

Profile of Female Sex Workers in a Chinese County: Does It Differ by Where They Came from and Where They Work?

Xiaoyi Fang, PhD, Beijing Normal University Institute of Developmental Psychology, Beijing, China

Xiaoming Li, PhD, The Carman and Ann Adams Department of Pediatrics Prevention Research Center, Wayne State University, Detroit, MI, USA

Hongmei Yang, PhD, The Carman and Ann Adams Department of Pediatrics Prevention Research Center, Wayne State University, Detroit, MI, USA

Yan Hong, PhD, Johns Hopkins University School of Public Health, Baltimore, MD, USA

Ran Zhao, PhD, Beijing Normal University Institute of Developmental Psychology, Beijing, China

Baiqing Dong, MD, Guangxi Center for Disease Control and Prevention, Guangxi, China

Wei Liu, MD, Guangxi Center for Disease Control and Prevention, Guangxi, China

Yuejiao Zhou, MD, Guangxi Center for Disease Control and Prevention, Guangxi, China

Shaoling Liang, MD, Guangxi Center for Disease Control and Prevention, Guangxi, China

Bonita Stanton, MD, The Carman and Ann Adams Department of Pediatrics Prevention Research Center, Wayne State University, Detroit, MI, USA

Correspondence: Xiaoming Li, PhD, Prevention Research Center, The Carman and Ann Adams Department of Pediatrics, Wayne State University School of Medicine, 4201 St. Antoine Street, UHC 6-D, Detroit, MI 48201, Tel: 313-745-8663, Fax: 313-745-4993, Email: xiaoming_li@wayne.edu

Abstract

Since the 1980s, informal or clandestine sex work in the service or entertainment industry has spread from municipalities to small towns in most areas of China. Despite recognition of the important role of female sex workers in HIV and STD epidemics in China, limited data are available regarding their individual characteristics and the social and environmental context of their work. Furthermore, most existing studies on commercial sex in China have been conducted in large cities or tourist attractions. Using data from 454 female sex workers in a rural Chinese county, the current study was designed to explore the individual profiles of commercial sex workers and to examine whether the profile and sexual risk behaviour differ by where the female sex workers came from and where they work. The sample in the current study was different from previous studies in a number of key individual characteristics. However, similarly to previous studies, the subjects in the current study were driven into commercial sex by poverty or limited employment opportunities, lived a stressful life, were subject to sexual harassment and related violence, and engaged in a number of health-compromising behaviours including behaviours that put them at risk of HIV/STD infection and depression. The findings of the current study underscore the urgent need for effective HIV/STD prevention, intervention and mental health promotion programs among female sex workers in China. The data in the current study suggest a strong association of individual profile with the economic conditions of work sites and residence status (in-province residency vs. out-of-province residency), which suggests that such efforts must take the social and cultural contextual factors of working environment (and sexual risks) into consideration.

Introduction

The current official estimate of numbers of persons infected with HIV in China exceeds 650,000 (China Ministry of Health 2006). While the number of infected individuals may be relatively small in a country with a population of 1.3 billion, the sharp increase in the prevalence of infection (e.g., over 30% annually) indicates a serious and rapidly deteriorating state of the HIV/AIDS epidemic in China. About two thirds of infections were in individuals 20 to 39 years of age, with a male predominance. Although intravenous drug use and paid blood/plasma donation have been the major sources of infection, it is estimated that 31% of the seropositive cases in China were sexually transmitted (20% heterosexually and 11% homosexually) (Yang et al. 2005b). The resurgence of wide-scale commercial sex since the 1980s has now accelerated to a nationwide dilemma. Commercial sex has long been considered a reservoir, if not a "vector" for transmission of sexual diseases (Asthana and Oostvogels 1995; Davis 1993; Ford and Koetsawang 1991; Karim et al. 1995). Despite recognition of the important role of female sex workers in China's HIV and STD epidemics, limited data are available regarding their individual characteristics and the social and environmental context of their work, which have been shown to be closely related to HIV/STD risk behaviours for women (Logan et al. 2002).

Prostitution in mainland China was declared eradicated in the early 1950s. Since the 1980s, it has emerged as a flourishing industry, a consequence of more political and economic freedom, increased disposable income and liberalized attitudes (Gil et al. 1996; Liao et al. 1996). While the actual number of female sex workers in China is unknown, the number of women engaging in commercial sex in mainland China has been estimated at between 4 and 10 million (Yang et al. 2005b; Huang et al. 2004). Since the 1980s, informal or clandestine sex work in the service or entertainment industry has spread from municipalities to small towns in remote areas in China (Hershatter 1996; Pan 1999).

Recent research addressing women, sex and HIV suggests that most existing HIV/STD behavioural prevention and intervention efforts do not sufficiently consider the range of important contextual and social factors that influence women's sexual behaviours (Kerrigan et al. 2003; Logan et al. 2002; Morisky et al. 2002; Morisky et al. 2006). Studies on female sex workers in China and in other parts of Southeast Asia indicate that the characteristics, knowledge and awareness of HIV, and health behaviours of female sex workers vary by geographic location and work site (Ford et al.

1995; Wirawan et al. 1995; Morisky et al. 2002). The existing literature also suggests an insufficient understanding of female sex workers in more remote Chinese counties and smaller metropolitan or rural areas (as opposed to big cities or tourist spots), especially regarding the women's individual and family characteristics, sexual experience and history of sex work, working and living environment, and health behaviours. While entertainment establishments where these women work vary substantially in the context of working and living (Yang et al. 2005c), little is known about whether the profiles of female sex workers (e.g., demographic characteristics, sexual experience and HIV-related risk behaviours) also differ by the type of working environment.

Therefore, the current study was designed to explore the profiles of Chinese women who provide sex services through entertainment establishments (e.g., restaurants, hotels and hair-salons) in three geographic locations with different levels of economic development and socio-cultural characteristics in a multi-ethnic rural county in China. Our goal was to identify important environmental and individual factors associated with HIV/STD-related sexual risk in order to develop effective HIV/STD prevention programs in these settings. Specifically, this study was designed to (1) explore the profile of the study sample in terms of individual characteristics, sexual experience and history of sex work, working environment and other health behaviours and mental health indicators, and (2) examine whether the profile and sexual risk behaviour differ by where the female sex workers come from (i.e., in-province residency vs. out-of-province residency) and where they work.

Methods

Study Site

The data in the current study were drawn from the baseline assessment of a longitudinal HIV/STD prevention project (Li et al. in press). The project was conducted in H County, a suburban county in Nanning, the capital city of Guangxi Zhuang Autonomous Region ("Guangxi"). Guangxi, one of China's five autonomous and multi-ethnic regions, is located in the southern part of the country. It is bordered by Guangdong Province on the east, the Gulf of Tonkin on the south and Vietnam on the southwest. Because of its central location in southwest China, Guangxi has historically been a transport hub for trade, commerce and tourism in southwest China and South East Asia. Guangxi has a population of 46.8 million, of which 72% are rural residents. The average annual per capita income in 2001 was 6,666 RMB (approximately 800 US dollars) for urban dwellers and 2,321 RMB (approximately 280 US dollars) for rural residents (Guangxi Bureau of Statistics, 2004).

Guangxi has witnessed an alarming rise in HIV prevalence in the past decade. A total of 8,602 HIV infected cases have been officially reported as of the end of 2003, with an estimated number of infected cases as high as 80,000 (Guangxi CDC, 2004). Guangxi ranks third among Chinese provinces in terms of reported seropositive cases. Similarly to the national epidemic, the majority of infected cases are from rural areas. The prosperous economy, international contact and tourism in Guangxi have created a demand and market for commercial sex. According to the statistics from the public security agency, there are at least 50,000 female sex workers in Guangxi, although the actual number is believed to be substantially higher (Liu et al. 2002). Female sex workers provide sexual service primarily through three venues in Guangxi: (1) hotels, restaurants, nightclubs, karaoke bars, dancing halls and other entertainment establishments, (2) barbershops, hair-washing rooms, saunas and massage parlours, and (3) roadside food stalls in rural-urban junctions (Liu et al. 2002).

H County, about 90 kilometres northeast from Nanning, is the most populous county in the Nanning suburban area. H County has jurisdiction over 22 townships with a total population of 1.1 million (94.5% are rural residents). Similarly to other areas of China, residents in H County are roughly divided into "urban" (county seats and towns) and "rural" (villages or rural centres). The population in H County consists of 23 ethnic groups, with the majority of residents being Han (60%) and Zhuang (37%). Zhuang is one of the 55 ethnic minorities in China. The Zhuang ethnic group, concentrated in southwest China, shares a culture similar to that of the Han, China's ethnic majority (92% of the nation's population). Zhuang people have their own dialects but can

also speak the country's official language, Mandarin. Besides its proximity to Nanning, H County is the biggest production and distribution centre for jasmine and jasmine tea in China. The official number of drug users here was 1,976 in 2003. This number has been increasing at a rate of 15% per year. The actual number of drug users is estimated by the county health department to be about 8,000, of which 70% share needles. The reported HIV prevalence among drug users was 20% in 2000 and 25% in 2002. It is estimated that there are about 200 entertainment establishments with more than 2,000 women offering sexual services in the county. The majority of these women are working in restaurants, barbershops and hair-washing rooms.

Sampling and Participants

Participants in the current study were recruited from restaurants, barbershops and hair-washing rooms in three geographic locations in H County: the county seat, a recently established economic development zone in rural–urban junction and one rural township. The county seat has an area of 15 square kilometres with a population of 100,000. The economic zone, about 10 kilometres from the county seat, is an area approximately 5 square kilometres in size. This zone was established in the late 1990s and has more than 100 small factories. The development zone and surrounding areas have a population of 90,000. The rural township is 35 kilometres from the county seat and has a population of 35,000. The workplace (mainly restaurants, hair salons, hair-washing rooms and massage parlours) was employed as the sampling unit. We used ethnographic targeted sampling (Carlson et al. 1994) to identify and recruit participants. First, the research team and local health workers conducted an ethnographic-mapping of establishments that provide sexual services. Ethnographic mapping identified these establishments with information from local healthcare providers (e.g., STD clinicians, obstetricians and gynecologists), taxi drivers, public security agencies, local business owners and residents. The mapping team collected data on the name and address of the establishment, estimated number of sex workers, operation history and contact information of the owner/manager. A total of 85 establishments were identified in the three targeted areas (53 in the county seat, 12 in the development zone and 20 in the township) with an estimated number of greater than 800 female sex workers in these establishments.

Upon completion of the ethnographic mapping, we contacted the owners/managers of these establishments for permission to conduct the study on their premises. Among the 85 establishments, 57 (67%) agreed to participate. After receiving permission from the owner/manager, local outreach workers (mainly health workers from the county anti-epidemic station or local hospitals) approached the women in the establishments who were identified by the owner/manager as female sex workers. Once the women confirmed their sex worker status, outreach workers explained the purpose, procedure, potential benefits and potential risks of the study and invited the women to participate. Women who expressed interest in the study were provided with an informed consent form and were assured of confidentiality and privacy. Of 581 women approached in the 57 workplaces, 454 (78%) agreed to participate and provided appropriate informed consent.

Survey Procedure

Each woman who provided appropriate informed consent was assigned a unique personal code number and given a self-administered questionnaire entitled "Health Survey for Women in the Service Sectors." The questionnaire contains four main components: Demographic information, living and working conditions, health behaviours with sexual experience and history of sex work, and HIV/AIDS-related knowledge and attitudes. The questionnaire takes 45–60 minutes to complete. It was extensively pilot tested in two waves among 22 women (7 in wave one and 15 in wave two) to ensure the appropriateness of content and language for the study population. Participants completed the questionnaire in a separate room or a private space and recorded the unique personal code number on the questionnaire. No other person (e.g., co-worker, employer, or customer) was allowed to stay with the participant during the survey, except for a trained interviewer who could provide assistance if needed. For participants with limited literacy (about 10%), the interviewer read

each question and response options aloud from the interviewer's copy of the questionnaire, while participants marked the response on their own copy (to ensure that the interviewer would not see their answers).

Most of the outreach workers and interviewers were healthcare workers from the county anti-epidemic station and local hospitals. They were carefully chosen and rigorously trained (and re-trained) on survey procedures and confidentiality issues and were asked to sign a pledge to protect participants' privacy and confidentiality. The study protocol was approved by the Institutional Review Boards at Wayne State University in the United States and Beijing Normal University and Guangxi Autonomous Region Centers for Disease Control and Prevention in China.

Measures

Individual and family characteristics. Participants were asked to provide information regarding their demographic characteristics, including age, year of formal schooling; ethnicity (Han, Zhuang, other); place of home residence (Guangxi vs. non-Guangxi); type of hometown (rural village, small town/county seat, small/medium city, major city); marital status (single without boyfriend, single with boyfriend or ever married); whether the participant had a child; living arrangements in H County, including living alone, with family member/relative (husband, child, boyfriend, parents, sibling, other relatives) or with other female sex workers; and workplaces, including restaurants and other dining services ("Restaurant") and barbershops, hair-washing rooms, message parlours and saunas ("Hair salon").

Sexual experience and history of sex work. Information collected on the participant's sexual experience included age of sexual onset, length of time being a sex worker, history of pregnancy and abortion, partner of first sexual intercourse (customer, boyfriend, husband, friend or other acquaintance, other), occupation prior to being a sex worker (student, peasant, migrant worker, unemployed, other); family members who knew that she was a sex worker and the reasons for being a sex worker.

Working environment. We assessed the contextual factors of working environment using a number of questions: monthly income (in Chinese currency Yuan), time interval between change of workplace (less than 3 months, every 3 to 6 months, every 6 to 12 month, more than 12 months, never changed), money management (e.g., giving most to parents, managed by husband or boyfriend, saved by self, spent most), number of sex workers in the current workplace, experience with law enforcement (e.g., was arrested, was fined, was sent to the Women's Education Centre), who were most of her clients (businessmen from other places, migrant workers, local peasants, local town residents).

Sexual behaviour and HIV-related risk. Participants were asked about the average number of clients per week, maximum number of clients per day, number of their stable sexual partners (including long-term customers), being raped or forced to have sex in the last 6 months, having had a "sugar-daddy" (i.e., a rich man) in the last 6 months, exchanging sex for drugs, sex under the influence of alcohol and sex with clients during menstruation. Participants were also asked about their sex acts with clients, including group sex, oral sex and anal sex (yes/no), and any use of protective measures with clients and stable partners in recent sexual encounters (e.g., last month). Participants were also asked about their personal history of STD infection.

Substance use/abuse and mental health indicators. Other health behaviours in the previous 6 months that were assessed included daily smoking (yes/no), alcohol intoxication (yes/no), illegal drug use (yes/no) and injection drug use (yes/no). Mental health indicators included life satisfaction, suicidal thoughts and actual suicide attempts in the previous 6 months (yes/no), psychological worries, attitudes toward sex work and plans for the future. Life satisfaction was measured using 2 items (i.e., satisfaction with work and satisfaction with life) with a 5-point scale (1 = very unsatisfied to 5 = very satisfied). Participants were asked to indicate what they worried about most in their daily life from a list of 8 items: being known as a sex worker by family/relatives, being abused by customers, not making enough money, getting pregnant, being raped or robbed, getting an STD,

getting HIV/AIDS and being arrested by the police. Participants' attitudes toward sex work were measured by 4 items: "The only difference in making money is an easy or hard way, but there is no right or wrong way," "To me sex work is the same as any other job," "If I had a choice, I would not be a sex worker," "If I have been a sex worker once, it will be very difficult for me to do anything else," and "It does not make any difference if you do sex work just for one day or for your whole life." Future plans included having both a short-term plan for her work (do it for a few more years, has no plan currently, wants to change to other job immediately) and a long-term plan (to have her own business, to get married and/or have a child).

Statistical Analysis

Chi-square (for categorical variables) and ANOVA (for continuous variables) were employed to assess the group differences in individual and family characteristics, sexual experience and history of sex work, working conditions, substance use/abuse and mental health indicators. All statistical analyses were performed using SPSS V11.5 for Windows.

Results

Demographic characteristics

The final sample of 454 women were recruited from 34 restaurant-type establishments ($n = 380$) and 23 hair salons, hair-washing rooms or massage parlours ($n = 74$) in three geographic locations (243 or 54% from the county seat, 131 or 29% from the development zone and 80 or 18% from the township). Participants had a mean age of 23.50 years ($SD = 5.09$) and an average of 5.69 years of formal schooling ($SD = 3.30$); about 70% were younger than 25 years of age (Table 1). More than one half of the women had finished no more than 6 years of formal schooling, and only 7% had more than 9 years of school. About one half of the sample was of Han ethnicity; about one third was of Zhuang ethnicity. Other ethnicities (e.g., Jingbo, Dong) made up one seventh of the sample. Among the participants, 299 (66%) were Guangxi natives, of whom 49 (16%) were H County residents. Eighty percent of participants had grown up in rural villages, and 13% had grown up in the county seat. Sixty percent of the sample was never married, with one fourth currently having a boyfriend/fiancée. A small proportion were divorced ($n = 20$). Among H County participants, 77% were living with other female sex workers, 14% were living alone and 12% with family members (child, husband, parents and sibling), boyfriend or relatives. Although nearly 40% had children, including 92% ($n = 166$) of married participants and 2% of single ($n = 6$), only a small fraction ($n = 2$) had their children with them in H County.

As shown in Table 1, the sample differed significantly by working location in a number of demographic characteristics. Compared with women working in the county seat or development zone, more women in the township were younger than 23 years of age (56%), had no more than 6 years of formal schooling (74%), were from an ethnic minority (61%), were Guangxi natives (68%) and rural residents (95%). More women in the township (93%) than their counterparts in the county seat (72%) or development zone (77%) currently lived with other female sex workers ($p < .0001$).

Compared to Guangxi natives, non-Guangxi residents were older (26.95 vs. 21.76, $p < .0001$), had more years of formal schooling (6.62 vs. 5.23, $p < .0001$), were of Han ethnicity (96% vs. 34%, $p < .0001$), were less likely to be rural residents (73% vs. 83%, $p < .001$), were married (72% vs. 24%, $p < .0001$) and had more children (72% vs. 22%, $p < .0001$). Living arrangements in H County were similar between Guangxi residents and non-residents, with about three fourths living with other female sex workers.

Sexual Experience and History of Sex Worker

Sex debut. The age of sexual debut for the entire sample was 18.62 years (Table 2). Age of sexual onset ranged from 13 to 27 years, with the majority (85%) having had sex before 20 years of age.

About 4% had had sex between 13 and 15 years of age. While the age of sexual onset was similar across the work location, Guangxi residents were younger than non-residents at the time of first sexual intercourse (18.10 vs. 19.64, $p < .0001$).

Table 1. Demographic characteristics of 454 female sex workers in Guangxi, China

	Work Location				Residence Status	
	Overall	City	Zone	Town	Guangxi	Non-Guangxi
<i>N</i> (%)	454 (100%)	243 (54%)	131 (29%)	80 (18%)	299 (66%)	155 (34%)
Mean age	23.50 ± 5.09	23.36 ± 4.69	24.08 ± 5.62	22.99 ± 5.34	21.76 ± 4.04	26.95 ± 5.23****
Age group ≤22	234 (52%)	125 (51%)	64 (49%)	45 (56%)	192 (62%)	40 (27%)****
Schooling						
0–6 years	260 (58%)	127 (53%)	74 (58%)	59 (74%)*	187 (63%)	71 (48%)**
7–9 years	158 (35%)	96 (40%)	46 (36%)	16 (20%)	96 (32%)	61 (41%)
>10 years	32 (7%)	19 (8%)	8 (6%)	5 (6%)	15 (5%)	17 (11%)
Mean schooling	5.69 ± 3.30	6.12 ± 3.33	5.81 ± 2.97	4.19 ± 3.34****	5.23 ± 3.36	6.62 ± 3.00****
Ethnicity						
Han	243 (55%)	130 (54%)	82 (66%)	31 (39%)**	99 (34%)	145 (96%)****
Zhuang	142 (32%)	81 (34%)	32 (26%)	29 (37%)	138 (47%)	2 (1%)
Other	61 (14%)	31 (13%)	11 (9%)	19 (24%)	57 (19%)	4 (3%)
Residence						
Guangxi	299 (66%)	180 (74%)	65 (50%)	54 (68%)****	299 (100%)	n/a
County	49 (11%)	28 (12%)	16 (12%)	5 (6%)	49 (16%)	n/a
Type of Hometown						
Rural	351 (80%)	178 (74%)	97 (80%)	76 (95%)**	243 (83%)	105 (73%)***
County seat	59 (13%)	39 (16%)	16 (13%)	4 (5%)	40 (14%)	19 (13%)
Small/medium city	19 (4%)	13 (5%)	6 (5%)	0	5 (2%)	13 (9%)
Major city	12 (3%)	10 (4%)	2 (2%)	0	5 (2%)	7 (5%)
Marital Status						
Single without boyfriend	161 (36%)	85 (35%)	42 (32%)	34 (43%)***	131 (44%)	28 (19%)****
Single with boyfriend	110 (24%)	76 (31%)	23 (18%)	11 (14%)	95(32%)	14 (9%)
Married	181 (40%)	81 (34%)	65 (50%)	35 (44%)	71 (24%)	109 (72%)
Have Children	173 (39%)	75 (31%)	66 (53%)	32 (40%)****	64 (22%)	108 (72%)****
Living Arrangements						
Alone	63 (14%)	36 (15%)	23 (18%)	5 (6%)**	41 (14%)	22 (22%)

Table 1. Continued

With other sex workers	350 (77%)	175 (72%)	101 (77%)	74 (93%)*	229 (77%)	118 (78%)
With family member	53 (12%)	39 (16%)	12 (9%)	2 (3%)*	37 (12%)	16 (11%)
Husband	7 (4%)	5 (6%)	2 (3%)	0	6 (9%)	1 (1%)
Child	2 (<.5%)	0	2 (2%)	0	2 (1%)	0
Boyfriend	27 (6%)	20 (8%)	6 (5%)	1 (1%)	17 (6%)	10 (7%)
Parents	4 (1%)	2 (1%)	2 (2%)	0	3 (1%)	1 (1%)
Sibling	13 (3%)	8 (3%)	5 (4%)	0	11 (4%)	2 (1%)
Relatives	7 (2%)	5 (2%)	1 (1%)	1 (1%)	4 (1%)	3 (2%)
Workplace						
Restaurant	380 (84%)	169 (70%)	131 (100%)	80 (100%)*	250 (84%)	126 (83%)
Hair salon	74 (16%)	74 (31%)	0	0	49 (16%)	25 (17%)

* $p < .05$. ** $p < .01$. *** $p < .001$. **** $p < .0001$.

Length of sex work. Overall, participants had a history of being a sex worker for just over 1 year (Table 2). Women in the township and Guangxi residents reported a shorter history of sex work than their counterparts in other locations ($p < .001$) or from other provinces ($p < .001$).

History of pregnancy and abortion. Sixty-three percent of the women reported having had at least one pregnancy in the past; of these 30% reported one pregnancy, 19% reported two, 8% reported three, and 6% reported more than three. Among those with at least one pregnancy, about three fourths reported having had at least one abortion. While the history of pregnancy was similar across work locations, women in the county seat tended to have a higher rate of abortion (55%) than those in the development zone (48%) or township (36%). Compared to their Guangxi counterparts, non-Guangxi residents had substantially higher rates of pregnancy (83% vs. 53%, $p < .0001$) and abortion (62% vs. 44%, $p < .0001$).

First sexual partners. Forty-five percent of participants reported that their first sexual intercourse was with their boyfriends, 32% with their husband, 16% with clients and 7% with friends or other people. While more women in the county seat had their first sexual intercourse with boyfriends, more women in the development zone and township had first sex with their husbands. More Guangxi residents than their non-Guangxi counterparts had their first sexual intercourse with clients (20% vs. 7%) or boyfriends (56% vs. 25%), while non-Guangxi residents had first sex with their husbands (64% vs. 16%).

Prior occupation. About 40% of the women were peasants before they entered into commercial sex work and an equal number were migrant workers (41%). One tenth had no job before and 5% were school students. Distribution of prior occupation was significantly different across work location ($p < .0001$), with more women in the township being peasants (78%) and more in the county seat being migrant workers (51%). More Guangxi residents were migrant workers (46%) than non-Guangxi residents (29%), while more non-Guangxi residents than Guangxi natives were peasants (46% vs. 39%) or jobless (15% vs. 8%).

Secrecy of their work. The majority of the sample (89%) had kept the nature of their commercial sex work secret from family members. Only 5% thought their parents knew about it; 8% thought their sibling knew about it and less than 1% thought their boyfriend or fiancée knew about it. Among those who were married, only five (3%) thought husbands knew. Such patterns were similar across work location and province of residency, except that women who thought their husbands knew about their sex work were all Guangxi residents.

Table 2. Sexual experience and history of sex work

	Work Location				Residence Status	
	Overall	City	Zone	Town	Guangxi	Non-Guangxi
Age of sexual onset	18.62 ± 2.11	18.73 ± 2.20	18.47 ± 2.09	18.54 ± 1.87	18.10 ± 1.90	19.64 ± 2.14****
Time being a sex worker (months)	12.18 ± 12.16	12.39 ± 11.78	14.35 ± 14.30	8.06 ± 7.94***	10.88 ± 11.62	14.86 ± 12.92***
At least 1 pregnancy	286 (63%)	160 (60%)	83 (64%)	43 (54%)	159 (53%)	125 (83%)
At least 1 abortion	218 (50%)	132 (55%)	57 (48%)	29 (36%)*	127 (44%)	89 (62%)
Partner of First Sex						
Client	71 (16%)	37 (15%)	22 (17%)	12 (16%)**	60 (20%)	11 (7%)****
Boyfriend	205 (45%)	132 (54%)	45 (35%)	28 (35%)	165 (50%)	37 (25%)
Husband ^a	144 (32%)	59 (24%)	52 (40%)	33 (41%)	47 (16%)	96 (64%)
Friend	24 (5%)	13 (5%)	6 (5%)	5 (6%)	21 (7%)	3 (2%)
Other	8 (2%)	2 (1%)	4 (3%)	2 (3%)	4 (1%)	4 (3%)
Prior Occupation						
Student	22 (5%)	8 (3%)	12 (9%)	2 (3%)****	16 (5%)	6 (4%)****
Peasant	186 (41%)	73 (30%)	51 (39%)	62 (78%)	115 (39%)	70 (46%)
Migrant worker	183 (41%)	122 (51%)	49 (38%)	12 (15%)	136 (46%)	44 (29%)
No job	46 (10%)	30 (12%)	13 (10%)	3 (4%)	23 (8%)	23 (15%)
Other	14 (3%)	8 (3%)	5 (4%)	1 (1%)	6 (2%)	8 (5%)
Family Member Who Knows You Are a Sex Worker						
Nobody	402 (89%)	214 (88%)	12 (92%)	67 (84%)	264 (88%)	135 (89%)
Parents	21 (5%)	8 (3%)	6 (5%)	7 (9%)	18 (6%)	3 (2%)
Sibling	35 (8%)	21 (9%)	6 (5%)	8 (10%)	20 (7%)	14 (9%)
Boyfriend or fiancée	5 (1%)	5 (2%)	0	0	5 (2%)	0 (0%)
Husband ^a	5 (3%)	2 (3%)	2 (3%)	1 (3%)	5 (7%)	0 (0%)*
Reasons for Being a Sex Worker						
Quick/easy money	24 (5%)	13 (5%)	7 (5%)	4 (5%)	22 (7%)	2 (1%)*
Easy/pleasant job	27 (6%)	6 (3%)	14 (11%)	7 (9%)*	19 (6%)	8 (5%)
No better job	185 (41%)	77 (32%)	68 (52%)	40 (50%)****	117 (39%)	64 (42%)
Influenced by others	67 (15%)	21 (9%)	25 (19%)	21 (26%)****	44 (15%)	22 (15%)
Marriage failure	37 (8%)	22 (9%)	13 (10%)	2 (3%)	21 (7%)	16 (11%)
Revenge on men	10 (2%)	4 (2%)	5 (4%)	1 (1%)	7 (2%)	2 (1%)
Deceived/forced	24 (5%)	17 (7%)	7 (5%)	0	18 (6%)	6 (4%)

Table 2. Continued

Family financial difficulty	295 (65%)	162 (67%)	74 (57%)	59 (74%)*	197 (66%)	97 (65%)
Other	13 (3%)	7 (3%)	3 (2%)	3 (4%)	11 (4%)	2 (1%)

^a Percentages were based on the numbers of female sex workers who were married.

* $p < .05$. ** $p < .01$. *** $p < .001$. **** $p < .0001$.

Reasons for engaging in commercial sex. Most women selected family financial hardship as a major reason to engage in commercial sex (65%). This percentage was consistent between Guangxi and non-Guangxi residents (66% vs. 65%). While it remained the most-selected reason across all three work locations, more women in the township (74%) than in the county seat (67%) and development zone (57%) selected this reason ($p < .05$). The other top reasons included inability to find a better job (41%) and influence of their friends or fellow villagers (15%). More women in the development zone (52%) and township (50%) than in the county seat (32%) thought the inability to find a better job was one of the reasons they engaged in commercial sex. Likewise, more women in the township (26%) than in the development zone (19%) or county seat (9%) said that they were influenced by their friends or fellow villagers.

Contextual Factors of Their Working

Size of workplace. As shown in Table 3, there were about 16.39 ($SD = 9.77$) female sex workers in each workplace, with an average of 15.43 ($SD = 7.96$) in the county seat, 20.65 in the development zone and 12.56 ($SD = 4.99$) in the township ($p < .0001$). The mode of number of female sex workers was 2–5 for the county seat (26%), 21–50 for the development zone (43%) and 11–15 for the township (38%, $p < .0001$). The number of female sex workers in the workplace did not differ between the Guangxi and non-Guangxi residents.

Income. Overall, average monthly income was 576 Yuan (about 70 US dollars), with 696 Yuan (85 US dollars) for women in the county seat, 419 (approximately 50 US dollars) in the development zone, and 468 (55 US dollars) in the township ($p < .0001$). About one half of the women made no more than 400 Yuan (50 US dollars) monthly, while only 2% of the women made between 2,000 to 4,000 Yuan (250 to 500 US dollars).

Frequency of changing workplace. About 15% of the women typically stayed in any workplace for less than 3 months, 10% stayed from 3 to 6 months, 27% stayed from 6 to 12 months and 48% stayed longer than 1 year. About one half of the women (52%) in the county seat or development zone stayed in one workplace longer than 12 months, while only 29% of women in the township stayed in one place for more than 12 months ($p < .0001$). Compared with Guangxi residents, more non-Guangxi residents stayed in one workplace for more than 12 months (59% vs. 43%, $p < .0001$).

Money Management. In terms of money management, about one quarter of the women said they sent most of their income to their parents; 42% saved the money for themselves; 28% spent most of the money. Only about 5% said they gave most to their husband or boyfriend. More women in the county seat (29%) or the township (26%) than in the development zone (16%) gave most of their money to their parents, while more women in the development zone (50%) saved money for themselves than women in the county seat (41%) or township (31%). Money management practices differed significantly between Guangxi and non-Guangxi residents, with more residents giving money to their parents (33% vs. 9%) and more non-residents saving the money for themselves (62% vs. 32%, $p < .0001$).

Experience with the law. Only a small proportion of women had experienced any problem with the law or law enforcement agencies because of involvement in commercial sex: 4% ($n = 19$) had been arrested, 3% ($n = 12$) fined, and less than 1% ($n = 3$) sent to women's education centres. While the numbers are not sufficient to examine differences across work locations and provinces of

residency, it is interesting to note that all 3 women sent to women's education centres were working in the county seat and all were Guangxi natives.

Table 3. Working environment

	Work Location				Residence Status	
	Overall	City	Zone	Town	Guangxi	Non-Guangxi
# of sex workers in your place	16.39 ± 9.77	15.43 ± 10.99	20.65 ± 7.96	12.56 ± 4.99****	16.09 ± 9.37	16.91 ± 0.42
Median monthly income (Yuan)	400	500	400	375		
How Often Do You Change Workplace						
<3 m	68 (15%)	40 (17%)	16 (12%)	12 (15%)****	54 (18%)	14 (9%)**
3–6 m	46 (10%)	27 (11%)	12 (9%)	7 (9%)	33 (11%)	12 (8%)
6–12 m	121 (27%)	49 (20%)	34 (26%)	38 (48%)	84 (28%)	35 (23%)
>12 m	126 (28%)	63 (26%)	46 (35%)	17 (21%)	69 (23%)	56 (37%)
Never	91 (20%)	63 (26%)	22 (17%)	6 (8%)	58 (20%)	33 (22%)
Money Management						
Parents	112 (25%)	70 (29%)	21 (16%)	21 (26%)*	97 (33%)	13 (9%)****
Husband or boyfriend	12 (5%)	5 (2%)	3 (2%)	4 (5%)	9 (3%)	3 (2%)
Self	189 (42%)	99 (41%)	65 (50%)	25 (31%)	96 (32%)	93 (62%)
Spent most	125 (28%)	64 (26%)	37 (28%)	24 (30%)	90 (30%)	33 (22%)
Other	15 (3%)	4 (2%)	5 (4%)	6 (8%)	6 (2%)	9 (6%)
Experience with Law						
Was arrested	19 (4%)	11 (5%)	6 (5%)	2 (3%)	16 (5%)	3 (2%)
Was fined	12 (3%)	8 (3%)	3 (2%)	1 (1%)	7 (2%)	5 (3%)
Was incarcerated	3 (1%)	3 (1%)	0	0	3 (1%)	0
Who Are Most of Your clients						
Businessmen from other places	120 (26%)	88 (36%)	19 (15%)	13 (16%)****	88 (29%)	32 (21%)
Migrant workers in H County	66 (15%)	43 (18%)	15 (12%)	8 (10%)	51 (17%)	14 (9%)*
Local peasants	99 (22%)	35 (14%)	37 (28%)	27 (34%)****	74 (25%)	25 (17%)*
Local urban residents	277 (61%)	138 (57%)	85 (65%)	54 (68%)	176 (59%)	98 (65%)
Other	54 (11%)	37 (15%)	10 (8%)	4 (5%)*	33 (11%)	18 (12%)

* $p < .05$. ** $p < .01$. *** $p < .001$. **** $p < .0001$.

Identity of clients. Most women (61%) identified local urban residents as their primary clients, followed by businessmen from other places (26%), local peasants (22%) and migrant workers in H

County (15%). Local urban residents were the primary clients for both Guangxi and non-Guangxi women and for women in various work locations. However, more women in the county seat (36%) than women in the development zone (15%) or township (16%) provided services to businessmen from other places ($p < .0001$). In contrast, more women in the township (34%) or development zone (28%) than women in the county seat (14%) provided services to local peasants ($p < .0001$). More Guangxi women than non-Guangxi women provided services to migrant workers (17% vs. 9%) and local peasants (25% vs. 17%, $p < .05$).

Sexual Behaviours and HIV-Related Risk

Stable partnership. As shown in Table 4, on average the sample had 1.29 stable sexual partners (husband, fiancé, boyfriend, lover or long-term client) and the number of stable sexual partners was similar across work locations. About 8% of participants reported a sexual relationship with a “sugar-daddy” (a rich man) in the previous 6 months, with more women reporting this in the county seat (11%) than in the development zone (3%) or township (5%) ($p < .05$). The rates of having a sugar daddy were similar by province of residency (Guangxi vs. non-Guangxi).

Number of clients. The women reported an average of 2 clients ($SD = 1.75$) per week (range of .25 to 14 clients), with 2.40 clients ($SD = 2.18$) among women in the county seat, 1.41 ($SD = .78$) in the development zone and 1.65 ($SD = .73$) in the township. About one half of the women had 1 client per week and about one fifth had 3 or more clients per week. Guangxi natives reported more clients per week than non-Guangxi residents (2.13 vs. 1.73, $p < .05$). The maximum number of clients per day averaged 1.25 ($SD = .60$) for the entire sample (range of 1 to 5). While the number was similar between Guangxi and non-Guangxi residents, women in the county seat reported a higher number of clients (1.34) than those in the development zone (1.08) or township (1.20).

Sexual coercion. About 15% of the sample reported being raped or forced to have sex during the previous 6 months, with more women in the county seat (20%) than those in the development zone (13%) or township (5%) reporting such experiences ($p < .01$). Rates of being raped or forced to have sex were similar by province of residency (Guangxi vs. non-Guangxi).

Sex acts. Only a small proportion of women had performed group sex with their clients (4%), with more women in the county seat (7%) than in the development zone (2%) or the township (0%) doing so. Similarly, only about 2% reported oral sex or anal sex with their clients. More Guangxi than non-Guangxi residents reported group sex, oral sex or anal sex, although none of the differences reached statistical significance.

Protective measures with clients. Male condom use and douching after intercourse were the protective measures that two thirds of the women used with their clients during the previous month, followed by oral contraception pills (14%), intrauterine devices (IUD) (13%), withdrawal (12%) and rhythm method (11%). While male condom use and douching were the two most common preventive measures among women across work locations, more women in the county seat (78%) than in the development zone (45%) or township (55%) reported any use of condoms ($p < .0001$). While more women in the county seat (14%) than those in the development zone (9%) or township (4%) used the rhythm method ($p < .05$), more women in the development zone (23%) than in the county seat (8%) or township (13%) used an IUD ($p < .0001$). More women from Guangxi than those from other provinces used oral contraceptives (16% vs. 9%, $p < .05$), condoms (69% vs. 56%, $p < .05$), douching (68% vs. 58%, $p < .05$) or the rhythm method (14% vs. 3%, $p < .0001$). In contrast, more non-Guangxi than Guangxi women used an IUD (29% vs. 5%, $p < .0001$).

Protective measures with stable partners. Among those women who had stable partners ($n = 309$), douching remained the most-used preventive measure (62%) with their stable partners, followed by female condom (42%), oral contraceptives (17%), withdrawal (16%) and the rhythm method (16%). More women in the township (82%) than in the county seat (56%) or development zone (65%) used douching with their stable partners ($p < .01$), while more women in the county seat (20%) than in the development zone (14%) or township (4%) used the rhythm method with their stable partners ($p < .05$). More Guangxi women with stable partners than their non-Guangxi

Table 4. Sexual behaviors of Chinese female sex workers

	Work Location				Residence Status	
	Overall	City	Zone	Town	Guangxi	Non-Guangxi
# of stable partners	1.29 ± .58	1.31 ± .59	1.30 ± .64	1.16 ± .42	1.33 ± .65	1.22 ± .47
Had a sugar-daddy in last 6 months	34 (8%)	26 (11%)	4 (3%)	4 (5%)*	26 (9%)	7 (5%)
Average # of clients per week	2.00 ± 1.75	2.40 ± 2.18	1.41 ± .78	1.65 ± .73****	2.13 ± 1.78	1.79 ± 1.67*
Maximum clients per day	1.25 ± .60	1.34 ± .72	1.08 ± .27	1.20 ± .54****	1.28 ± .64	1.17 ± .52
Being raped in last 6 months	70 (15%)	49 (20%)	17 (13%)	4 (5%)**	49 (16%)	20 (30%)
Sex Acts						
Double	12 (3%)	11 (5%)	1 (1%)	0*	9 (3%)	3 (2%)
Group	6 (1%)	5 (2%)	1 (1%)	0	4 (1%)	1 (1%)
Oral Sex	9 (2%)	6 (3%)	2 (2%)	1 (1%)	8 (3%)	1 (1%)
Anal sex	9 (2%)	6 (3%)	3 (2%)	0	7 (2%)	2 (1%)
Protective Measure with Clients Last Month						
Pills	62 (14%)	36 (15%)	17 (13%)	9 (11%)	48 (16%)	14 (9%)*
Condom	292 (65%)	190 (78%)	58 (45%)	44 (55%)****	204 (69%)	85 (56%)*
Douching	293 (65%)	152 (63%)	87 (67%)	54 (68%)	203 (68%)	88 (58%)*
Withdrawal	54 (12%)	22 (9%)	19 (15%)	13 (16%)	41 (14%)	13 (9%)
Rhythm method	48 (11%)	34 (14%)	11 (9%)	3 (4%)*	43 (14%)	5 (3%)****
IUD	59 (13%)	19 (8%)	30 (23%)	10 (13%)****	16 (5%)	43 (29%)****
Nothing	24 (5%)	7 (3%)	10 (8%)	7 (9%)*	38 (20%)	13 (11%)*
Mean income (100 Yuan)	5.76 ± 5.23	6.96 ± 6.45	4.19 ± 2.39	4.68 ± 3.23****	6.08 ± 5.68	5.11 ± 4.19
Protective Measure with Partner						
Pills	51 (17%)	33 (19%)	16 (17%)	2 (4%)	38 (20%)	13 (11%)*
Condom	128 (42%)	80 (47%)	34 (37%)	14 (31%)	80 (43%)	46 (39%)
Douching	191 (62%)	95 (56%)	60 (65%)	36 (80%)**	120 (64%)	71 (60%)
Withdrawal	50 (16%)	27 (16%)	14 (15%)	9 (20%)	35 (19%)	15 (13%)
Rhythm Method	49 (16%)	34 (20%)	13 (14%)	2 (4%)*	41 (22%)	8 (7%)****
IUD	59 (19%)	26 (15%)	24 (26%)	9 (20%)	15 (8%)	44 (37%)****
Other Sexual Risks						
Exchanged sex for drugs	2 (<.5%)	2 (1%)	0	0	2 (1%)	0
Sex with alcohol	133 (29%)	71 (29%)	41 (32%)	21 (26%)	96 (32%)	34 (23%)
Sex during menstruation	30 (7%)	19 (8%)	7 (6%)	4 (5%)	24 (8%)	6 (4%)
Ever had an STD	88 (19%)	55 (23%)	26 (20%)	7 (9%)*	61 (20%)	25 (17%)

* $p < .05$. ** $p < .01$. *** $p < .001$. **** $p < .0001$.

counterparts used pills (20% vs. 11%, $p < .05$) or the rhythm method (22% vs. 7%, $p < .0001$).

Other sexual risks. Two women reported exchanging sex for drugs. Both were working in the county seat and were Guangxi residents. About 29% of women reported having had sex under the influence of alcohol. The percentage was similar across work locations, with more Guangxi residents doing so than non-Guangxi residents (32% vs. 23%, $p < .05$). About 7% of women reported having sex with clients during menstruation. The percentage was similar across work locations and between Guangxi and non-Guangxi residents. About one fifth of the sample reported a history of STDs; this was higher among women in the county seat (23%) and the development zone (20%) than in the township (7%).

Substance Use/Abuse and Mental Health Indicators

Substance use/abuse. As shown in Table 5, 15% of the women had been daily smokers during the previous month, and the rate of daily smoking was similar across work locations. One third reported being intoxicated with alcohol at least once during the previous month. More women in the county seat (36%) and development zone (39%) than in the township (14%) reported such an experience ($p < .0001$). Both daily smoking and alcohol intoxication were higher among Guangxi than non-Guangxi women (18% vs. 11%, $p < .05$ for daily smoking; 37% vs. 24%, $p < .01$ for intoxication). Two percent had used illicit drugs and 1% had used intravenous drugs during the previous 6 months.

Lifelwork satisfaction. Only a small proportion of the women were satisfied with their work (4%) or their life (8%). Guangxi women tended to be more satisfied with their life or work than non-Guangxi women, and women in the township tended to be more satisfied than other women. However, none of the differences reached statistical significance.

Suicidal thoughts and suicidal attempts. About 14% of the women reported thoughts about suicide during the previous 6 months, and the rate was similar between Guangxi and non-Guangxi women. About 8% of the sample had actually attempted suicide during the previous 6 months, with more Guangxi (10%) than non-Guangxi women (6%) having made such attempts. More women in the county seat tended to have suicidal thoughts and suicide attempts than other women, although the difference was only significant for suicide attempts ($p < .05$).

Psychological worries. The top five issues the women worried about most during their daily life were STD infection (75%), HIV infection (58%), family awareness of the nature of their work (56%), getting pregnant (44%) and being arrested by the police (37%). In general, more women in the county seat worried about these issues than other women, particularly about HIV infection ($p < .0001$), family awareness of their work ($p < .05$) and being arrested. ($p < .01$). In addition, more women in the county seat (18%) and the development zone (13%) than in the township (4%) worried about being raped and robbed ($p < .01$). There was no statistically significant difference between Guangxi women and non-Guangxi women on issues of worry, except that more Guangxi (53%) than non-Guangxi women worried about getting pregnant ($p < .0001$).

Attitudes toward sex work. The majority of the women (81%) thought that they would not be sex workers if they had other choices. About one fourth viewed sex work as just another job. More than one third believed that once they had been a sex worker, it would be very difficult for them to do something else. About one fifth agreed that being a sex worker for 1 day is the same as being a sex worker all the time. Such views and attitudes were similar across work locations and between Guangxi and non-Guangxi residents, except that more Guangxi women (41%) than non-Guangxi women (29%) believed it would be very difficult for them to do something else in the future ($p < .01$).

Future personal plans. About 62% of participants said they currently had no plans at all regarding their future. About 30% would like to find another type of job immediately, with about 8% planning to continue in this line of work for a few more years. This pattern of response was consistent across work locations and province of residency.

Regarding long-term plans, nearly one half of the women would like their own business in the future. More women in the county seat (53%) and development zone (48%) than in the township (25%) planned to do so ($p < .05$). Likewise, more non-Guangxi women (53%) than Guangxi

Table 5. Other health behaviors and mental health indicators

	Work Locations				Residence Status	
	Overall	City	Zone	Town	Guangxi	Non-Guangxi
Substance Use/abuse						
Daily smoking last 6 m	70 (15%)	39 (16%)	22 (17%)	9 (11%)	53 (18%)	16 (11%)*
Alcohol intoxication last 6 m	149 (33%)	87 (36%)	51 (39%)	11 (14%)*	111 (37%)	36 (24%)**
Illegal drug use last 6 m	10 (2%)	3 (1%)	6 (5%)	1 (1%)	5 (2%)	5 (3%)
IDU last 6 m	4 (1%)	2 (1%)	2 (2%)	0	3 (1%)	1 (1%)
Mental Health Indicators						
Satisfaction with work	19 (4%)	9 (4%)	6 (5%)	4 (5%)	17 (6%)	2 (1%)
Satisfaction with life	34 (8%)	15 (6%)	11 (8%)	8 (10%)	30 (10%)	4 (3%)
Suicidal thoughts last 6 m	60 (14%)	42 (17%)	16 (12%)	7 (9%)	42 (14%)	23 (15%)
Suicide attempts last 6 m	38 (8%)	29 (12%)	5 (4%)	4 (5%)*	29 (10%)	9 (6%)
Issues Worried Most						
Be known by family as a sex worker	253 (56%)	148 (61%)	72 (55%)	33 (42%)*	163 (55%)	87 (58%)
Abused by clients	121 (27%)	67 (28%)	39 (30%)	15 (19%)	86 (29%)	35 (23%)
Cannot make enough money	89 (20%)	49 (20%)	29 (22%)	11 (14%)	66 (22%)	23 (15%)
Get pregnant	198 (44%)	116 (48%)	50 (38%)	32 (41%)	157 (53%)	40 (27%)*
Be raped and robbed	64 (14%)	44 (18%)	17 (13%)	3 (4%)*	46 (15%)	18 (12%)
Get STD	338 (75%)	188 (77%)	91 (70%)	59 (75%)	226 (76%)	110 (73%)
GET HIV/AIDS	262 (58%)	160 (66%)	69 (53%)	33 (42%)*	173 (58%)	87 (58%)
Be arrested by police	166 (37%)	97 (40%)	53 (41%)	16 (20%)*	117 (39%)	49 (33%)
Attitudes Toward Sex Work (Agree)						
Sex work is the same as other work	119 (26%)	68 (28%)	31 (24%)	20 (25%)	85 (29%)	31 (21%)
I would not be one if I had choice	368 (81%)	200 (82%)	105 (81%)	63 (79%)	241 (81%)	124 (83%)
Difficult to do something else	167 (37%)	87 (36%)	50 (39%)	30 (38%)	123 (41%)	43 (29%)*
One day is the same as all the time	86 (19%)	48 (20%)	18 (14%)	20 (25%)	59 (20%)	27 (18%)
Current Plan ($p = .000$)						
A few more years of sex work	34 (8%)	13 (5%)	9 (7%)	12 (15%)	24 (8%)	10 (7%)
No plan	282 (62%)	148 (61%)	73 (56%)	61 (76%)	192 (64%)	87 (58%)
Change job immediately	136 (30%)	81 (34%)	48 (37%)	7 (9%)	82 (28%)	53 (35%)
Future Plans						
Have my own business	209 (46%)	127 (53%)	62 (48%)	20 (25%)*	128 (43%)	80 (53%)*
Get married or have child	278 (62%)	158 (66%)	70 (56%)	50 (63%)	207 (70%)	68 (46%)*

Table 5. Continued

Unmarried	216 (80%)	122 (76%)	52 (81%)	42 (93%)*	182 (81%)	31 (74%)
Married	60 (34%)	35 (44%)	17 (28%)	8 (23%)*	23 (33%)	37 (35%)

* $p < .05$. ** $p < .01$. *** $p < .001$. **** $p < .0001$.

women (43%) planned to own a business in the future ($p < .05$). Among those who were unmarried, about 80% would like to get married and have children. Among married women, one third would like to have (more) children in the future. More unmarried women in the township (93%) than in the county seat (76%) or development zone (81%) wanted to get married ($p < .05$), while more married women in the county seat (44%) than in the development zone (28%) or township (23%) wanted to have children ($p < .05$).

Discussion

This descriptive study provides data on individual profiles of women providing sexual services in a multi-ethnic area in China. The profiles were examined for differences across work locations and between Guangxi residents (in-province residents) and those who migrated to Guangxi from other provinces (out-of-province residents). Work location was employed in the current study to represent local economic conditions, as the township represents a less economically developed rural setting and the county seat is the political, economic and cultural centre of the county. Data in the current study suggest a strong association between the individual profiles of female sex workers with the economic conditions of work sites and residence status (in-province residency vs. out-of-province residency).

The sample of female sex workers in this study is different in a number of key demographic characteristics and sexual practices from those of female sex workers in studies conducted in other economically advantaged regions of China. First, this sample was multi-ethnic, with a mixture of Han majority (55%), Zhuang minority (32%) and other minorities (14%). Most previous studies in other regions of China were conducted among women of predominately Han majority, ranging from 92.8% (Rogers et al. 2002) to 96.7% (Lau et al. 2002). Second, women in the current study were less educated, with more than 50% of women having finished no more than 6 years of formal schooling (or elementary school), compared with 13% in Beijing (Rogers et al. 2002) and 32% in Guangzhou (Lau 2002).

The difference in ethnicity and education across different work locations in the current study also followed the same trend of studies in Guangxi and other economically advantaged provinces/regions, with more women of Han ethnicity and with relatively better education tending to work in locations with better economic conditions. These differences between female sex workers in the current study and those in studies conducted in major metropolitan areas (e.g., Beijing) or economically booming provinces or regions (e.g., Guangdong, Shenzhen and Hainan) provide further support to the association of local economic conditions with demographic characteristics and their HIV-related risks among female sex workers.

Third, the sample in the current study had fewer numbers of clients than those of female sex workers in other economically booming regions. Fourth, women in the current study reported lower income (80% earned ≤ 75 US dollars per month) than female sex workers in other regions (Rogers et al. 2002; van den Hoek et al. 2001) and other bigger cities in Guangxi (Qu et al. 2002). Fifth, most women in the current study were Guangxi natives (66%), while in studies conducted in other regions of China, most female sex workers were young out-of-province migrants.

Despite their young age, short personal history of sex work and relatively low number of clients, the sample of female sex workers in the current study faces a significant risk of HIV/STD infection and transmission. The self-reported history of STD infection was similar to that in more economically advantaged regions such as Shenzhen (15%, Lau et al. 2002). The proportion of women who had never used a condom with their clients during the previous month was similar to that reported

in other studies (Yang et al. 2005a). Similarly, condom use with stable partners was low among this population. In addition, most women in the current study reported concurrent multiple sexual partners in a mixture of commercial and non-commercial partners.

Researchers in both China and international communities have been concerned about the “bridging effect” of female sex workers in the rapid spread of HIV from a high-risk population (e.g., intravenous drug users [IDU]) to the general population in China (Yang et al. 2005a). One aspect of the bridging effect is the mixture of commercial sex and illicit drug use among female sex workers. However, rates of illicit drug use, particularly the rate of IDU, was low among this population. Although drug use was locally prevalent in Guangxi (Hammett et al. 2003), very few women reported exchanging sex for drugs. One of the reasons for this low rate of drug use among female sex workers may be because they were relatively new to sex work. In addition, a small number of women in the current study reported having anal sex. This finding is consistent with previous studies in which the rate of anal sex among Chinese female sex workers was about 1% (van den Hoek et al. 2001; Qu et al. 2002). The low rates of illicit drug use (including IDU) and other high-risk sexual behaviour (e.g., anal sex) among female sex workers present a window of opportunity for early prevention efforts among this population.

There are potential limitations in the current study. First, the sample was recruited through convenience sampling rather than random sampling. Because commercial sex is technically illegal in China, a random sampling is not feasible. Therefore, caution is needed in generalizing the findings from this study to other female sex worker populations. However, the fact that our sample is comparable to other Guangxi-based studies (e.g., Qu et al. 2002) in a number of key demographic characteristics (e.g., age, ethnicity, education and residence status) provides evidence of the representative nature of our sample. Second, the current sample is multi-ethnic, and while the proportion of ethnic minorities mirrored the ethnic composition of the Guangxi population, the sample limited the ability of these findings to be generalized to other regions where other ethnic groups (e.g., Han) predominate in the population. Third, because the current study was not designed to examine the personal profile of female sex workers, some important information (e.g., family socioeconomic status) was not collected due to space limitations of the survey instrument.

The findings in the current study have some important public health implications. First, there is an urgent need for effective prevention and intervention programs targeting this new but rapidly growing female sex worker population, particularly in remote, rural areas. Given the relatively low education, low income and young age of this population, empowerment and alternative employment/education opportunities should be part of the intervention efforts. Similarly, mental health promotion is needed among this population to increase their adaptive coping strategies with their stressful lives. Second, the associations between local socioeconomic conditions and HIV risk behaviours among female sex workers suggest that HIV/STD intervention efforts among female sex workers must be appropriate for (and responsive to) local cultural and economic conditions and must take the social and cultural contextual factors of their working environment (and sexual risks) into consideration.

Global literature indicates that HIV prevention should go beyond the individual level and incorporate environmental and structural factors (Latkin and Knowlton, 2005; Logan et al. 2002; Morisky et al. 2005; Parker et al. 2000). Our study, as the first step toward a better understanding of these environmental and structural factors, suggests the need for multi-faceted strategies targeting groups of sex workers based on their differing individual characteristics, including demographic background, sexual practices and work conditions. Future studies with rigorous research methodology are needed to focus on environmental factors (e.g., partners, gatekeepers, workplace, community and culture) and structural factors (e.g., policy, healthcare system, law enforcement and legislature) associated with female sex workers' HIV risks. Furthermore, these studies should explore or evaluate ways to utilize these factors in designing and implementing effective and culturally appropriate HIV/STD interventions among female sex workers. Intervention programs may be more effective if efforts at multiple levels (e.g., individual, family, community, environmental and structural) can be imple-

mented synergistically across multiple contexts of risk factors (Pequegnat and Stover 2000; Morisky et al. 2006).

Acknowledgements

This project is supported by a grant from the NIH Office of AIDS Research (R01MH064878-3S1) to Xiaoming Li, PhD. The authors want to thank other research team members from the China CDC Center for AIDS/STD Control (Hui Liu), China CDC Resources Center for STD Prevention and Treatment (Guojun Liang, Ping Yang, Xiaohong Su), Guangxi Zhouang Autonomous Region CDC (Wei Lu, Dongmei Huang, Weijian Lu, Qinghua Chen, Linzhen Guo), H County Anti-epidemic Station (Canjian Lu, Feng Chen, Qinghua Lei, Zutiab Lu, Zilong Meng, Jiancheng Zhou, Yan Nong, Biwei Wei, Li Ma, Huang Ling), Beijing Normal University (Danhua Lin and Linyuan Zeng), Wayne State University Pediatric Prevention Research Center (Jiantong Guo, Hongjie Liu, Xinguang Chen). The authors also want to thank Joanne Zwemer for assistance in preparing the manuscript.

References

- Asthana, S. and R. Oostvogels. 1995. "Community Participation in HIV Prevention: Problems and Prospects for Community-Based Strategies among Female Sex Workers in Madras." *Social Science and Medicine* 43(2): 133–48.
- Carlson, R.B., J. Wang, H.A. Siegal, R.S. Falck and J. Guo. 1994. "An Ethnographic Approach to Targeted Sampling: Problems and Solutions in AIDS Prevention Research among Injection Drug and Crack-Cocaine Users." *Human Organization* 53(3): 279–86.
- China Ministry of Health, UNAIDS and WHO. 2006. *2005 Update on the HIV/AIDS Epidemic and Response in China*. Chinese Center for Disease Control and Prevention (China CDC): Beijing.
- Davis, N. 1993. *Prostitution: An International Handbook on Trends, Problems, and Policies*. London: Greenwood Press.
- Ford, N. and S. Koetsawang. 1991. "The Sociocultural Context of the Transmission of HIV in Thailand." *Social Sciences and Medicine* 33: 405–14.
- Ford, K., D.N. Wirawan and P. Fajans. 1995. "AIDS Knowledge, Risk Behaviors, and Condom Use among Four Groups of Female Sex Workers in Bali, Indonesia." *Journal of AIDS and Human Retrovirology* 10: 569–76.
- Gil, V.E., M.S. Wang, A.F. Anderson, G.M. Lin and Z.O. Wu. 1996. "Prostitutes, Prostitution and STD/HIV Transmission in Mainland China." *Social Science Medicine* 42: 141–52.
- Guangxi Bureau of Statistics. 2004. *Guangxi Social and Economic Development Statistics*. Available at www.gxi.gov.cn/gxzw/dzjg.
- Guangxi CDC. 2004. Guangxi HIV/AIDS Sentinel Surveillance Report in 2003. In *China CDC & National Sentinel Surveillance Group, ed. National HIV/AIDS Surveillance* (pp. 221–24). Beijing, China, 2004.
- Hammitt, T.M., D.C. Des Jarlais, W. Liu, D. Ngu, N.D. Tung, T.V. Hoang et al. 2003. "Development and Implementation of a Cross-Border HIV Prevention Intervention for Injection Drug Users in Ning Ming County (Guangxi Province), China and Lang Son Province, Vietnam." *International Journal of Drug Policy* 14, 389–98.
- Hearshatter, G. 1996. Sexing modern China. In G. Hershatter, E. Honig and J. Lipman (Eds.), *Remapping China-Fissures in Historical Terrain* (pp.77–96). California: Stanford University Press.
- Huang, Y., G.E. Henderson, S. Pan S. and M.S. Cohen. 2004. "HIV/AIDS Risk among Brothel-Based Female Sex Workers in China: Assessing the Terms, Content, and Knowledge of Sex Work." *STD* 31(11): 695–700.
- Karim, Q.A., S.S. Karim, K. Soldan and M. Zondi. 1995. "Reducing the Risk of HIV Infection among South African Sex Workers: Socio-Economic and Gender Barriers." *American Journal of Public Health*, 85(11): 1521–25.
- Kerrigan, D., J.M. Ellen, L. Moreno, S. Rosario, J. Katz, D.D. Celentano and M. Sweat. 2003. "Environmental-Structural Factors Significantly Associated with Consistent Condom Use Among Female Sex Workers in the Dominican Republic." *17*: 415–23.
- Latkin, C.A. and A.R. Knowlton. 2005. "Micro-Social Structural Approaches to HIV Prevention: A Social Ecological Perspective." *AIDS Care* 17: S102–S113.
- Lau, J.T., H.Y. Tsui, P.C. Siah and K.L. Zhang. 2002. "A Study on Female Sex Workers in Southern China (Shenzhen): HIV-Related Knowledge, Condom Use and STD History." *AIDS Care* 14: 219–33.

- Li, X., B. Wang, X. Fang, R. Zhou, B. Stanton, Y. Hong et al. in press. "Short Term Effect of a Cultural Adaptation of Voluntary Counseling and Testing Among Female Sex Workers in China: A Quasi-Experimental Trial." *AIDS Education and Prevention*.
- Liao, S., J. Schensul and I. Wolffers. 2003. "Sex Related Health Risks and Implications for Interventions with Hospitality Women in Hainan, China." *AIDS Education and Prevention* 15: 109–21.
- Liu, W., J. Chen, Q. Dai, Z. Qin, S. Liang, Y. Li et al. 2002. *Assessing population mobility and HIV vulnerability, Guangxi, People's Republic of China*. Bangkok, Thailand: The United Nations Development Programme South East Asia HIV and Development Project.
- Logan, T.K., J. Cole and C. Leukefeld. 2002. "Women, Sex and HIV: Social and Contextual Factors, Meta-Analysis of Published Intervention, and Implications for Practice and Research." *Psychology Bulletin* 128(6): 851–85.
- Morisky, D.E., C. Chiao, J.A. Stein and R. Malow. 2005. "Impact of Social and Structural Influence Interventions on Condom Use and Sexual Transmitted Infections among Establishment-Based Female Bar Workers in Philippines." *Journal of Psychology and Human Sexuality* 17: 45–63.
- Morisky, D.E., M. Pena, T.V. Tiglaio and K.Y. Liu. 2002. "The Impact of the Work Environment on Condom Use among Female Bar Workers in the Philippines." *Health Education & Behavior* 29(4): 461–72.
- Morisky, D.E., J.A. Stein, C. Chiao, K. Skosbiech and R. Malow. 2006. "Impact of Social Influence Interventions on Condom Use and Sexual Transmitted Infections among Establishment-Based Female Bar Workers in the Philippines: A Multilevel Analysis." *Health Psychology* 25(5): 595–603.
- Parker, R.G., D. Easton and C.H. Klein. 2000. "Structural Barriers and Facilitators in HIV Prevention: A Review of International Research." *AIDS* 14: S22–S32.
- Pan, S.M. 1999. *Reality and Absurdity – Underground Sex Industry in China*. Beijing: Qun Yan Publishing House.
- Pequegnat, W. and E. Stover. 2000. "Behavioral Prevention Is Today's AIDS Vaccine!" *AIDS* 14: S1–7.
- Qu, S., W. Liu, K. Choi, R. Li, D. Jiang, Y. Zhou et al. 2002. "The Potential for Rapid Sexual Transmission of HIV in China: Sexually Transmitted Diseases and Condom Failure Highly Prevalent among Female Sex Workers." *AIDS and Behavior* 6: 267–75.
- Rogers, S.J., L. Ying, Y.T. Xin, K. Fung, J. and J. Kaufman. 2002. "Reaching and Identifying the STD/HIV Risk of Sex Workers in Beijing." *AIDS Education and Prevention* 14: 217–27.
- van den Hoek, A., F. Yuliang, N.H. Dukers, C. Zhiheng, F. Jiangting, Z. Lina, Z et al. 2001. "High Prevalence of Syphilis and Other Sexually Transmitted Diseases among Sex Workers in China: Potential for Fast Spread of HIV." *AIDS* 15: 753–59.
- Wirawan, D.N., P. Fajans and K. Ford. 1995. "AIDS and STDs: Risk Behavior Patterns among Sex Workers in Bali, Indonesia." *AIDS Care* 5(3): 291–305.
- Yang, H., X. Li, B. Stanton, X. Fang, D. Lin, R. Mao et al. 2005a. "HIV-Related Risk Factors Associated with Commercial Sex among Female Migrants in China." *Health Care for Women International* 26: 134–48.
- Yang, H., X. Li, B. Stanton, H. Liu, X. Fang, D. Lin et al. 2005b. "Heterosexual Transmission of HIV in China: A Systematic Review of Behavioral Studies in Last Two Decades." *Sexually Transmitted Diseases* 32(5): 270–80.
- Yang, H., X. Li, B. Stanton, X. Fang, D. Lin, R. Mao et al. 2005c. "Workplace and HIV/STD Risk Behavior and Perceptions among Female Migrant Workers in China." *AIDS Care* 17(7): 819–33.