

*Full Length Research Paper*

# Investigation and analysis of the related knowledge, attitude and behavior on AIDS of the FSWs in Jiangsu Province, China

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To understand the status of related knowledge, attitude, the practical situation of behavior on AIDS of the female sex workers (FSWs) in the places of entertainment in Jiangsu Province in order to provide a more effective scientific evidence for prevention and control the prevalence of AIDS. The 867 entertainment FSWs in three cities in Jiangsu province were interviewed by the trained interviewers using the anonymous questionnaire designed by our group. The proportion knowing the three HIV transmission routes was 56.5%, the rate of condom use during the latest sexual intercourse with their regular sexual partners and customers was 57 and 77.7% respectively, there was significant difference between this two kinds of people ( $\chi^2=73.125$ ,  $P=0.000$ ) while different age groups was not significantly different ( $\chi^2=2.753$ ,  $P=0.431$ ). Results of a logistic regression analysis indicated that age, household location, whether they have regular sexual partners or not and the awareness of AIDS prevention measures were associated with condom use during the latest sexual intercourse. Knowledge with regard to STD/AIDS mostly come from television (69.9%), followed by friends (45.5%). When the interviewees were suspicious of developing STD/AIDS, 85.9% of them choose to seek medical treatment from public hospitals. Entertainment FSWs have a certain understanding of AIDS-related knowledge, but not comprehensive. The customers did not realize that the use of condom can prevent sexually transmitted diseases and AIDS. Raising the awareness of preventive measures is an important factor to increase the use of condom. FSWs do not use condoms with their regular partners, this will lead to the further spread of AIDS and accelerate the speed of prevalence. Further efforts should be made according to the characteristics of this group to strengthen their health education and behavioral intervention. In practice, trying to work more flexible and using a more comprehensive strategy to intervene in their behavior to control the spread and the prevalence of AIDS.

**Key words:** AIDS, female sex workers, knowledge, attitude, behavior.

## INTRODUCTION

AIDS is a worldwide problem of public health and sociology, HIV has been transmitted rapidly in China

since the first infection was found out in 1985 (Lu et al., 2008; Hayes and Weiss, 2006). The prevalence of AIDS in China has gone through the period of distribution and local transmission, and has entered the period of wide epidemic (Peng et al., 2009). The China Ministry of Health, World Health Organization (WHO) and UNAIDS cooperated to estimate the status of AIDS epidemic in

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China in 2009, and the result indicated that up to the end of October, 2009, 319877 HIV infections and AIDS cases were reported cumulatively, while the total number of HIV infections and AIDS patients was estimated as 740 thousand. The latest estimation report indicated that sexual transmission has become the primary mode of HIV transmission. Emerging 48 thousand HIV infections in 2009 was estimated, among which heterosexual transmission and male homosexual transmission accounted for 42.4 and 32.5% respectively (Ministry of Health, 2009).

FSW is a group with high risk of HIV prevalence, as well as a significant bridging group from which HIV is transmitted from high risk population to the public. Sentinel surveillance data suggest that, the average HIV infection rate among FSWs in China increased rapidly, from 0.02% in 1995 it rose to 0.93% in 2004 (Wu et al., 2007; Lu et al., 2006), but it differs a lot in different areas in the country, HIV prevalence among FSWs in some areas is over 10% (Wang et al., 2008; 2009; Chen et al., 2005). The rapid increase of HIV prevalence rate among FSWs in China is closely related to their high-risk behavior, lack of AIDS-related knowledge, and so on. Some researches indicated that most FSWs in China cannot adhere to 100% condom use (Zhao and Yu, 2001). To understand the status of related knowledge, attitude, the practical situation of behavior on AIDS of FSWs in order to provide a more effective scientific evidence for prevention and control the prevalence of AIDS and improve condom use, this study interviewed 867 entertainment FSWs in three cities in Jiangsu Province, using the anonymous questionnaire designed by our group from September to December in 2009.

## MATERIALS AND METHODS

### Investigation subjects

867 entertainment FSWs were chosen with the cooperation of relevant departments in three cities of Jiangsu Province during this investigation, which come from developed, developing, and undeveloped areas in Jiangsu, respectively.

### Investigation method

With the approval of the investigation subjects, the 867 entertainment FSWs in three cities in Jiangsu Province were interviewed one by one by trained interviewers and filled the questionnaire designed by our group confidentially. General information of the interviewees was checked by interviewers one by one, to ensure the authenticity and accuracy of provided information. Questionnaires were taken back on the spot and corrected when incompleteness, omission or disqualification was found. The questionnaire included general demographic characters, AIDS-related knowledge and ways to access, medical behavior, personal behavior and factors influencing condom use.

### Data analysis

Database was established and filled using EpiData 3.1 software,

disqualified questionnaires were excluded by logic verification. Statistical tests were performed using SPSS16.0 software, differences among rates were analyzed using  $\chi^2$  test, P value was calculated using Fisher's exact test for data which did not meet  $\chi^2$  test. Multiple factor analysis was performed using regression model.

## RESULTS

### General demographic character

867 entertainment FSWs were interviewed in this investigation, whose ages ranged from 17 to 46 (average, 27.12±5.7). Majority of FSWs have an education level of primary or junior high school. 29.3% of study subjects cohabited with boyfriend, while 30.6% are married. FSWs have a great tendency to move, 75.5% of them came from outside Jiangsu (Table 1). Interviewees who admitted providing commercial sex service had 3 clients every day (median) in the previous week, maximum was 10. Most interviewed FSWs had a more than half-a-year duration in commercial sex industry, proportions of FSWs who had been selling their sex for less than 3 months, 3 to 6 months, 6 months to a year, 1 to 2 years, more than 2 years are 9.3, 11.5, 15.8, 17.8, and 45.6%, respectively (Table 2). FSWs whose average daily income are below 100 yuan, 100 to 300 yuan, 300 to 500 yuan, 500 to 1000 yuan, over 1000 yuan account for 24.9, 33.8, 26.2, 10.4, and 4.6%, respectively.

### AIDS-related knowledge and attitude

The proportion knowing the three HIV transmission routes among the 867 interviewees was 56.5%, with an average knowing of 73.77%. Table 3 shows that shaking hands or hugging with AIDS patients does not transmit AIDS was known by the largest proportion of FSWs, which accounted for 93.08%, while bites by mosquitoes or insects with HIV does not transmit was known by 66.55%, which is the least. Moreover, sharing meals with AIDS patients together, ordinary kisses with AIDS patients and sharing toilet seats with AIDS patients does not transmit AIDS was known by 84.31, 81.78, and 88.93%, respectively. Four behaviors lead to infection, having unprotected sex with AIDS patients, transfusing blood from AIDS patients, childbirth of HIV-infected mothers and sharing syringes or needles with AIDS patients have an awareness rate of 88.35, 85.47, 69.55 and 79.70%, respectively.

### Knowledge of AIDS with regards to where it comes from

This investigation suggests that entertainment FSWs mainly get knowledge with regard to AIDS and sexually transmitted diseases (STD) from television programs (69.9%), followed by friends (45.5%) and magazines or

**Table 1.** Demographic characters of 867 female sex workers.

General information	No. of FSWs	Proportion (%)	General information	No. of FSWs	Proportion (%)
<b>Age</b>			<b>Household register</b>		
≤20	93	11.3	Local		
21~30	527	64.0	Other town in the city	146	17.3
31~40	168	20.4	Other city in the province	221	26.2
> 40	35	4.3	Other province	417	49.3
Total	823	100	Total	845	100
<b>Educational level</b>			<b>Marital status</b>		
Illiteracy	69	8.2	Single	143	17.0
Primary school	317	37.6	Seperated	138	16.4
Junior high school	346	41.1	Cohabitated	246	29.3
Senior/Vocational high school	97	11.5	Married	257	30.6
College or higher	13	1.5	Divorced	56	6.7
Total	842	100	Total	840	100

**Table 2.** Distribution of duration in commercial sex industry.

Duration in current work	Below 3 months	3 months~	6 months~	1 year~	2 years or longer	Total
No. of FSWs	77	95	131	147	377	827
Proportion (%)	9.3	11.5	15.8	17.8	45.6	100

**Table 3.** Awareness for AIDS transmission of 867 female sex workers.

AIDS transmission	No. correct	Awareness rate (%)
Sharing meals with AIDS patients (non-transmission)	731	84.31
Shaking or hugging with AIDS patients (non-transmission)	807	93.08
Ordinary kisses with AIDS patients (non-transmission)	709	81.78
Unprotected sex with AIDS patients	766	88.35
Bites by mosquitoes or insects with HIV (non-transmission)	577	66.55
Blood transfusion from AIDS infections	741	85.47
Transmit to infant by mother with HIV	603	69.55
Sharing syringes or needles with AIDS patients	691	79.70
Sharing toilet seats with AIDS patients (non-transmission)	771	88.93

books (38.9%), newspapers (37.1%), promotional materials or leaflets (28.8%), medical staff (18.2%), peer educators (14%), broadcast (12.7%), movie videos (9%) and wall papers (4.1%) (Table 4).

#### Personal high-risk behavior and condom use

Among 867 investigated FSWs, ages of sexual debut ranged from 13 to 24, average 18.13±2.17. 57 among 823 participants, which accounted for 6.93%, admitted using drugs, of these drug users, 22 were 20 or younger, 16 are older than 20 but younger than 30, 11 aged from

31 to 40, and 8 were older than 40. Different age groups have an obvious different drug abusing rate compared with others ( $\chi^2=51.622$ ,  $P=0.000$ , calculated using Fisher's exact test). Meanwhile, 721 of all interviewees had regular sexual partners, 411 of which used condoms in the latest sexual intercourse (57%). 605 among 779 who participated in the investigation reported using condoms with clients in the latest sex. There is a significant difference between the use of condom when FSWs are with regular sexual partners and guests ( $\chi^2=73.125$ ,  $P=0.000$ ). FSWs used condoms less with sexual partners than clients, which was consistent with related researches (Wong et al., 2003).

**Table 4.** Knowledge of AIDS with regards to where it comes from (multiple choices).

Approaches of information sources	Frequency	Proportion (%)	Approaches of information sources	Frequency	Proportion (%)
Newspapers	322	37.1	Peer educators	121	14.0
Television programs	606	69.9	Promotional materials or leaflets	250	28.8
Broadcast	110	12.7	Wall papers	36	4.1
Movie videos	78	9.0	Medical stuff	158	18.2
Magazines or books	337	38.9	Others	0	0
Friends	394	45.5			

**Table 5.** Proportions for FSWs in four age groups using condoms with regular sexual partners.

Age group	No. answered	Proportion (%)
20 or younger	65	50.8
21 to 30	489	56.6
31 to 40	135	62.2
Older than 40	32	53.1
Total	721	57.0

Table 5 shows that the proportions for FSWs in four age groups to use condoms with regular sexual partners are 50.8% (20 or younger), 56.6% (21 to 30), 62.6% (31 to 40), 53.1% (older than 40). FSWs in different age groups did not show obvious differences at using condoms with their sexual partners ( $\chi^2=2.753$ ,  $P=0.431$ ). Table 6 shows reasons for FSWs' not using condoms with regular sexual partners, mainly because of believing it is not necessary for their own partners (86.02%), followed by partners' unwillingness (29.79%) and having taken other contraceptive methods (25.84%), while being with clients, the major cause for not using condoms was clients' unwillingness (34.86%), excessive price (24.16%), failing to purchase (14.37%), inaccessibility around (12.54%), having taken other contraceptive methods (11.93%), self unwillingness (10.09%) and forgetting to use (7.65%). 62.79% of all condom uses with clients were proposed by FSWs, 27.29% were by both FSWs and clients and 9.91% were by guests (Table 6).

Simple logistic regression analysis for condoms use in latest sex suggests that, 10 variables, including age, household location, marital status, duration working in current career, average daily income from prostitution, age of first sex, whether have a regular sexual partner or not, recognition about STD-related symptoms, and AIDS transmission, awareness of preventive measures are convincingly related to condom use in previous sex ( $P<0.05$ ). Based on which the following variables were found statistically significant by using multivariate logistic regression analysis: age ranging from 21 to 30 (OR=0.21, 95% CI 0.08 to 0.34), 31 to 40 (OR=0.14, 95% CI 0.04 to

0.25), household registered at outside city in local province (OR=3.73, 95% CI 2.07 to 5.39), household registered at outside province (OR=2.01, 95% CI 1.13 to 2.87), whether they have a regular sexual partner or not (OR=2.12, 95% CI 1.49 to 2.75) and recognition of AIDS transmission (OR=3.81, 95% CI 2.74 to 4.89) (Table 7).

#### Medical behavior of interviewees suspecting of developing AIDS

When the interviewees were suspicious of developing STD/AIDS after unprotected sex, 85.9% of the 867 interviewees would choose to seek medical care from public hospitals, 23.7% would take treatment at clinics or hospitals nearby, 19.2% choose to take medicines home, 11% would treat themselves by purchasing medicine from pharmacies, 9.1% go to private clinics, 1.5% seek medical advice from medicine stalls, 40% would tell the situation of illness to their sexual partners or friends (Table 8).

#### DISCUSSION

It is the first time we have investigated and analyzed AIDS-related knowledge, attitude and behavior about FSWs at such a scale in Jiangsu Province. The general awareness rate of three HIV transmissions among 867 investigation subjects was 56.6%, which was higher than results of research in some areas (Lau et al., 2007), but was appreciably lower than general awareness of Shenzhen in 2007 (Liu et al., 2008; Wang et al., 2008). It can be seen that general awareness about AIDS differs slightly in different regions, which has a significant relation to local economic level, cultural environment and the implementation of intervention. Jiangsu, a relatively developed province, has an approximate AIDS morbidity of one ten thousandth, which is lower in general (Cui et al., 2010), work of publicity, education and emphasis still needs to be improved compared with provinces which have high AIDS incidence. Moreover, this group of people, which mostly come from outside cities or provinces, have a high mobility, it is long-term continuous

**Table 6.** Reasons for not using condoms in latest sex.

Reasons	No. answered	Proportion (%)	Reasons	No. answered	Proportion (%)
<b>With regular sexual partners (N=329) (multiple choices)</b>			<b>With clients (N=327) (multiple choices)</b>		
Unavailability by side	31	9.42	Inaccessibility by side	41	12.54
Excessive price	12	3.65	Self unwillingness	33	10.09
Other contraceptive methods being taken	85	25.84	Clients' unwillingness	114	34.86
Believing not necessary for partners	283	86.02	Forgetting to use	25	7.65
Partners' unwillingness	98	29.79	Failing to purchase	47	14.37
			Excessive price	79	24.16
			Other contraceptive methods being taken	39	11.93

**Table 7.** Multivariate logistic regression analysis for condom use in latest sex.

Variable	Regression coefficient	Standard error	P-Value	OR	95 % CI	
					Upper limit	Lower limit
Age group			0.001			
≤20				1		
21~30	-1.337	0.436	0.001	0.21	0.08	0.34
31~40	-2.439	0.541	0.000	0.14	0.04	0.25
Household location			0.032			
Local				1		
Outside city in local province	-1.924	0.311	0.004	3.73	2.07	5.39
Outside province	-1.014	0.307	0.012	2.01	1.13	2.87
Whether have regular sexual partners or not	1.161	0.350	0.002	2.12	1.49	2.75
Recognition of AIDS transmission	1.454	0.341	0.000	3.81	2.74	4.89

publicity and education that can make AIDS-related knowledge widespread timely and effectively.

The common sense that AIDS is not transmitted by shaking hands or by hugging AIDS patients was known by the largest proportion of FSWs, which accounted for 93.08%, while being bitten by mosquitoes or insects which have bitten AIDS patients does not transmit AIDS was known by

66.55%, the least, which indicates that entertainment FSWs have a certain but not comprehensive understanding about AIDS. This also reflects in condom usage, 57% of FSWs used condoms with sexual partners, while 77% used with clients, condom use rates have a significant difference between FSWs' having sex with sexual partners and guests ( $\chi^2=73.125$ ,  $P=0.000$ ). FSWs do not use condoms with regular

partners mainly because of the trust for each other, considering no need to use with their own sexual partners, due to the professional features of FSWs; however, not using condoms may lead to AIDS transmission to their partners and accelerate the speed of prevalence of AIDS, which also reflects both sides ignorance of FSWs' belonging to high risk people of AIDS infection and having a weak awareness of self prevention.

**Table 8.** Medical behavior of interviewees suspecting of developing AIDS (multiple choices).

Measures to take when being suspicious of developing AIDS/STD	Frequency	Proportion (%)
Seek medical care from public hospitals	745	85.9
Take treatment at clinics or hospitals nearby	205	23.7
Go to private clinics	79	9.1
Tell their sexual partners or friends	347	40.0
Seek medical advice from medicine stalls	13	1.5
Take medicines home	166	19.2
See doctors of traditional Chinese medicine	21	2.4
Purchase medicine at pharmacies	95	11.0
Others	1	0.1

While FSWs are with guests, they do not use condoms mainly because of clients' unwillingness, owing to inequality in the economic and social position, FSWs usually tend to submit to clients' will, what is more, considering the illegality of their work, lack of protection from social security and legal system, being afraid of losing guest source, FSWs usually dare not insist that guests should use condoms after already being rejected. Meanwhile, high price of condoms, failing to purchase and failing to get around also account for some proportion in reasons for not using condoms, some FSWs working in middle or low grade entertainments have a compared low income, having exclusion for using condoms and taking a chance on not being infected is understandable consequently.

Therefore, behavioral intervention for FSWs should focus on increasing their communication skills with clients, to enable FSWs to persuade clients on using condoms. Increasing condom retail stores and free condom providing in entertainments and areas of people with high mobility can also improve condom use. Simple logistic regression analysis for condom use in latest sex suggests that intervention should be more specific to make it more effective. Sharing needles among intravenous drug users is another major means of transmission for AIDS (Wang et al., 2008). 57 of the interviewed FSWs, which accounted for 6.93%, admitted abusing drug. Drug addiction rates in groups with ages of 20 or younger and older than 40 were both over 20%, apparently higher than 3% in group 21 to 30 and 6.5% in group 31 to 40. Different age groups have an obvious different drug abusing rate with others ( $\chi^2 = 51.622$ ,  $P = 0.000$ ). Owing to the young age, FSWs that are 20 or younger are more easily to be encouraged to try to use drug, which increases the risk of infection with HIV further.

Due to entertainment, FSWs' common low education levels and the similarity between education levels in groups of young and old, no significant difference was found on condom use with regular sexual partners between young and old groups by statistical test

( $\chi^2 = 2.753$ ,  $P = 0.431$ ). It is considered by most people that FSWs in young age group have advantage on accepting new things; however, limited by their poor education, young FSWs did not have better performance on recognition, attitude and prevention than their older counterparts. Moreover, FSWs' low education level affects their access to education and publicity, outside which it reminds relevant departments to take the education level of this group of people into account and make publicity materials that are illustrated and easy to understand, to increase the level of FSWs' health knowledge and condom use rate effectively.

Meanwhile, this investigation also shows that knowledge with regard to STD/AIDS of entertainment FSWs mostly come from television, followed by friends. The rate of FSWs who obtain AIDS-related knowledge from friends was slightly higher than relative reports (Cui et al., 2010; Liu et al., 2007), which indicates FSWs communicate AIDS-related knowledge with each other frequently and are willing to get information from their friends. The investigation also reflects, however, that FSWs have a simple way to acquire information, an incomplete range of knowledge and are easy to be misguided by others. Additionally, 85.9% of interviewed FSWs choose to seek medical treatment from public hospitals when being suspicious of developing AIDS, which means that the majority of FSWs take care of their own health and trust treatment provided by public hospitals. 19.2% of FSWs choose to take medicine stored at home, while using medicine according to common sense easily lead to delay in treatment and resistance of antibiotics.

In conclusion, focus of interventional work should be put on increasing and consummating health education for FSWs, AIDS-related knowledge should be popularized by more diverse methods, providing voluntary counseling and testing for target population is helpful for detecting HIV infection as soon as possible and taking effective treatments for them, preventing HIV infections transmit the virus to others in the case of unawareness. In practice, trying to work more flexible and using a more comprehensive strategy to intervene in their behavior to

control the spread and the prevalence of AIDS.

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