identified using unpublished mapping and enumeration data on FSWs collected independently by the State AIDS Control Society and Avahan (the India AIDS Initiative of the Bill and Melinda Gates Foundation).

A two-stage sampling procedure was used to select FSWs from both brothel and non-brothel sites. For brothel sites, two-stage systematic sampling was used. In the first stage, lanes or small areas were systematically selected, and in the second stage, brothel houses in each lane/small sub-area were selected. All FSWs in the selected brothel houses were interviewed using a screening tool to identify mobile FSWs. In the case of non-brothel sites, two-stage time location sampling was used. In the first stage, sex workers’ cruising points or homes were selected, and in the second stage, the day and timing of visits were systematically selected. All FSWs found during the selected time, day and cruising sites/homes were interviewed using a screening tool (Verma et al., 2010).

About 94% (or 9475) of FSWs who were initially contacted ($N=10,075$) agreed to provide information required to complete the screening questionnaire. Of these, 5611 (59%) were found eligible for the detailed interview according to the study definition of mobile FSWs: those who moved to two or more different locations for sex work during the previous two years, one of which included a move across districts.

Of the total eligible FSWs (5611), 87 were excluded: 15 were not interviewed because they were below age 18, 21 refused to participate in the study, and 51 withdrew during the course of the interview. Of those who completed the interview (5524), 223 were excluded because of incomplete information. Data on socioeconomic variables were missing for 26 FSWs, while data on either the place where clients are solicited or the place for sex were missing for 197 FSWs. This resulted in a total analytical sample of 5301 FSWs, including 1295 brothel-based FSWs and 4006 non-brothel-based FSWs according to the definition used in this study for selecting the sample of FSWs.

Ethical Procedures

Ethical approval for the study was obtained from the institutional review boards (IRBs) of the Population Council and the University of Manitoba, Canada. Verbal consent was obtained from all respondents prior to participation in the interview and steps were taken to ensure their confidentiality. For ethical considerations, only those FSWs who were at least 18 years of age were interviewed. Participants were not provided any compensation for their
time in the study but were given information on local organizations that provide services for treating sexually transmitted infections and condoms.

Interviews were conducted by trained researchers with multilingual fluency. All the researchers had at least 5 years of experience and a graduate or master’s degree in sociology, anthropology, and/or statistics. Participants were asked to respond to a 45-minute interviewer-administered survey in the local language. Instruments were developed in English, translated into four local languages, and then reviewed by study investigators who were fluent in English and the local language. Discrepancies were resolved in consultation with the principal investigator from the Population Council.

Interviews were conducted in private or public locations depending on the preference of the respondent. Locations for street-based FSWs included street corners, gardens, parks, and areas outside cinema halls. Data were collected using handheld Palmtop Digital Accessories (PDAs) in the states of Maharashtra, Andhra Pradesh, and Tamil Nadu and using printed questionnaires in Karnataka. In order to facilitate the acceptance of PDAs, respondents were told about the interviewing technique and shown how a PDA works. A customized PDA program was used to ensure the confidentiality of the data collected in the field and to reduce errors in data entry using a PDA. Data quality control and management of questionnaires involved immediate review by field staff after interviews to ensure accuracy and completion, same-day review by the field supervisor, and weekly transportation of survey forms to the data management team. Trained data entry officers then entered the survey data weekly and processed it monthly to verify consistency and accuracy, using SPSS software (Version 16.0; SPSS Inc, Chicago, IL). The consistency and quality of the data collected through the use of PDAs was assessed weekly using SPSS.

Measures

The primary variable of interest in this study—the typology of sex work—was based on two questions asked during the survey: What were the common places that FSWs used to solicit clients, and what were the common places where FSWs engaged in sex with most of their clients? Multiple responses to these questions, as recommended by previous studies (NACO, 2007; Nag, 2006), were captured by 14 response options on the survey. These responses to the question on place of solicitation were collapsed into eight categories based on the places where clients were solicited. These included the six categories defined by NACO (2007): brothel-based, street-based, home-based, lodge-based (including hotels), dhaba-based, and highway-based (including vehicles)—and two additional categories, bar or nightclub-based and cell phone–based. The street-based category includes FSWs who reported soliciting clients on the roadside, at railway stations/bus stands, market areas, cinema halls, and labor naka (place where men congregate for
contract work). The home-based category includes those who reported using their own home, clients’ homes, or rented rooms for soliciting clients and having sex. Except for the brothel-based category, all the other categories are non–brothel-based. However, cell phones can be used by brothel- and non–brothel-based FSWs for soliciting clients.

Similarly, responses to the question on the places where FSWs engaged in sex were recorded by 13 response options, which apart from the cell phone option are consistent with the places for soliciting clients. These 13 options were then collapsed into seven categories (excluding cell phones) using the same classification used earlier to define places for soliciting clients.

The dependent variables used in this study include the relative importance of the categories, the extent of fluidity, the nature of fluidity, and the risk of HIV acquisition. The relative importance of the categories was measured by the percentage of FSWs who mentioned ever using a place to solicit clients or to engage in sex and the percentage of FSWs who mentioned using such a place exclusively. The extent of fluidity was measured by the percentage of FSWs who used two or more places to solicit clients or to engage in sex and the average number of places used for solicitation and sex. The nature of fluidity was measured by the percentage of FSWs who reported using a specific combination of two places among those who used two or more places to solicit clients or to engage in sex.

Exposure to the risk of acquiring HIV (HIV risk) was defined as the inconsistent use of condoms and was measured by a variable created from responses to items regarding condom use in the last week and at the last time sex with occasional and regular clients, and with nonpaying partners. Three variables were created for each type of client: occasional, regular, and nonpaying. FSWs who reported always using a condom in the last week and condom use at the last time sex were coded as 0 (consistent condom use) and those who reported always using condom in the last week but did not use a condom at the last time sex or reported sometimes or never using a condom in the last week were coded as 1 (inconsistent condom use). A binary variable indicating overall inconsistent condom use was created by combing the three variables on inconsistent condom use during sex with each type of partner. Consistent condom use (coded as 0) includes those FSWs who reported always using condoms with all types of clients in the last week as well as using condoms at the last time sex with each of these clients/partners. All other FSWs were coded as 1 to indicate overall inconsistent condom use.

The independent variables or covariates used in this study included the respondents’ age and education level, duration of sex work, state where FSWs practiced sex work, and program exposure. Demographics were assessed via single items regarding age (grouped into five categories: 19–24, 25–29, 30–34, 35–39, 40+ years), education (grouped into four categories: illiterate or no formal schooling; primary school, 1-5 years of education; secondary school, 6-8 years of education; high school, 9 years and above),
duration of sex work (grouped into four categories: 0–2, 3–5, 6–10, 11+ years), and state where FSWs were practicing sex work (Maharashtra, Andhra Pradesh, Karnataka, and Tamil Nadu). A binary variable representing program exposure was constructed based on FSWs’ self-report of access to free or subsidized condoms at the current place of sex work, as this was one of the key components of the HIV prevention program. FSWs who reported having access to either free or subsidized condoms were categorized as exposed to the program and were coded as 1, and those who did not report access to free and subsidized condoms were categorized as not exposed to the program and were coded as 0.

Statistical Analysis

The importance of specific typologies of sex work was assessed by calculating the percentage of FSWs who had ever used that place and the percentage of FSWs who had used that place exclusively. The extent of fluidity was assessed by calculating the percentage of FSWs who used multiple places for solicitation and sex, and the average number of places used for solicitation and sex. The nature of fluidity was assessed by calculating the percentage of FSWs who used a specific combination of places among those who used two or more places for solicitation and sex. The variation among states in typologies, and the extent and nature of fluidity were assessed by calculating these percentages separately for each state.

Logistic regression models were constructed to estimate crude odds ratios (ORs) and 95% confidence intervals (CIs) to assess the observed effect of each covariate on the extent of fluidity (multiple places for solicitation) and inconsistent condom use. Multiple logistic regression models were constructed to estimate adjusted odds ratios (AORs) and 95% CIs to assess the independent effect of each covariate on the extent of fluidity, and the independent effect of fluidity, typology of sex work and each covariate on inconsistent condom use. Three separate multivariate regression models were constructed to assess: (a) the independent effect of each covariate on fluidity; (b) the independent effect of fluidity on inconsistent condom use among all mobile FSWs; and (c) the independent effect of the specific typology of sex work on inconsistent condom use among mobile FSWs who solicited clients from only one location. The key sociodemographic covariates included in these models were respondents’ age, education level, duration of sex work, program exposure, and the state where they were practicing sex work. All statistical analyses were conducted using SPSS Version 16.0.

RESULTS

Table 1 shows the typology by place where FSWs solicit clients, place where they engage in sex, and both places together. The most common category
for soliciting clients based on responses to the question of ever using that place was street-based (65%) sex work; other less common categories include home-based (29%), lodge-based (26%), and brothel-based (24%) sex work. In comparison, the most common categories for engaging in sex based on responses to the question of ever using that place were lodges (58%) and homes (54%); less common categories were streets (32%) and brothels (27%). When places for solicitation and sex were included together, the most common categories of sex work included those who ever solicited clients on the street and ever used lodges for sex (44%), homes for sex (40%), or streets for sex (30%). Other common categories included home-to-home (27%), lodge-to-lodge (23%), and brothel-to-brothel (23%) sex work. A substantial proportion of FSWs (about 22%) used cell phones to solicit clients; however, most of them also used other places for solicitation. Those who solicited clients using cell phones used streets (46%), homes (41%), and lodges (35%) for sex and, to a much lesser degree, brothels (13%), highways (9%), and dhabas (4%).

Close to one-half of FSWs in this study reported using multiple places for soliciting clients as well as for engaging in sex. On average, FSWs reported using close to two places for sex work (for soliciting clients 1.90 ± 1.0; for sex 1.93 ± 1.0). About 58% of FSWs used two or more places for solicitation and the remaining (42%) used one place exclusively, with 23% street-based and 12% brothel-based. In comparison, about 43% used two or more places for engaging in sex and the remaining 57% used one place exclusively: 19% used homes, 17% used lodges, and 14% used brothels.

Table 2 shows the fluidity and the overlapping nature of FSW categories based on the main places for soliciting clients or engaging in sex. The top panel presents data on FSWs who reported using at least two places for soliciting clients. Streets were the most common place for soliciting clients among FSWs who mentioned at least two places for solicitation. The percentage of FSWs who mentioned streets ranged from 49% among those who also mentioned brothels or cell phones; to more than 90% among those who mentioned dhabas, bars and highways for soliciting clients. However, those who solicited clients on the streets also did so from lodges (42%) and homes (38%); those who solicited clients from homes also did so on the streets (64%) and from lodges (45%); and those who solicited clients from lodges also did so on the streets (68%) and in homes (44%). In addition to streets, other common places for soliciting clients among those who used at least two places included homes and lodges.

The bottom panel of Table 2 shows similar data for FSWs who mentioned at least two places where they engage in sex. Lodges were the most common place for sex among FSWs who mentioned at least two places for sex. The percentage of FSWs who mentioned lodges ranged from 50% among those who also mentioned brothels or cell phones; to more than 90% among those who also mentioned brothels or homes. About 60% of FSWs who used lodges for sex
| Typology* based on place of solicitation | Brothel | Street | Home | Lodge | Dhaba | Highway | Bar | % FSWs ever used the place\(^\d\) for solicitation | Average number of places used for solicitation | % FSWs used the place for solicitation exclusively | Total |
|----------------------------------------|---------|--------|------|-------|-------|---------|-----|---------------------------------|---------------------------------------------|-----------------------------------------------|-------|
| Brothel-based                          | 22.6    | 2.7    | 7.3  | 8.7   | 2.3   | 0.5     | 0.3 | 24.4                           | 1.85 ± 1.0                                  | 11.5                           |       |
| Street-based                           | 8.8     | 30.2   | 39.7 | 44.1  | 8.0   | 9.5     | 1.6 | 64.6                           | 2.09 ± 1.1                                  | 23.1                           |       |
| Home-based                             | 5.2     | 9.9    | 26.7 | 15.5  | 3.4   | 2.3     | 0.7 | 28.6                           | 2.86 ± 1.1                                  | 3.7                            |       |
| Lodge-based                            | 5.0     | 10.9   | 15.6 | 23.3  | 3.4   | 2.1     | 1.1 | 26.4                           | 2.91 ± 1.2                                  | 1.2                            |       |
| Dhaba-based                            | 2.0     | 7.1    | 4.5  | 5.4   | 6.5   | 5.6     | 0.4 | 12.0                           | 3.68 ± 1.3                                  | 0.5                            |       |
| Highway-based                          | 0.4     | 4.8    | 4.1  | 4.0   | 1.9   | 3.8     | 0.2 | 6.8                            | 3.22 ± 1.3                                  | 0.1                            |       |
| Bar-based                              | 1.4     | 3.7    | 3.7  | 3.9   | 1.2   | 0.6     | 1.5 | 5.3                            | 2.68 ± 1.2                                  | 0.3                            |       |
| Cell phone-based                       | 3.3     | 5.3    | 14.2 | 14.0  | 1.3   | 1.5     | 0.3 | 22.1                           | 2.49 ± 1.0                                  | 1.5                            |       |

\(^\d\)Includes FSWs who used the place exclusively.

\(^*\)This typology includes NACO’s categorization (2007) and additional categories recommended in other studies. Typologies based on each place separately are shown by percentages; percentages shown in each cell indicate the typology based on ever use of a place for solicitation and a place for sex; overall percentages are shown in the right hand corner. Street-based category includes: on the road side, railway station/bus stand, market areas, cinema halls, labor \textit{naka} (for solicitation), and park/bushes (for sex); home-based category includes own home, client's home, rented room; lodge-based category also included hotels; the highway-based category includes: vehicle; and the bar-based category also includes night clubs. \textit{Dhabas} are roadside resting places for truck drivers and other long distance motorists.

All percentages are based on the total number of FSWs (5301). Percentages do not add to 100 due to multiple responses regarding places of solicitation as well as places for sex.

SD = Standard deviation.
| Place of solicitation | Typology Based on Place of Solicitation* | Brothel | Street | Home | Lodge | Dhaba | Highway | Bar | Cell Phone | No. of FSWs† |
|-----------------------|----------------------------------------|---------|--------|------|-------|-------|--------|-----|-----------|--------------|
| Brothel               | 100.0                                  | 49.1    | 37.7   | 32.5 | 12.4  | 2.8   | 3.9   | 22.7| 684       |
| Street                | 15.3                                   | 100.0   | 38.1   | 41.5 | 25.6  | 14.7  | 11.1  | 24.4| 2198      |
| Home                  | 19.6                                   | 63.5    | 100.0  | 44.5 | 9.7   | 13.0  | 7.1   | 36.1| 1319      |
| Lodge                 | 16.7                                   | 68.5    | 44.1   | 100.0| 13.1  | 13.0  | 10.1  | 30.4| 1331      |
| Dhaba                 | 13.9                                   | 91.7    | 20.9   | 28.4 | 100.0 | 23.2  | 12.6  | 8.3 | 613       |
| Highway               | 5.4                                    | 92.6    | 49.1   | 49.4 | 40.6  | 100.0 | 6.6   | 30.9| 350       |
| Bar                   | 10.1                                   | 91.0    | 35.2   | 50.6 | 28.8  | 8.6   | 100.0 | 9.4 | 267       |
| Cell phone            | 14.2                                   | 49.1    | 43.5   | 37.0 | 4.7   | 9.9   | 2.3   | 100.0| 1094      |

| Place of Sex          | Typology Based on Place of Sex*        | Brothel | Street | Home | Lodge | Dhaba | Highway | Bar | No. of FSWs† |
|-----------------------|----------------------------------------|---------|--------|------|-------|-------|--------|-----|--------------|
| Brothel               | 100.0                                  | 25.1    | 54.7   | 81.2 | 20.8  | 5.8   | 3.6   | NA  | 693         |
| Street                | 12.0                                   | 100.0   | 47.5   | 71.2 | 22.1  | 20.3  | 4.8   | 1451|             |
| Home                  | 23.6                                   | 42.9    | 100.0  | 81.4 | 14.6  | 10.7  | 3.6   | 1607|             |
| Lodge                 | 26.1                                   | 47.8    | 60.5   | 100.0| 15.7  | 9.3   | 3.5   | 2161|             |
| Dhaba                 | 28.6                                   | 63.5    | 46.6   | 67.3 | 100.0 | 28.8  | 3.8   | 504 |             |
| Highway               | 9.9                                    | 73.0    | 42.7   | 49.9 | 36.0  | 100.0 | 2.2   | 403 |             |
| Bar                   | 23.6                                   | 65.1    | 54.7   | 70.8 | 17.9  | 8.5   | 100.0 | 106 |             |

*This typology includes NACO’s categorization (2007) and additional categories recommended in other studies. Street based category includes: on the road side, railway station/bus stand, market areas, cinema halls, labor naka (for solicitation), and park/bushes (for sex); home-based category includes own home, client's home, rented room; lodge-based category also included hotels; the highway-based category includes: vehicle; and the bar-based category also includes night clubs. Dhabas are roadside resting places for truck drivers and other long distance motorists.

†Those who reported two or more places. Row percentages are based on the numbers of FSWs. Total percent in each row is greater than 100 because of multiple places used for solicitation as well as for sex.
also used homes, and 70% of those who used highways for sex also used streets. In addition to lodges, other common places for sex among those who used at least two places included homes, streets, and brothels.

There are important state-level differences in the places FSWs use for sex work (Table 3). For example, the percentage of FSWs who used only one place to solicit clients ranged from 20% in Andhra Pradesh to 59% in Maharashtra, and those who used only one place for sex ranged from 28% in Andhra Pradesh to 83% in Karnataka. Fluidity among FSWs was highest in Andhra Pradesh for both solicitation and sex, and lowest in Maharashtra for solicitation and lowest in Karnataka for sex. The use of cell phones by FSWs to solicit clients was far more common in Andhra Pradesh and Karnataka than in Maharashtra and Tamil Nadu.

Table 4 shows the typology of sex work based on the places where clients are solicited, where FSWs engage in sex, and both places together for each of the four southern states. The typology of sex work based on the place where clients are solicited in Andhra Pradesh was similar to the typology based on the place of engaging in sex and the typology based on both of these places: FSWs in this state mainly used streets, homes, and lodges to both solicit clients and to engage in sex. FSWs in Karnataka used streets and cell phones to solicit clients but lodges for sex. FSWs in Maharashtra used brothels and streets to solicit clients but brothels and lodges for sex. Consequently, the most common categories based on both places were brothel to brothel and street to lodge for sex work. FSWs in Tamil Nadu, on the other hand, mainly used streets to solicit clients, but homes and lodges and, to a lesser degree, streets for sex. Consequently, the most common categories based on both places in Tamil Nadu were street to lodge, street to home, and street to street.

The extent of fluidity varied by FSWs’ characteristics as indicated by the crude ORs as well as AORs shown in Table 5. Moreover, FSWs who used multiple places for soliciting clients were exposed to greater HIV risk than those who used only one place. The use of multiple places for solicitation was relatively more common among FSWs who were 25 to 34 years of age, had at least a high school education, had not been exposed to programmatic interventions, and were practicing sex work in Andhra Pradesh or Karnataka.

Utilizing the multiple regression analysis, the study findings show that HIV risk is relatively higher among FSWs who use multiple places for solicitation or who use streets for solicitation in comparison to brothels. For example, after controlling for FSWs’ characteristics, inconsistent condom use was higher among FSWs who used multiple places to solicit clients than among those who used only a single place to solicit clients (AOR = 1.4, 95% CI 1.2–1.7, p < .01; Table 6). Further, among FSWs who used only one place to solicit clients, inconsistent condom use was higher among street-based FSWs than brothel-based FSWs (AOR 1.3, 95% CI 1.0–1.7, p = .06). Among FSWs who used one place to solicit clients, 70% used
### TABLE 3 Percentage of FSWs Reporting Ever Use or Exclusive Use of a Particular Place for Solicitation or for Sex by State

| Typology based on place of solicitation* | % FSWs ever used the place for solicitation | % FSWs who exclusively used the place for solicitation |
|-----------------------------------------|---------------------------------------------|-------------------------------------------------|
|                                         | Andhra Pradesh (N = 1514) | Karnataka (N = 1378) | Maharashtra (N = 1166) | Tamil Nadu (N = 1243) | Andhra Pradesh (N = 311) | Karnataka (N = 522) | Maharashtra (N = 687) | Tamil Nadu (N = 680) |
| Brothel-based                           | 21.6 | 18.1 | 56.2 | 5.1 | 1.8 | 13.3 | 32.5 | 1.8 |
| Street-based                            | 68.9 | 45.5 | 53.3 | 91.3 | 13.9 | 12.7 | 20.7 | 48.4 |
| Home-based                              | 51.4 | 23.1 | 5.9 | 28.2 | 2.8 | 7.5 | 1.5 | 2.7 |
| Lodge-based                             | 36.8 | 24.5 | 16.8 | 24.8 | 0.1 | 3.2 | 0.8 | 1.0 |
| Lodge-based                             | 20.7 | 14.6 | 7.1 | 3.3 | 0.1 | 0.2 | 1.7 | 0.0 |
| Home-based                              | 8.8 | 4.7 | 1.5 | 11.4 | 0.0 | 0.4 | 0.0 | 0.2 |
| Bar-based                               | 9.4 | 1.3 | 4.4 | 5.6 | 0.0 | 0.0 | 1.2 | 0.0 |
| Cell phone–based                        | 23.4 | 39.6 | 9.2 | 13.4 | 1.8 | 2.8 | 0.6 | 0.6 |
| % Who used only one for solicitation    | 2.41 ± 1.1 | 1.71 ± 0.7 | 1.54 ± 0.8 | 1.83 ± 1.2 |
| Average number of places used for solicitation | | | | |

| Typology based on place of sex* | % FSWs ever used the place for sex | % FSWs exclusively used the place for sex |
|--------------------------------|-----------------------------------|-----------------------------------------|
| Andhra Pradesh (N = 1514) | Karnataka (N = 1378) | Maharashtra (N = 1166) | Tamil Nadu (N = 1243) | Andhra Pradesh (N = 311) | Karnataka (N = 522) | Maharashtra (N = 687) | Tamil Nadu (N = 680) |
| Brothel-based                           | 23.1 | 18.7 | 62.8 | 6.1 | 1.8 | 17.7 | 36.4 | 2.1 |
| Street-based                            | 56.0 | 17.1 | 9.3 | 39.6 | 5.6 | 4.5 | 1.8 | 5.2 |
| Home-based                              | 82.0 | 23.5 | 25.6 | 71.2 | 17.6 | 23.5 | 7.4 | 25.4 |
| Lodge-based                             | 61.5 | 43.2 | 54.6 | 71.7 | 2.3 | 27.6 | 16.6 | 22.8 |
| Lodge-based                             | 21.9 | 4.5 | 8.1 | 3.8 | 0.1 | 0.5 | 1.8 | 0.0 |
| Home-based                              | 8.9 | 15.4 | 2.9 | 13.3 | 0.0 | 9.4 | 0.0 | 1.0 |
| Bar-based                               | 3.1 | 0.1 | 3.5 | 2.0 | 0.0 | 0.0 | 0.7 | 0.1 |
% Who used only one place for sex
Average number of places used for sex  

|          | 27.5 | 83.2 | 64.7 | 56.6 |
|----------|------|------|------|------|
| 2.56 ± 1.1 | 1.32 ± 0.6 | 1.67 ± 0.9 | 2.07 ± 0.8 |

*This typology includes NACO’s categorization (2007) and additional categories recommended in other studies. Street based category includes: on the road side, railway station/bus stand, market areas, cinema halls, labor naka (for solicitation), and park/bushes (for sex); home-based category includes own home, client’s home, rented room; lodge-based category also included hotels; the highway-based category includes: vehicle; and the bar-based category also includes night clubs. Dhabas are roadside resting places for truck drivers and other long distance motorists.
| Places for | Andhra Pradesh (N = 1514) | Karnataka (N = 1378) | Maharashtra (N = 1166) | Tamil Nadu (N = 1243) |
|------------|--------------------------|----------------------|------------------------|----------------------|
| Soliciting clients | Street (69%) | Street (46%) | Brothel (56%) | Street (91%) |
| | Home (51%) | Cell phone (40%) | Street (53%) | Home (28%) |
| | Lodge (37%) | Lodge (25%) | | |
| Having sex | Home (82%) | Lodge (43%) | Brothel (63%) | Lodge (72%) |
| | Lodge (62%) | Home (24%) | Lodge (55%) | Home (71%) |
| | Street (56%) | | | Street (40%) |
| Both | Street to home (54%) | Street to lodge (24%) | Brothel to brothel (55%) | Street to lodge (69%) |
| | Street to street (52%) | Lodge to lodge (23%) | Street to lodge (42%) | Street to home (66%) |
| | Home to home (47%) | Phone to lodge (23%) | Street to lodge (41%) | Street to street (39%) |
| | Street to lodge (44%) | Home to home (22%) | | |

Percentages in each state are based on the number of FSWs in that state.
Percentages do not add up due to multiple responses on places of solicitation as well as sex.
streets in Andhra Pradesh and Tamil Nadu; there were no differences in inconsistent condom use in these states by typology. In Karnataka and Maharashtra, street-based FSWs were at higher HIV risk than brothel-based FSWs; the difference between the two was statistically significant (AOR = 1.4, 95% CI 1.2–1.7).

**DISCUSSION**

While fluidity in the categories of female sex work has been previously recognized (NACO, 2007), this empirically grounded study documents for the first time the extent and nature of fluidity in the typologies of female sex work–based one place of solicitation and place of sex. It also highlights several advantages in considering the place of sex in addition to place of solicitation to define the typology of sex work. Our study results show that such a consideration of places of sex work identified lodges as an important place for expanding programmatic interventions. Utilizing the multiple regression analysis, our study findings indicate that the extent and nature of fluidity

| Characteristic                        | %     | N     | Crude OR (95% CI) | AOR (95% CI) |
|---------------------------------------|-------|-------|-------------------|--------------|
| Age group                             |       |       |                   |              |
| 19–24                                 | 53.0  | 753   | Referent          | Referent     |
| 25–29                                 | 61.2  | 1,944 | 1.4 (1.1–1.7)     | 1.4 (1.2–1.7) |
| 30–34                                 | 59.5  | 1,310 | 1.3 (1.1–1.6)     | 1.4 (1.1–1.7) |
| 35–39                                 | 58.1  | 829   | 1.2 (1.0–1.5)     | 1.3 (1.0–1.7) |
| 40+                                   | 47.3  | 465   | 0.8 (0.6–1.0)     | 1.0 (0.8–1.4) |
| Education                             |       |       |                   |              |
| Illiterate                            | 58.7  | 1,817 | Referent          | Referent     |
| Primary school                        | 60.5  | 935   | 1.1 (0.9–1.3)     | 1.2 (1.0–1.4) |
| Secondary school                      | 54.6  | 2,162 | 0.8 (0.7–0.9)     | 1.2 (0.9–1.2) |
| High school and above                 | 66.9  | 387   | 1.4 (1.1–1.8)     | 1.8 (1.4–2.3) |
| Duration of sex work                  |       |       |                   |              |
| 0–2 years                             | 59.8  | 1,046 | Referent          | Referent     |
| 3–5 years                             | 56.8  | 2,359 | 0.9 (0.8–1.0)     | 0.9 (0.8–1.1) |
| 6–10 years                            | 57.9  | 1,493 | 0.9 (0.8–1.1)     | 1.1 (0.9–1.3) |
| 11+ years                             | 59.6  | 403   | 1.0 (0.8–1.3)     | 1.3 (0.9–1.7) |
| Program exposure                      |       |       |                   |              |
| Yes                                   | 55.9  | 1,707 | Referent          | Referent     |
| No                                    | 58.9  | 3,594 | 1.1 (1.0–1.3)     | 1.4 (1.2–1.7) |
| State                                 |       |       |                   |              |
| Maharashtra                           | 41.1  | 1,166 | Referent          | Referent     |
| Andhra Pradesh                        | 79.5  | 1,514 | 5.5 (4.7–6.6)     | 5.5 (4.6–6.5) |
| Karnataka                             | 59.9  | 1,378 | 2.1 (1.8–2.5)     | 2.6 (2.1–3.2) |
| Tamil Nadu                            | 45.3  | 1,243 | 1.2 (1.0–1.4)     | 1.1 (0.9–1.4) |

**TABLE 5** Characteristics Associated with Use of Multiple Places for Solicitation of Clients among FSWs
| Characteristics                  | Overall \((N=5301)\) | Inconsistent condom use | Crude OR (95% CI) | AOR (95% CI) | Among those who use only one place for solicitation \((N=2230)\) | Inconsistent condom use | Crude OR (95% CI) | AOR (95% CI) |
|---------------------------------|------------------------|-------------------------|-------------------|-------------|---------------------------------------------------------------|-------------------------|-------------------|-------------|
| **Age group**                   |                        |                         |                   |             |                                                               |                         |                   |             |
| 19–24                           | 52.1                   | Referent                | Referent          |             | 53.1                                                          | Referent                | Referent          |             |
| 25–29                           | 54.4                   | 1.1 (0.9–1.3)           | 0.9 (0.8–1.2)     |             | 46.7                                                          | 0.8 (0.6–1.0)           | 0.8 (0.6–1.2)     |             |
| 30–34                           | 42.9                   | 0.7 (0.6–0.8)           | 1.1 (0.9–1.2)     |             | 34.3                                                          | 0.5 (0.4–0.6)           | 0.9 (0.6–1.3)     |             |
| 35–39                           | 26.2                   | 0.3 (0.2–0.4)           | 0.9 (0.7–1.2)     |             | 25.1                                                          | 0.3 (0.2–0.4)           | 1.2 (0.8–1.8)     |             |
| 40+                             | 19.6                   | 0.2 (0.1–0.3)           | 0.9 (0.7–1.3)     |             | 16.3                                                          | 0.2 (0.1–0.3)           | 0.9 (0.6–1.6)     |             |
| **Education**                   |                        |                         |                   |             |                                                               |                         |                   |             |
| Illiterate                      | 45.1                   | Referent                | Referent          |             | 42.4                                                          | Referent                | Referent          |             |
| Primary school                  | 58.5                   | 1.7 (1.4–2.0)           | 1.3 (1.1–1.6)     |             | 48.2                                                          | 1.3 (1.0–1.6)           | 0.9 (0.7–1.3)     |             |
| Secondary school                | 37.6                   | 0.7 (0.6–0.8)           | 0.8 (0.7–1.0)     |             | 31.8                                                          | 0.6 (0.5–0.7)           | 0.7 (0.5–0.9)     |             |
| High school and above           | 35.9                   | 0.7 (0.5–0.9)           | 0.7 (0.5–0.9)     |             | 31.3                                                          | 0.6 (0.4–0.9)           | 0.5 (0.3–0.9)     |             |
| **Duration of sex work**        |                        |                         |                   |             |                                                               |                         |                   |             |
| 0–2 years                       | 64.3                   | Referent                | Referent          |             | 55.7                                                          | Referent                | Referent          |             |
| 3–5 years                       | 47.1                   | 0.5 (0.4–0.6)           | 0.7 (0.6–0.9)     |             | 42.0                                                          | 0.6 (0.5–0.7)           | 0.7 (0.5–0.9)     |             |
| 6–10 years                      | 29.3                   | 0.2 (0.1–0.3)           | 0.6 (0.5–0.7)     |             | 24.4                                                          | 0.3 (0.2–0.3)           | 0.6 (0.4–0.8)     |             |
| 11+ years                       | 24.3                   | 0.2 (0.1–0.2)           | 0.5 (0.3–0.6)     |             | 20.9                                                          | 0.2 (0.1–0.3)           | 0.5 (0.3–0.8)     |             |
| **Program exposure**            |                        |                         |                   |             |                                                               |                         |                   |             |
| Yes                             | 33.8                   | Referent                | Referent          |             | 26.8                                                          | Referent                | Referent          |             |
| No                              | 64.6                   | 3.6 (3.2–4.0)           | 1.4 (1.2–1.6)     |             | 60.2                                                          | 4.1 (3.4–4.9)           | 1.0 (0.7–1.3)     |             |
| **State**                       |                        |                         |                   |             |                                                               |                         |                   |             |
| Maharashtra                     | 30.2                   | Referent                | Referent          |             | 26.9                                                          | Referent                | Referent          |             |
| Andhra Pradesh                  | 38.5                   | 1.4 (1.2–1.7)           | 1.3 (1.1–1.6)     |             | 37.9                                                          | 1.6 (1.2–2.2)           | 1.5 (1.1–2.0)     |             |
| Karnataka                       | 89.9                   | 20.6 (16.6–25.5)        | 24.8 (19.2–32.1)  |             | 83.9                                                          | 14.1 (10.6–18.7)        | 14.3 (9.8–20.9)   |             |
| Tamil Nadu                      | 11.7                   | 0.3 (0.2–0.4)           | 0.3 (0.2–0.4)     |             | 12.2                                                          | 0.4 (0.3–0.5)           | 0.4 (0.3–0.6)     |             |
| Use of multiple places for solicitation of clients | N/A | N/A | N/A |
|------------------------------------------------|-----|-----|-----|
| No                                             | 38.1| Referent | Referent |
| Yes                                            | 47.9| 1.5 (1.3–1.7) | 1.4 (1.2–1.7) |
| Typology of sex work                           |     |     |     |
| Brothel                                        | 40.8| Referent | Referent |
| Street                                         | 30.6| 0.6 (0.5–0.8) | 1.3 (1.0–1.7) |
| Home                                           | 55.8| 1.8 (1.3–2.5) | 1.2 (0.8–1.8) |
| Lodge                                          | 64.2| 2.6 (1.5–4.4) | 1.5 (0.7–3.0) |
| Cell phone                                     | 58.8| 2.1 (1.3–3.3) | 1.4 (0.8–2.6) |
| Others                                         | 51.1| 1.5 (0.8–2.7) | 2.4 (1.2–4.7) |
vary by state and FSWs’ characteristics and that fluidity also increases HIV risk in India.

FSWs who use streets exclusively for solicitation are exposed to a higher degree of HIV risk compared to those who use only brothels for soliciting clients. Furthermore, by analyzing the most common combination of places used for sex work, our study was able to address an important policy issue: Should programmatic interventions be spread to reach all categories of sex workers or focus on a smaller number of places? Our results show that it is not necessary to consider a comprehensive typology of sex work or to dilute programmatic efforts by trying to cover all places of sex work. Instead a programmatic focus on a small number of places, for example: streets, lodges, and brothels, will not only reach the large majority of FSWs but will reach most FSWs multiple times.

NACO (2007) recommends using the primary place where clients are solicited for sex in considering a particular typology of sex work. Our study of mobile FSWs shows that less than half of FSWs mentioned only one place for soliciting clients, which means that more than half used at least two places to solicit clients. Furthermore, our study findings show that streets are the most common place for soliciting clients but lodges and homes are the two most common places for engaging in sex. For example, consistent with previous research studies in India, our study also found that 60% of mobile FSWs across the study states use streets for solicitation of clients (NACO, 2007; Ramesh et al., 2010). The current study supplements this information by documenting that approximately one-fourth of FSWs mentioned streets as exclusive places for solicitation of clients and an additional two-fifths reported streets in combination with other places for solicitation. Moreover, streets were reported as one of the most common places to solicit clients in all four states. These findings corroborate the results of previous studies, which indicate that 56% of FSWs in southern India solicited clients in open spaces, mostly streets and highways (Indian Council of Medical Research & Family Health International, 2009). However, with changing technology, the large majority of FSWs are contacting clients through cell phones, which has replaced the need for middle men such as pimps and other facilitators (Buzdugan et al., 2010) and less use of open spaces (Saggurti et al., 2011). The changing typology of sex work combined with mobility of FSWs can be deemed as one of the main programmatic challenges to HIV prevention work with this population, as it becomes difficult to contact, follow-up, or treat FSWs under any program ambit (Verma et al., 2010).

Our study identifies lodge-based and home-based FSWs as the two most common categories based on place of engaging in sex. To reach sex workers who solicit clients on the phone and are highly mobile, place of engaging in sex adds an important dimension to the typology of female sex work. For example, the extension of programmatic interventions to lodges will be important in all states because it is the most common place for
engaging in sex as well as solicitation of sex, especially among FSWs who use multiple places for sex work. Our study shows that close to one half of FSWs used multiple places to solicit clients as well as for sex, and FSWs use on an average two places for solicitation and sex. While home-based sex workers are difficult to reach with programmatic interventions, interventions focused on streets, lodges, and brothels would reach most of these FSWs; only a small percentage of FSWs (4%), who use homes exclusively as a place to solicit sex, would be difficult to reach with these interventions.

Our study documenting state-level variations in the typology and the extent and nature of female sex work reaffirm the need to consider the local context in designing programmatic interventions for FSWs (Saggurti et al., 2011). The use of cell phones as an important means to solicit clients, especially in Andhra Pradesh and Karnataka, indicates the importance of finding ways to reach FSWs with preventive messages through this emerging mode of communication. While a focus on brothel-based FSWs can pay dividends in Maharashtra, such a focus in the other three study states is likely to miss most FSWs because brothels are not among the most common places reported either for soliciting clients or engaging in sex in these states. In Andhra Pradesh and Tamil Nadu, home-based solicitation is not as important as home-based sex; street-based solicitation of clients is the most common category in these states. When considering place of sex as the basis of the typology, lodges are among the most common places for engaging in sex in all four states. These results suggest the need to initiate interventions in lodges across the states for the promotion of safe sex practices.

The need to establish mutually exclusive categories of sex work is important for research and analyses, especially when using multivariate analysis. We have shown how one can address this issue by undertaking two separate multivariate analyses: one using multiple versus single places as an independent or dependent variable, and another using type of sex work among FSWs who use only one place for solicitation as an independent variable. Using multiple regression analysis, our study findings show that a higher proportion of FSWs in Andhra Pradesh and Karnataka used multiple places to solicit clients than in the other two study states; they were also at higher risk of acquiring and transmitting HIV than those who used only one place to solicit clients. Furthermore, inconsistent condom use among street-based FSWs in Karnataka and Maharashtra was significantly higher than among those who used brothels to solicit clients.

For all four states together, the variation in inconsistent condom use by type of sex work among those who used only one place to solicit clients was not found to be statistically significant because of the relationship between the typology of sex work and state of residence. It is only in Karnataka and Maharashtra that a significant proportion of FSWs exclusively used either streets or brothels for soliciting clients. In these two states, a statistically significant relationship was found between inconsistent condom use and type
of sex work. Inconsistent condom use among street-based FSWs was higher than among those who used brothels to solicit clients. Strengthened intervention focus is required among FSWs who solicit clients either in the street or in the places where they have sex, such as lodges. Further, the lack of program exposure was positively associated with multiple places for solicitation of clients. Those FSWs who were not exposed to the program were more likely to use multiple places for soliciting clients, and were also more likely to use condoms inconsistently in sex with clients than others. Interventions need to be strengthened to reach FSWs who use multiple places for solicitation, so that their HIV risk can be reduced.

Although the findings of this analysis based on empirical evidence from the typology of female sex work and its linkages with HIV risk have important programmatic implications, they must be interpreted with caution because the study population included only mobile FSWs and did not cover nonmobile FSWs. It is possible that the inclusion of nonmobile FSWs may change the degree of fluidity as well as the relative importance of each category, especially because the brothel-based category is likely to be higher among nonmobile FSWs than mobile FSWs. However, the inclusion of nonmobile FSWs is unlikely to change the basic typology of female sex work and the validity of the findings, as most FSWs are concentrated in four categories: street-based, brothel-based, home-based, and lodge-based. Another limitation of this study is that the extent and nature of fluidity were assessed from multiple spontaneous responses regarding the common places for soliciting clients and engaging in sex. A better way to measure the extent of fluidity in future research and programs would perhaps be to ask two questions on each place; that is, the primary place and the secondary place for soliciting clients and engaging in sex.

Further research studies in this area should explore the links between state-level differences in the way sex work is organized (in terms of the typology and the extent and nature of fluidity), state-level differences in the way FSWs perceive their own risk of acquiring HIV, and state-level differences in the stage of the HIV epidemic. Future research should also explore the ever-changing locations used by sex workers and their implications for HIV prevention work in India. Research is also needed to confirm the increasing use of cell phones by FSWs for solicitation of clients and their higher chances of unsafe sex behaviors irrespective of their primary place of solicitation. The current study results, however, point to the fact that most FSWs who solicit clients using cell phones are likely to have sexual activity in lodges. If program coverage is extended to lodges, a greater proportion of FSWs who solicit clients using cell phones can be covered.

All these findings suggest that programmatic interventions focused on street-, lodge-, and brothel-based FSWs are likely to cover more than 90% of FSWs, and most of them multiple times. However, the nature of the interventions would need to differ by state and typology of sex work. The difference
in the nature of sex work between the states would also have important implications for the effectiveness of ongoing HIV prevention interventions.

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