

Open Access

HIV/AIDS - Related Knowledge, Attitudes, and Sexual Practices among Migrant Wives in Rural Anhui Province, China

Huachun Zou¹⁴, Xin Dai², Xiaojun Meng⁵, Huadong Wang⁶, Chao Jiang⁷, Yanchun Wang⁶, Lin Zhang⁸, Yongqing Gao⁹, Song Tang¹⁰, Tan Xu^{11,12}, Wenjie Sun9,^{12*} and Yufeng Wen^{7*}

¹Melbourne Sexual Health Centre, Alfred Health, Melbourne, Australia

²School of Population and Global Health, the University of Melbourne, Melbourne, Australia

³School of Public Health and Community Medicine, the University of New South Wales, Sydney, Australia

⁴Centre for Population Health, Burnet Institute, Melbourne, Australia

⁵Wuxi Center for Disease Control and Prevention, Wuxi, China

⁶Anhui Provincial Center for Disease Control and Prevention, Hefei, China

⁷School of Public Health, Wannan Medical College, Wuhu, China

⁸Clinical Laboratory, Peking Union Medical College Hospital, Chinese Academy of Medical Sciences, Beijing, China

⁹School of Food Science, Guangdong Pharmaceutical University, Zhongshan, China

¹⁰School of Environment and Sustainability, University of Saskatchewan, SK, Canada

¹¹School of Public Health, Medical College of Soochow University, Suzhou, China

¹²School of Public Health and Tropical Medicine, Tulane

Abstract

Background: Migrant wives have been increasing in some poor rural regions of China and they may bridge HIV transmission across regions. This study aimed to assess HIV/AIDS-related knowledge, attitudes and sexual practices among this population in rural Anhui Province, China.

Methods: A cross-sectional survey was conducted with questionnaire of HIV/AIDS-related knowledge, attitudes, and sexual practices between June 2011 and May 2012. A total of 730 migrant wives and 207 local women were enrolled in this study. Unpaired T-test, Chi-square was utilized to compare the difference of HIV/AIDS knowledge, attitudes and sexual practices between migrant wives and local women.

Results: Around 80% of the migrant wives were from Yunnan, Guizhou, or Sichuan Provinces. The main sources of HIV/AIDS information were TV/radio, posters, and newspapers/periodicals. HIV/AIDS knowledge level among migrant wives was significantly lower than that among local women (e.g. 47.1% vs 57.0% (p<0.001) answered "Yes" for the question "Can an apparently healthy person be HIV-infected?"), and stigma and prejudice towards HIV/AIDS among migrant wives were more common than those among local women (e.g. 73.2% vs 65.7% (p=0.006) answered "No" for the question "If a shopkeeper or food seller had the HIV, would you buy food from them?"). Compared to local women, migrant wives were more likely to have ever had sex during menstruation (6.8% vs 3.4%, p=0.065) and extramarital sex (17.5% vs 10.1%, p=0.01), and were less likely to consistently use condoms with their husbands (45.8% vs 57.5%, p<0.001) or extramarital sex partners (48.8% vs 58.95, p<0.001).

Conclusions: Migrant wives in rural China had a low HIV/AIDS knowledge level and high prevalence of stigma and prejudice and risky sexual behaviors. Local HIV/AIDS prevention programs should target this neglected population.

Keywords: HIV/AIDS; Migrant wives; Knowledge; Attitudes; Sexual practices

Introduction

Since the first reported case of AIDS in 1985, the overall prevalence of HIV among the general population of China remains low with an estimated accumulated 780,000 people infected with HIV in China by the end of 2012 [1]. However clusters of high rates of infection exist both geographically and within specific sub-groups [1]. One group, the migrant population group, have become an important "bridge population" in the spread of the HIV/AIDS virus [2]. In 2012, there were 63 million migrant women of child-bearing age in China, accounting for 25% of all women of child-bearing age [3]. These women were mostly sexually active but had low HIV/AIDS-related knowledge. Coupled with risky sexual behaviors, this puts them at a higher potential risk for HIV transmission compared to the overall Chinese population [2].

In this paper the term "migrant wife" refers to a woman who has migrated from another province in China or an underdeveloped foreign country to marry and live with a local man in rural areas of Langxi County, Anhui Province, China [2]. The majority of Chinese migrant wives were from Yunnan, Sichuan and Guangxi [2], the most HIV-prevalent provinces in China [1]. Meanwhile, most of the foreign migrant wives were from Vietnam and Myanmar [2] where high HIV prevalence has been reported [4]. These women – also known as "migrant brides" –normally relocate from economically less developed regions to comparatively richer regions. They are mostly between 15 and 45 years old, and account for almost 0.5% of the total population in some regions [5]. Some migrant wives are former sex workers with a high probability of carrying HIV and other sexually transmitted infections [6].

*Corresponding authors: Wenjie Sun, School of Public Health and Tropical Medicine, Tulane University, LA, USA, School of Food Science, Guangdong Pharmaceutical University, Zhongshan, 1440 Canal Street, Suite 2100 New Orleans, LA 70112, China, Tel: 504-988-4223; E-mail: sunwenjie2002@hotmail.com

Yufeng Wen, School of Public Health, Wannan Medical College, Wuhu, 22 Wenchang Xi road, Wuhu, China, Tel: +86 055 3393 2059; E-mail: wyf@wnmc.edu.cn

Received April 26, 2014; Accepted June 23, 2014; Published June 30, 2014

Citation: Zou H, Dai X, Meng X, Wang H, Jiang C, et al. (2014) HIV/AIDS - Related Knowledge, Attitudes, and Sexual Practices among Migrant Wives in Rural Anhui Province, China. J AIDS Clin Res 5: 319. doi:10.4172/2155-6113.1000319

Copyright: © 2014 Zou H, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

In recent years, migrant wives have gradually captured public health attention as an increasing number of them have been detected with HIV and other STIs [2]. In rural areas of Shandong and Shanxi provinces, HIV prevalence among migrant wives was found to be 0.39% to 3.59% [7,8]. These migrant wives were usually unaware of their HIV status before they migrated to their place of marriage, with this lack of information playing a potentially very important role in the spread of HIV amongst family members. Indeed, a 2008 study in Henan Province found that seven husbands and two babies of nine HIV positive migrant wives also tested and were found to be HIV positive [9].

In China, migrant wives often lack basic health knowledge, or opportunity to receive HIV education, counseling and testing services. They are often subject to discrimination and isolation from the local population and are less exposed to social support [10]. Compared to local women, migrant wives are particularly vulnerable to the transmission of HIV. However, until now little has been known about the HIV/AIDS related knowledge, attitudes, and sexual practices among this population in rural Anhui Province, China. And yet, studies into these characteristics could be expected to play a critical role in guiding effective prevention strategies to combat the HIV epidemic among this group, and break the potential bridge of transmission to and from their spouses and family members.

Langxi County is located in the southeast of Anhui Province in eastern China. It has a population of 340,000 with GDP per capita of 28,000 RMB (\$4,650 USD). Over 50% of the population lives in rural areas. By the end of 2013, 116 HIV/AIDS cases had been reported, resulting in a HIV/AIDS prevalence rate of 0.016%. Beginning in the 1990s, there has been an increasing number of migrant wives arriving in Langxi County to marry local men and by 2013, the number of migrant wives registered in the County's Womens' Federation exceeded 1,502, or 0.44% of the County's total population. The main objective of this study is therefore to explore HIV/AIDS knowledge awareness and assess the HIV/AIDS related attitudes and practices among these migrant wives in this rural area of Anhui Province in east China.

Methods

Sample

This study was conducted in 12 rural towns in Langxi County of Anhui Province from June 2011 to May 2012. A random snow-ball sampling method was used to recruit subjects. In this study, women who were born in provinces other than Anhui Province and married to residents of Langxi County were defined as migrant wives. Eligible women were also required to be 15 to 45 years of age. To compare knowledge, attitude and behavior of HIV/AIDS between migrant wives and local people, we randomly selected local women who were neighbors of the migrant wives to act as a control group. To be eligible for participation in this control group, the local women had to be married, from the same neighborhood as the migrant wives and had to be within two years of age of their migrant neighbors.

The Institutional Ethics Board of Wannan Medical College approved this study (Approved in 2010, NO.2010011). Subjects who agreed to participate provided informed consent and answered a face-to-face questionnaire administered by trained interviewers. Investigators were medical researchers from Wannan Medical College or public health practitioners from the Anhui Provincial Center for Disease Control. They were trained in accordance with project protocols before participation in the study.

Measures

A structured questionnaire was adapted from the Family Health International HIV/AIDS Behavioral Survey[11] and the World Health Organization Research Package: Knowledge, Attitude, and Practices on AIDS (WHO 1990) [11]. The questionnaire included 46 questions from three categories: (1) socio-demographic characteristics (5 questions); (2) sources of acquired information about HIV/AIDS (13 questions); and (3) knowledge (16 questions), attitudes (8 questions), and practices (4 questions) related to HIV/AIDS (Cronbach's alpha, 0.71). Correct answers were scored 1 with wrong or "don't know" answers coded as 0. The knowledge scores were the sum total of 15 items. For the more sensitive information in the third part of the questionnaire, participants wrote their answers on answer sheets by listing only question numbers and codes for their responses. For questions on condom use, consistent condom use refers to use in every vaginal intercourse.

Statistical analysis

We used mean and corresponding standard deviation to describe the distribution of continuous variables. We used percentage and corresponding 95% confidence intervals to describe the distribution of categorical variables. The socio-demographic characteristics of the respondents were presented in terms of their distributions in the population. A chi-square test was performed to examine the differences in educational background, income, HIV-related knowledge, perceptions, and practices between migrant wives and their local counterparts. Another chi-square test was performed to examine the differences in risky sexual behaviors among women in different demographic groups. Finally, an unpaired T-test was performed to examine the differences in age and HIV/AIDS knowledge scores between the two groups. All statistical analysis was conducted using STATA 12.0 (StataCorp, Texas, US).

Results

Characteristics of participants

Women's socio-demographic characteristics are summarized in Table 1. We approached 751 (50%) migrant wives in Langxi County. 16 (2.1%) did not participate because they went to other regions to work while a further five (0.67%) refused to participate in this study. As a result 730 (97.2%) migrant wives were included of which two had been diagnosed with HIV/AIDS since 2007. Conversely, a total of 207 local women were recruited for the control group. Average ages were 28.6 ± 5.8 years for the migrant wives and 28.0 ± 6.3 years for the local women (p=0.21). Of the participants, 54% of migrant wives and 60% of the local women had either only a primary school education or were illiterate. Over 50% of the respondents in both groups did not have a steady income. There was no significant difference in age, education and income between the migrant wives and the local women. Among the migrant wives, 46.3% came from Yunnan province, 11.1% were from Guizhou province, and 8.1% came from Sichuan province.

Sources of HIV/AIDS related information

Migrant wives had less access to HIV/AIDS information compared to the local women (Table 2). Only 18.9% of migrant wives obtained information on HIV/AIDS from posters compared to 31.9% of local women (p<0.001). A significantly lower proportion of migrant wives obtained information from posters, neighbors and friends, preventive medicine staff, expert lectures, communication with family members, and village doctors compared to local women. The proportion of migrant wives who accessed HIV/AIDS information via the Internet

Page 2 of 6

Citation: Zou H, Dai X, Meng X, Wang H, Jiang C, et al. (2014) HIV/AIDS - Related Knowledge, Attitudes, and Sexual Practices among Migrant Wives in Rural Anhui Province, China. J AIDS Clin Res 5: 319. doi:10.4172/2155-6113.1000319

Characteristic	Migrant Wives (N=730) n (%)	Local women (N=207) n (%)	t/X²	<i>p</i> -value	
Age (year mean ± SD)	28.6 ± 5.8	28.0 ± 6.3	1.27	0.21	
Time since migration (year, mean ± SD)	11.0 ± 6.4				
Education					
illiterate	26 (12.6)				
Primary school	85 (41.1)	304 (41.6)	6.841.	0.07	
Junior middle school	77 (37.2)	248 (34.0)			
Senior high school and above	19 (9.2)	42 (5.8)			
Monthly income					
<500 yuan ^c	41 (19.8)	148 (20.3)		0.64	
500-1000 yuan	30 (14.5)	130 (17.8)	1.67		
>=1000 yuan	19 (9.2)	48 (6.6)			
unsteady	117 (55.5)	404 (55.3)			
Rank of current marriage ^a					
First marriage	688 (94.3)	198 (95.7)	0.62	0.431	
Second marriage	42 (5.7)	9 (4.3)			
Gynecological diseases history⁵					
Yes	256 (35.1)	62 (30.0)	1.89	0.17	
No	474 (64.9)	145 (70.0)			
Province of origin					
Yuannan	434 (46.3)				
Guizhou	104 (11.1)				
Sichuan	76 (8.1)				
Other provinces	323 (34.5)				

^aRank of current marriage: order of the current. Some women were in their first marriage and some were in their second marriage.

^bGynecological diseases history were self-reported by women. ^c6.2 yuan equals 1 US dollar at time of study.

Table 1. Socio-demographic characteristics of migrant wives in rural Anhui, China.

Resource	Ν	Migrant Wives (N=730)	п	Local Women (N=207)	X ²	<i>p</i> -value
TV/radio	538	73.7	161	77.8	1.42	0.234
Poster	238	32.6	87	42.0	6.33	0.012
Newspaper and periodical	216	29.6	68	32.9	.81	0.368
Neighbor and friend	138	18.9	66	31.9	15.95	<0.001
Preventive medical staff	124	17.0	51	24.6	6.22	0.013
Expert lecture	86	11.8	48	23.2	17.12	<0.001
Communication in family	82	11.2	44	21.3	13.92	<0.001
Village doctor	74	10.1	43	20.8	16.70	<0.001
VCD/Movie	80	11.0	31	15.0	2.49	0.114
School/teacher	56	7.7	24	11.6	3.18	0.075
Internet	56	7.7	21	10.1	1.31	0.253
Art performance	50	6.9	26	12.6	7.06	0.008
Health events	158	21.6	56	27.1	2.68	0.102

Table 2. Sources of HIV/AIDS-related knowledge among migrant wives and local women in rural Anhui, China.

were 1 (1.9%), 2 (2.4%), 13 (16.9%) and 5 (26.3%) among those who were illiterate, those with primary school education, those with junior middle school education and those with higher education (p-trend<0.01), respectively.

HIV/AIDS-related knowledge

Table 3 lists responses to questions about possible transmission mechanisms for HIV/AIDS. The accuracy of responses for the migrant wives ranged from 31.0% to 75.3%, significantly lower than the correct

response rates for the local women (Table 3). Overall there was a major misunderstanding of HIV/AIDS facts related to transmission mechanisms. For example, 69% of migrant wives incorrectly responded that they believed HIV could be transmitted by mosquito bites. This compared unfavorably to responses by local women where 56.5% in this group believed mosquito bites acted as a transmission mechanism.

HIV/AIDS related attitudes

Page	4	of	6
------	---	----	---

Items	n	Migrant Wives (N=730)	п	Local women (N=207)	χ²/t	<i>p</i> -value
Can an apparently healthy person be HIV-infected	300	41.1	118	57.0	16.69	<0.001
HIV cannot be transmitted through						
Shaking hands or hug	476	65.2	157	75.9	8.33	0.004
Diner together	458	62.7	154	74.4	9.67	0.003
Talking together	472	64.7	151	73.0	4.97	0.026
Sharing tools and vehicles	480	65.8	161	77.8	10.79	0.001
Sharing public swimming pools	364	49.9	131	63.3	11.66	<0.001
Sneezing and coughing	336	46.0	131	63.3	19.21	<0.001
Mosquitoes bites	226	31.0	90	43.5	11.31	<0.001
Sharing the towels	326	44.7	118	57.0	9.68	0.002
Sharing shaver blade	368	50.4	109	52.7	.33	0.568
Sharing needles	550	75.3	170	82.1	4.17	0.041
Receiving blood from an infected person	560	76.7	173	83.6	4.46	0.035
Mother-to-child transmission during pregnancy	510	69.9	168	81.2	10.29	0.001
Mother-to-child transmission during delivery	450	61.6	152	73.4	9.75	0.002
Mother-to-child transmission during breastfeeding	466	63.8	164	79.2	17.34	<0.001
Sexual contact	518	71.0	166	80.2	6.98	0.008
Overall score of HIV knowledge (mean±SD)		8.99 ± 2.11		10.61 ± 2.83	8.99	<0.001

Table 3. HIV/AIDS-related knowledge among migrant wives and local women in rural Anhui, China.

ltem	Answer	n	Migrant Wives (N=730)	n	Local women (N=207)	X ²	<i>p</i> -value
If a teacher has HIV but is not sick, should he or she be allowed to continue teaching in school?	No	212	29.0	77	37.2	5.06	0.080
If a person has HIV, should he or she be quarantine?	Yes	412	56.4	105	50.7	2.47	0.291
Would you be willing to share a vehicle with PLWHAs?	No	216	29.6	71	34.3	2.81	0.245
Would you be willing to share tools with PLWHAs?	No	240	32.9	71	34.3	4.07	0.131
Would you be willing to share a meal with PLWHAs?	No	382	52.3	106	51.2	0.09	0.955
Would you be willing to shake hands with PLWHAs?	No	342	46.9	82	39.5	7.76	0.021
If a shopkeeper or food seller had the HIV, would you buy food from them?	No	534	73.2	136	65.7	10.11	0.006
If a student has HIV but is not sick, should he or she be allowed to continue attending school?	No	258	35.4	84	40.6	13.37	0.004

Table 4: Attitude towards PLWHA among migrant wives and local women in rural Anhui, China.

We observed a high proportion of negative attitudes toward people living with HIV/AIDS (PLWHA) among both migrant wives and local women, (Table 4) although the proportion of negative attitudes toward HIV/AIDS patients was significantly higher amongst the migrant wife sample. 73.2% of migrant wives and 65.7% of local women refused to buy food from a HIV-infected shopkeeper or seller (p=0.006), while 49.6% of the migrant wives and 39.5% of local women answered that they would not be willing to shake hands with PLWHAs (p=0.021).

Sexual practices

Sexual risk behaviors stratified by socio-demographic characteristics among all women are summarized in Table 5. Ever having sex during menstruation was associated with lower literacy (p<0.001). Ever having extramarital sex was positively associated with being younger (p<0.001), being a migrant (p=0.01), having lower literacy (p=0.049), being low income (p<0.001), being from Yunnan or Guizhou Provinces (p=0.009) and gynecological disease history (p=.003). Consistent condom use during extramarital sex in the past six months was associated with migrant status (p=0.01), lower literacy (p=0.001), and being from Yunnan or Guizhou Provinces (p=0.024). Consistent condom use during sexual intercourse within their marriages during the previous six months was associated with migrant status (p=0.01), lower literacy (p<0.001), and being from Yunnan or Guizhou Provinces (p<0.001).

Discussion

This is the first study from China to report on HIV/AIDS related knowledge, attitudes and sexual practices among a large sample of migrant wives in a rural area of Anhui Province in eastern China. Conversely, existing Chinese studies about this population have mostly only reported on either HIV/AIDS related knowledge and/or attitudes [2]. With China's economic transformation and urbanization, tens of millions of women in rural areas are migrating to urban areas to look for work. This has resulted in men in some rural areas significantly outnumbering women, and causing many men around marital age to try and find wives from other regions. These potential marriage candidates then tend to migrate from other less economically developed regions to live with their husbands [12]. Despite these migrant wives having comparable socio-demographic characteristics like age, education and income with local women, they are less exposed to HIV/AIDS knowledge, are more likely to have a prejudice against PLWHAs and are more likely to practice high risk behaviors that aid HIV transmission [7,8].

The main sources of HIV/AIDS related knowledge among migrant wives were the TV or radio with only a small fraction of these women accessing information via the internet, despite the fact that more health education resources are available online compared to either TV or radio. Despite this however, there was a correlation between education level and

Citation: Zou H, Dai X, Meng X, Wang H, Jiang C, et al. (2014) HIV/AIDS - Related Knowledge, Attitudes, and Sexual Practices among Migrant Wives in Rural Anhui Province, China. J AIDS Clin Res 5: 319. doi:10.4172/2155-6113.1000319

Page 5 of 6

Characteristics of women	Ever having sex during menstruation n, %	Ever having extramarital sex n, %	Consistent condom use during extramarital sexual intercourse in past 6 months n, %	Consistent condom use during sexual intercourse with husband in past 6 months n, %
Age group (<i>p</i> -value)	0.642	<0.001	0.562	0,381
<20	0 (0)	7 (53.8)	7 (53.8)	5 (38.5))
20-30	15 (5.7)	35 (13.3)	154 (58.3)	142 (53.8)
>30	37 (6.1)	76 (12.5)	297 (49.0)	288 (47.5)
Sample (<i>p</i> -value)	0.065	0.01	<0.001	<0.001
Migrant daughter-in-law	50 (6.8)	128(17.5)	356 (48.8)	334 (45.8)
Local women	7 (3.4)	21 (10.1)	122 (58.9)	119 (57.5)
Education (<i>p</i> -value)	<0.001	0.049	0.001	<0.001
Illiterate	22(13.6)	31(19.1)	65 (40.1)	63 (38.9)
Primary school	15 (3.9)	70(18.0)	188 (48.3)	174 (44.7)
Junior middle school	16 (4.9)	44(13.5)	186 (57.2)	177 (54.5)
Senior high school and above	4 (6.6)	4 (6.6)	39 (1.0)	39 (63.9)
Monthly income (<i>p</i> -value)	0.545	<0.001	0.624	0.578
<500 yuan	45 (6.3)	135 (19.0)	357 (50.3)	332 (46.8)
500-1000 yuan	10 (6.3)	8 (5)	83 (51.9)	83 (51.9)
>=1000 yuan	2 (3.0)	6 (9.0)	38 (56.7)	38 (56.7)
Rank of marriage (<i>p</i> -value) ^a	0.507	0.406	0.216	0.261
First marriage	55 (6.2)	143 (16.1)	445 (50.2)	420 (47.4)
Second marriage	2 (3.9)	6 (11.8)	33 (64.7)	33 (64.7)
Source province (p-value)	0.725	0.009	0.024	<0.001
Yunnan or Guizhou	34 (6.3)	100 (18.6)	264 (49.1)	246 (45.7)
Other provinces	23 (5.8)	49 (12.3)	214 (53.6)	207 (51.9)
Gynecological diseases history (<i>p</i> -value) ^b	0.633	0.003	0.624	0.702
Yes	21 (6.6)	35 (11.0)	166 (52.2)	157 (49.4)
No	36 (5.8)	114 (18.4)	312 (50.4)	296 (47.8)

^aRank of current marriage: order of the current. Some women were in their first marriage and some were in their second marriage.

^bGynecological diseases history were self-reported by women.

Table 5. Sexual behaviors among migrant wives and local women in rural Anhui, China.

internet access. Research showed migrant wives who have higher levels of education being more likely to access health related knowledge via the internet. For example, the proportion of migrant wives accessing HIV/AIDS related knowledge via the Internet increased from 4% among those who were illiterate to 26% among those with at least senior high school or above (p-trend<0.01). This indicates that strategies for disseminating sexual health information should target women based on their education level.

Compared to local women, migrant wives had a poorer knowledge of key issues related to HIV/AIDS. For example, half of all migrant wives surveyed believed that sharing a public swimming pool could result in HIV transmission compared to only 37% of local women. This is consistent with other studies [7,8]. In some places, the proportions of migrant wives who can correctly answer HIV/AIDS related questions were mostly lower than 40% [2]. There are a few reasons for the existence of barriers that prevent migrant wives from accessing HIV/ AIDS related information. Firstly, most migrant wives in the sample came from rural areas with few sources of information on HIV/AIDS. Therefore, the participants generally had little knowledge of HIV/ AIDS and had particularly high numbers of misconceptions with regards to casual social contact, as evidenced by their responses to the question "whether HIV is transmitted by mosquito bites or not." Secondly, because of the differences in dialects and cultures between regions, migrant wives may have had difficulties in communicating with members of the local population [13]. As such, they may have underutilized the various sources of information available on HIV/ AIDS, such as posters, neighbors and friends, preventive medicine staff, expert lectures, communication with family members, and village doctors. This finding necessitates the development of feasible and accessible sources of HIV/AIDS information for migrant wives, such as peer education, expert lectures and other innovative strategies.

Compared to local women, migrant wives share similar attitudes towards PLWHAs in certain items but vary in others. 73.2% of migrant wives would not buy food from a shopkeeper or food seller who had HIV compared to 65.7% of local women (p=0.006). Consistent with responses from local women, over half of migrant wives thought HIVinfected people should be quarantined. This may be largely due to their limited knowledge of HIV/AIDS. Stigma and discrimination is also a documented barrier for the prevention and control of HIV [14]. Education should not only include how to protect migrant wives from being infected, but also on how to correctly judge and treat PLWHAs. For the migrant wife sample, low awareness of HIV/AIDS knowledge and high stigma and prejudice against PLWHAs exist in parallel with low awareness of HIV voluntary counselling and testing (VCT) services. This is despite the existence of over 1,700 VCT clinics across China [15]. Zhang et al. reported that only 38.8% of migrant women in Shanghai have ever heard of VCT clinics with their willingness to access VCT services positively associated with education level (p<0.05). When informed of the free VCT services, over three quarters of women were willing to attend a VCT clinic, unfortunately though, most VCT clinics are located in medium and large sized cities and counties. This makes it relatively difficult for people from rural areas to access free VCT services. It is recommended that these free services include rural areas, especially those with high and increasing numbers of migrant wives.

Compared to local women, migrant wives are more likely to practice risky sexual behaviors implying HIV transmission. They are also more likely to report having ever had sex during menstruation. Existing data support the hypothesis that the level of HIV-1 RNA in cervical secretions is influenced by the menstrual cycle, suggesting that the risk of heterosexual transmission of HIV-1 may increase as menses approaches or during menstruation [2]. Migrant wives are also more likely to have engaged in extramarital sex. Disappointingly, migrant wives are also more likely to not use a condom, either with their husbands or extramarital partners. All these factors generally put them at a higher risk for HIV transmission compared to local women. In line with our study, Li et al. reported that compared to local women, a much higher proportion of migrant wives had engaged in sexual experiences before marriage (38.0% vs 3.4%, p<0.001), had engaged in extramarital sexual relationships (6.7% vs 0.8%, p<0.001) and had an abortion (27.9% vs 16.4%, p<0.001) [6].

In our sample, two (0.3%) migrant wives were HIV-positive. This ratio is similar to some other studies, [2] with others finding a higher prevalence of HIV and/or other STIs among migrant wife populations. For example, a 2009 study of 2,028 migrant wives in Shandong Province found the prevalence rates of HIV, syphilis, HBsAg and HCV to be 0.6%, 2.7%, 10.8% and 1.9%, respectively [6]. A further study of 199 migrant wives in Ruzhou, Henan Province in 2004 found the prevalence of HIV to be 9.6% with over 60% of the 19 HIV-infected women coming from Myanmar. Among the husbands of the 19 HIV-infection while for the four women who had children, one child (25%) was confirmed with to be infected with HIV.

Many migrant wives are from regions with higher-than-average HIV/AIDS infection rates among the general population [2]. In this study around half of those infected were from Yunnan Province, China's highest province for rate of HIV infection [16]. Of course, migrant wives also come to China from other countries with high rates of HIV infection. For example, the past decade witnessed an increasing number of wives migrating from Myanmar and Vietnam [2]. This has clearly added to the challenges faced by China in its efforts to control and prevent the spread of HIV.

There are a few limitations in our study. Firstly, our sample was limited to migrant wives from rural Anhui Province and they may not be representative of all migrant wives in China. Secondly, data on detailed sexual behaviors and STI detection was not available. Thirdly, data on HIV transmission within family was not obtained as only two of the migrant wives sampled had HIV. Longitudinal studies are necessary to study interventions aimed at increasing HIV/AIDS knowledge, decreasing stigma and prejudice, and minimizing unprotected sexual behaviors among this population. Prevention efforts are needed to address the potential risk for HIV transmission among migrant wives in rural Anhui Province. These efforts would potentially include enhanced surveillance of HIV and other STIs, promotion of condom use, timely mother-to-child HIV transmission blockage where possible, providing preventative measures for sero-negative partners and children, sexual health education and other innovative interventions where available.

Page 6 of 6

Conclusions

In general, migrant wives have limited HIV/AIDS related knowledge and exhibit high stigma and prejudice against PLWHAs. They also tend to engage in risky sexual behaviors that promote HIV transmission. In China, HIV/AIDS prevention and control policies should be tailored to address the particular characteristics of this subset of the population.

Acknowledgment

This study was supported by China Global Fund Program on AIDS Round Three. Dr. Tan Xu would like to thank Fogarty International Center of the National Institutes of Health under NIH grant: Award Number D43TW009107.

References

- 1. UNAIDS (2012) China AIDS Response Progress Report 2012.
- Fazito E, Cuchi P, Mahy M, Brown T (2012) Analysis of duration of risk behaviour for key populations: a literature review. Sex Transm Infect 88 Suppl 2: i24-32.
- Dokubo EK, Kim AA, Le LV, Nadol PJ, Prybylski D, et al. (2013) HIV incidence in Asia: a review of available data and assessment of the epidemic. AIDS Rev 15: 67-76.
- Wen-yu Y, Jie C (2009) Analysis on Papers Published by Ningxia Center for Disease Control and Prevention, 2003-2008. Preventive Medicine Tribune 15: 852-854.
- Li Jian-zhuo, KANG Dian-min, Zhang Sheng-yang (2009) Knowledge, behavior and infection status related to AIDS among immigrant women in rural areas of Shandong Province. Chin J Public Health: 1420-1421.
- Fu JH, Liu XZ, Kang DM, Qian YS, Zhang XF, et al. (2005) A survey on HIV infections among migrant women in rural areas of Shandong province. Chinese Journal of AIDS/STD 11: 403-405.
- Wang X (2006) A survey of HIV infections among non-native women in rural areas in certain city, Shandong province. Chinese Journal of Disease Control Prevention 10: 620-621.
- Yuhong Z, Shuiwang W (2008) Investigation of HIV prevalence and related factor among married-in migrant women in a rural county of Henan province. Chinese Primary Health Care 23: 1379-1381.
- Ford N, Kittisuksathit S (1996) Mobility, love and vulnerability: sexual lifestyles of young and single factory workers in Thailand. Int J Popul Geogr 2: 23-33.
- World Health Organization, Global Programme on AIDS, Social and Behavioural Research Unit (1990) Research package: AIDS-related knowledge, attitudes, beliefs and practices. Phase 1. Draft.
- XU Xing-hong, LAN Jing yi, CHEN Xiao-geng, HU Si-ding, LIU Jie, et al. (2008) Investigation of HIV infections and AIDS-related knowledge among immigrant wives in Jingning
- 12. county, Zhejiang province. Disease Surveillance 23: 571-572.
- Fu JH, Lu CX, Liu X Z, Zhang XF (2009) Analysis on HIV/AIDS cases among migrant women in Shandong province. Chinese Journal Public Health 25: 1004-1005.
- Mahajan AP, Sayles JN, Patel VA, Remien RH, Sawires SR, et al. (2008) Stigma in the HIV/AIDS epidemic: a review of the literature and recommendations for the way forward. AIDS 22 Suppl 2: S67-79.
- Zou H, Wu Z, Yu J, Li M, Ablimit M, et al. (2013) Internet-facilitated, voluntary counseling and testing (VCT) clinic-based HIV testing among men who have sex with men in China. PLoS One 8: e51919.
- Wu Z, Sullivan SG, Wang Y, Rotheram-Borus MJ, Detels R (2007) Evolution of China's response to HIV/AIDS. Lancet 369: 679-690.