HIV Risk in Female Sex Workers in the Chinese Border Region

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ABSTRACT

Background: Female sex workers (FSWs) in Yunnan are a highly vulnerable population to HIV virus. The HIV positive FSWs can then pass onward the HIV transmission via commercial sex. Yunnan is located near the "Golden Triangle" border region, which has the highest HIV/AIDS prevalence rates in China.

Method: In order to understanding of the HIV burden and risk in FSWs in the border region of China, semi-structured interviews were conducted between May 2018 and June 2018 with 20 FSWs recruited in Hekou County, Yunnan province, China.

Results: Thematic analysis was applied for the data analysis. There were four themes that were actively interpreted from the data, including: Desire for Condom Use, Poor Gynaecological Service Access, Low HIV/AIDS Literacy, and Working Without the Influence.

Conclusion: There is an urgent demand for HIV prevention among FSWs and their clients in the Chinese border regions. It is essential for governmental infrastructures to implement practical strategies in terms of HIV prevention for FSWs in China.

Keywords human immunodeficiency virus (HIV), female sex workers (FSWs), "Golden Triangle", China

Background

Female sex workers (FSWs) are a highly vulnerable population to the HIV virus, and the HIV positive FSWs can pass onward HIV transmission via commercial sex. In previous research, the male clients of FSWs report having numerous sexual partners and using condoms less frequently [1]. Male clients of FSWs then could be a potential bridge of HIV transmission to the general population [2]. A previous meta-analysis, covering 50 countries, reported that the overall HIV prevalence among FSW was 11.8% [3].

China's commercial sex industry is increasing tremendously amongst FSWs due to an upward trend in economic prosperity and the growing disproportionate gender ratio where there are more males than females in the total population [4]. Researchers suggest that both sex workers and clients tend to have low awareness and understanding of both HIV transmission and prevention strategies [5]. Commercial sex is illegal in China, which makes FSWs a hard to reach population for public health entities, let alone provide HIV prevention. Previous research also has pointed out that it is difficult for government organisations to provide services to sex workers due to the lack of mutual trust [5].

Yunnan is located near the "Golden Triangle" of the border region between Taiwan and China, and it also has the highest HIV/AIDS prevalence rate in China [6, 7]. The HIV related burden among FSWs in Yunnan requires increasing research attention. Sex workers are a diverse group working in a wide range of different contexts [8]. Many HIV prevention programs for sex workers lack a sufficient understanding of the epidemiological transmission dynamics and the consideration of geographic and population heterogeneity [9]. Effective HIV prevention for sex workers should be tailored according to local heterogeneous contexts [10, 11].

Although many quantitative studies have focused on the FSWs located around the Chinese border area [6], limited in-depth interviews have been conducted to understand the HIV burden and risk for these women. We conducted the current study to provide in-depth, recent and updated information in the

research area in order to increase appropriate protective behaviour, decrease HIV risk, and fill the existing knowledge gap,. Thus, we aimed to reveal the unique experiences from FSWs through using a qualitative interview approach.

METHODS

Settings and subjects

Semi-structured interviews were conducted between May, 2018 and June, 2018 with 20 FSWs recruited in Hekou County, Yunnan province, China. Eligibility criteria for participants were: (1) age 16 years or above; (2) female sex workers, who self-reported providing commercial sex within the last 3 months, (3) were able to communicate with the researchers and provide oral informed consent. The study protocol was approved by the Wuhan University Research Ethics committee. Face-to-face interview was conducted by trained interview researchers from Wuhan University.

Procedure

Two interviewers were present, and the interviews occurred around a table, in the same residential setting and in a private room as an effort to create an environment that allowed for the sex workers to speak freely. The sex workers were interviewed once and could have a friend or relative present if they so chose. Interviews lasted on average 45 minutes allowing for a rich data set to be created. Interviews were transcribed in Chinese and translated to English, with a standard of checks completed[12].

Data analysis

The analysis was conducted using a psychological form of thematic analysis [13]. The analysis was inductive being driven by the data, themes were also semantic, meaning they represent a surface level interpretation of the data as the research was exploratory. There are 6 stages to thematic analysis

according to Braun and Clarke. In stage one the researcher gained familiarity with the data by reading the 20 interviews a series of times until patterns began to form. Initial coding than began for stage 2, invivo coding was used (e.g. condoms, checkup, AIDS, drugs, alcohol) with superordinate coding occurring as appropriate (e.g. drug and alcohol combined). The final coding was then used to construct the themes, with patterns being sought in the data, completing stage 3. Stage 4 saw the themes revised to best convey the information. These revised themes were given final names during stage 5. Finally, the results are divided by themes, with extracts representing the majority of the sex workers talk with negative case studies presented when appropriate, concluding stage 6 of thematic analysis.

RESULTS

The demographic information of the female sex workers was presented in Table 1. The age of participants ranged from 20 to 50 years of age. Among the 20 participants, there were four women infected with HIV, and 11 reported their HIV status as unknown. There were four themes actively interpreted from the data, including Desire for Condom Use, Poor Gynaecological Service Access, Low HIV/AIDS Literacy, and Working Without the Influence.

Desire for Condom Use

Even though the female sex workers had low literacy they understood by using condoms they were protected from sexually transmitted infections (STIs). The workers preferred clients to use condoms, though the reality was they needed money and would charge more for not using one. The few who knew they were positive for HIV/AIDS insisted the clients use condoms, however few knew their status. Regardless of the clients age, most agreed to use a condom:

> ***Interviewer: Who asks ?***
>
> *Female Sex Worker 12: I ask for it, I ask for it (laughing), I don't need to set it up (laughing)*

Interviewer: Do the 50-60-year-old males bring a condom ?

Female Sex Worker 12: I can't do it without a condom. If they don't wear it, I don't agree (shakes her head).

Interviewer: If they don't agree, then you are not a guest, but there are few [who do not use a condom]?

Female Sex Worker 12: No, there is no, I don't want this money.

Interviewer: How many guests will there be ?

Female Sex Worker 12: That's it.

Interviewer: How many can you do ?

Female Sex Worker 12: It 's these four or five things. It's because of this. Some don't have a condom. I don't want to. If he doesn't agree, he's gone.

The sex worker used 'I' repeatedly to position herself as responsible when it came to condom use, for example she uses the words "I don't' and 'I can't'. She reported that she turned away clients who would not use a condom, 'I don't want this money', 'If he doesn't agree, he's gone".The female sex workers would also check the man for STIs:

Interviewer: Are the friends around you wearing them?

Female Sex Worker 18: Some are worn, young people wear it, that is, we are old, that is, there are many people wearing condoms, not wearing less.

Interviewer: Are you afraid that some guests have something wrong?

Female Sex Worker 18: Well, we have to look first.

Interviewer: Can you usually see this?

Female Sex Worker 18: Yes.

Interviewer: Is the guest angry?

Female Sex Worker 18: He is angry and not angry, his body is the most important.

Female Sex Worker 18 reinforces that not using a condom was 'less'. To determine if the client is clean she first has a look at his penis, she does not care if this angers the client. She positions herself as looking out for the client 'his body is the most important thing'. However, when condoms were not used, the price charged would be raised:

Interviewer: How much is the actual use [of condoms]?

Female Sex Worker 7: There are many (he)

Interviewer: Do you not need [a condom]?

Female Sex Worker 7: No use (only answer "Yes, yes, um")

Interviewer: None of the them, the ones inside? Actually, men don't like to use it?

Female Sex Worker 7: If it [condom] is introduced, most of them are older. If you are afraid of getting sick, you must use it.

Interviewer: Does the guest have a feeling of using their old age?

Female Sex Worker 7: That's there too.

Interviewer: They don't want to use it. Is there such a situation?

Female Sex Worker 7: Yes, there is

Interviewer: So is there any use in this situation?

Female Sex Worker 7: There are also [situations]

Interviewer: Do you want to add money if you don't need it?

Female Sex Worker 7: I want to add one hundred dollars.

The worker admited that sometimes male clients do not use condoms, however this is inconsistent with the other workers responses as she suggestes, ‘there are many’. If there is a concern with the client workers ‘must use it’, again the owness for preventing STIs is on the work ‘if you are afraid’. This concern around not using a condom is considered to be more with ‘older’ men. If a client does not want to use a condom the price for the work increases, she would like to add ‘one hundred dollars’, a large sum and profit.

Poor Gynaecological Service Access

There was limited access to STI testing and for accessing a clinic to improve vaginal health. The workers commonly reported ‘itchy’ vaginas and leukorrhea as a result:

Interviewer: Have you checked in the past two years?

Female Sex Worker 2: Not checked.

Interviewer : Is there self inspection?

Female Sex Worker 2: Well, just check it out.

Interviewer: Is this the first inspection?

Female Sex Worker 2: Well, the first check

Interviewer: Is it usually uncomfortable? Is it uncomfortable below?

Female Sex Worker 2: I just checked, a little uncomfortable below.

Interviewer: How uncomfortable?

Female Sex Worker 2: Itchy

Interviewer: Red?

Female Sex Worker 2: Don't seem red

Interviewer: Does it hurt?

Female Sex Worker 2: It doesn't hurt, it is itchy.

Interviewer: Do you have a gynecological examination?

Female Sex Worker 2: Yes.

Interviewer: It's just itchy, nothing else?

Female Sex Worker 2: Well, itchy, today is my first time to check.

Interviewer: Yeah, you have to check it often.

Female Sex Worker 2: Do more inspection.

Interviewer: Do you know a regular doctor? The doctors who control the disease are quite good.

Female Sex Worker 2: I don't know.

Interviewer: So you are the first time to go to the disease control side?

Female Sex Worker 2: Well, the first time

Interviewer: Then, when are you going to continue working and suffering, have you thought about it?

Female Sex Worker 2: Don't want to suffer

Interviewer: Don't want to suffer? I don't want to go back?

Female Sex Worker 2: I don't want to go back. Hey, I don't want to work hard in this place, I want to change places.

This worker was in her 40s but did not have a regular doctor. She reported that she had just been for a check up as her vagina felt 'uncomfortable below', with the use of the word 'itchy' twice for emphasis. While she wanted to have vaginal health and treat her problem, 'don't want to suffer' she did not want to go back to the doctor. She wanted to 'change places' of work where she did not need to work as hard, she associated working hard in her current place as linked to her poor vaginal health. Female Sex Worker 2 was not the only sex worker with gynecological problems:

Interviewer: Have you ever had any gynecological diseases?

Female Sex Worker 13: Seems to be a little enlarged, uterine fibroids

Interviewer: Is it cervical hypertrophy?

Female Sex Worker 13: A little hypertrophy of the cervix, there is uterine fibroids

Interviewer: Is it engorged?

Female Sex Worker 13: No

Interviewer: Abnormal leucorrhea?

Female Sex Worker 13: That is still normal.

Interviewer: Is there an itch?

Female Sex Worker 13: Occasionally, what about me, Fu Yan Jie wash

Interviewer: How to clean after doing the work with the guests?

Female Sex Worker 13: That is to say , it is generally washed with water. After washing, I don't know what it is, what is oily.

Interviewer: What if he shoot [ejaculates] inside? Wash it [vagina] inside?

Female Sex Worker 13: Washing

Interviewer: Do you wash it inside, use water?

Female Sex Worker 13: Well, I usually use that one.

Interviewer: Dropper?

Female Sex Worker 13: Yes, right.

Female Sex Worker 13 had 'uterine fibriods' this makes her cervix 'enlarged' and she had 'a little hypertorphy', which could make sex work uncomfortable. She believes that having any leucorrhea is normal. If this occurs and she feels an itch she will use a douche 'Fu Yan Jie wash" to treat her vagina

herself. She talks about good practice after a client, that she should wash and douche afterwords. If the workers did get a gyneacological exam it was only once a year, even though they were engaging in sex work:

Interviewer: Then how are you going to re-examine?

Female Sex Worker 16: I am not in the red ribbon. I will have a physical examination every year, because we are going back outside, no matter what we do now, we do cancer screening every year.

Interviewer: Is it quite good?

Female Sex Worker 16: Yes, it's normal.

The red ribbon is an associate outreach program for HIV/AIDS, the worker explains that she is not part of the HIV/AIDS program, suggesting she is HIV negative. By not being part of the program, she goes for a physical exam and cancer screening once a year. She implies that women who do street work are stuck doing street sex work, 'we are going back outside, no matter what'. She feels the gynecological service is average, when asked if it is a good service she replied that it is just 'normal'.

Low HIV/AIDS Literacy

The women had little education around HIV/AIDs, even if they had HIV/AIDS medication compliance was low and diagnosis was at a late stage. The workers did not know much about AIDS despite the red ribbon outreach program:

Female Sex Worker 6: I don't know. I didn't know the AIDS thing before.

Interviewer: Didn't the red ribbon have been there?

Female Sex Worker 6: I haven't been there. I have only heard of syphilitic diseases before. I have never heard of AIDS. It is the first time I have done an examination. For the Miss, I checked it out. (calling the seventh cigarette)

When asked if she is informed about AIDS Female Sex Worker 6 stated she did not know, saying this twice for emphasis. Her knowledge is limited to one STI, syphilis, she had just completed her first gynecological exam where she learned about AIDS. The lack of information could be because the red ribbon program did not visit regularly:

Interviewer: What do you think about AIDS?

Female Sex Worker 15: We are coming from the red ribbon. It's coming from time to time. It's just a physical examination, the wall will be written, we all know.

The worker reported that the red ribbon did not come consistently for outreach with the women, 'It's coming from time to time'. She uses the word 'just' to imply that the physical exam provided is not enough, that the workers know if there is a physical problem 'the wall will be written', and she implies she is informed about AIDS. The red ribbon program ran more effectively when it was just established:

Female Sex Worker 5: When we used to collect blood, we told them not to go. At that time, the doctor went directly to each dance hall. At that time, we were all relatively fixed without a small mixed-mix tube. Every dance hall had a good business…

Interviewer: Then how did you get to the doctor?

Female Sex Worker 5: When the red ribbon was just established, when my sister used to play, I told my sister that when I was fine, I went to chat and played cards. I followed, and then recruited

staff. I have been doing it for six or seven years, but I haven't done it for a few years. I said that I have to go home. Later, when I came, doctor said that there is a point to find someone here, mainly because I don't play cards and have time to guard. I can live, they all love to gamble, they can't keep it, only I have time to sit, so at the beginning I was doing it on the red ribbon, and later came here, for four or five years. Alright.

Interviewer: Do you usually go out for an outreach?

Female Sex Worker 5: We had outreaches here. I was in charge of this office. Every place had outreach and did not need us. In the past, we also had to go out to lecture. Before, we had not set up a bougainvillea. When we were in the red ribbon, we had to come over here frequently. Many people lived together. There were more than ten people in the middle of the road. They were brought together. Lecture at home.

Red Ribbon was a program that Female Sex Worker 5 felt was important, she did not want it to go. The key to the success was going to the dance halls where the women worked. Female Sex Worker 5 was involved with Red Ribbon as she had free time. She was formerly in charge of the outreach office, then places 'did not need us'. She uses we statement to show it takes a team of people to be effective. Other important aspects of the program used to include visiting halls frequently and lecturing in the community about AIDS. She indicates this was well received in the community, 'ten people in the middle of the road. They were brought together… at home'.

Working Without the Influence

Few sex workers reported addiction problems, they did not drink to excess or use drugs when working and practiced professionalism. Several extracts supported a professional work mentality:

Interviewer: Drinking?

Female Sex Worker 11: Don't drink, because I don't know if it is true, that is, drinking is in conflict with this.

Interviewer: Is the amount of alcohol good?

Female Sex Worker 16: I don't drink alcohol. If I smoke and drink, I still choose to smoke two cigarettes. I drink two or three cups at a time, three or four cups, four or five cups. I don't advise you to drink here. Some places are very expensive.

Interviewer: Do you smoke or drink?

Female Sex Worker 20: No

Interviewer: How much is smoking and drinking in the guests?

Female Sex Worker 20: Not much. I don't do anything when I drink alcohol. I don't know if a regular customer calls me. Because I like this person to be cheerful, some drink alcohol and you are not welcome to talk and ugly, I don't like it, drink the wine and do not do it. There are a lot of sisters, and there is a lot of quarrels with drinking. I don't like to quarrel with people.

Female Sex Worker 11 identifies drinking as 'in conflict with this' suggesting it that women should not drink when working, a point agreed to by Female Sex Worker 16 'I don't advise you to drink here'. Those who did drink, like Female Sex Workers 16 and 20, kept the drinking to a minimal and was done more so to appease their clients. Some of the workers chose not to drink due to cost, others felt it was only safe to drink with a regular client they knew and would not drink with a new client. They also avoided drinking to stay out of trouble, women would 'quarrel' if drinking too much, and this was unwanted. The same went for drugs, most women did not speak of drug use:

Interviewer: How much drug was used 10 years ago?

Female Sex Worker 19: Well, it seems to be

Interviewer: Have you seen drug abuse?

Female Sex Worker 19: No, I have never seen it. I have never seen any drug abuse.

The worker uses the repetition of 'I have never seen' to emphasis that drug abuse is not common among the working women. If addiction was present however, high risk behavior was engaged in:

Interviewer: How to prepare before going out?

Female Sex Worker 10: Beat the needle and eat well. It can be maintained until dawn.

Interviewer: How big is the amount?

Female Sex Worker 10: One or two or three bags, see if the purity is good, two can also, three bags can also be, anyway, I figured out that when I went to stay overnight and also supported it.

Interviewer: Is it a needle?

Female Sex Worker 10: No

Interviewer: Is it water?

Female Sex Worker 10: You can share the needle water. Everyone is a new needle. We don't want to use it once. We used to wash the needle.

Interviewer: Do you wash it together?

Female Sex Worker 10: I haven't washed it. Now I have changed some over at the red ribbon. We can also buy it with money, or lose it, or change it.

Interviewer: How did you get infected?

Female Sex Worker 10: I am, my husband. He didn't tell me when I was with him. I don't know. I didn't know when I got married, but I can't do it. I had lived for so long; I had lived for a year or two when I got married but I haven't got it yet. I had to check it when I get married. He has it. I didn't have it. I only checked it out last year. I got married in the past five years.

Female Sex worker 10 was an injecting drug user, she injected heroin and had HIV. To keep from going into withdrawal she needed up to three bags of heroin based on the purity. This was the minimal amount she could use when working. She engaged in risky behavior by sharing water and washing syringes, which were then re-used. Female Sex Worker 10 did engage in good practice though by not sharing needles and trying to use the needle exchange through red ribbon or buying clean needles. Her transmission of HIV came from her husband. He was positive and did not tell her, she only found out a year ago she had HIV and could have received the transmission sexually or through poor injecting drug practices.

DISCUSSION

The current study explored the HIV risks among FSWs in Yunnan, which provided an in-depth understanding of the FSWs lived experiences, revealed intersecting influences, and identified context specific information. Four prominent themes from analysis were: Desire for Condom Use; Poor Gynaecological Service Access; Low HIV/AIDS Literacy; and Working Without the Influence. The current study highlights the importance of promoting HIV prevention strategies for FSWs and their clients, as revealed by themes of Poor Gynaecological Service Access and Low HIV/AIDS Literacy. Moreover, the results also showed that FSWs consciously protect themselves in terms of the themes Desire for Condom Use and Working Without the Influence.

In the current study, four out of 20 participants were HIV positive, which presented a very high rate of 20%. Although due to the small sample size, the prevalence was not representative. Previous studies in the US-Mexico border reported that 6% female sex workers (FSWs) tested HIV positive [14]. Another study in five border provinces of Vietnam found that the prevalence of HIV among FSWs was 4.5% in these areas [15]. The prevalence of HIV found in the current study was much higher than the previous

studies. HIV infection in FSWs varied across geographical and epidemic typology, structure of sex work, as well as the association with other HIV risk behaviours [3]. Yunnan province is the geographical area with the highest HIV rate in China, and FSWs in this area are therefore at high risk of being HIV positive. These environmental factors could explain the high HIV prevalence rate found in the current study. Also, the sample in the US-Mexico study was 924 FSWs and in the Vietnam study 911, these number far exceed the 20 FSWs in this study, who may not be representative of the larger population. However, this random sample of interviews is representative of the larger FSW population that are HIV positive in the Yunnan province. Rates in this province range from 10.3% to 25.8% (Wang et al., 2009). However, these rates are inconsistent in the literature with recent rates estimating 2.74% (Zhu et al. 2014). Future research should consider the transient nature of FSWs and put measures in place to account for this when conducting research on prevalence, in general further research is needed to understand the ratio of HIV positive sex workers in the province.

The data showed that Poor Gynaecological Service Access and Low HIV/AIDS Literacy in FSWs. It is difficult for public health professionals and clinical practitioners to promote HIV related knowledge among these mobile and hidden sex worker population [5]. Due to the stigma towards sex workers, they are also less likely to actively seek for HIV related knowledge. Mobility is also a factor, as stated FSWs are a transient population, those with higher mobility have been found to report fewer STIs and HIV rates, with those who are bound to the province receiving poorer care resulting in higher rates if STIs/HIV (wang et al., 2010). A 9 year longitudinal study in the Yunnan Province also found that there was little follow-up due to the aforementioned transient nature of FSWs (Su et al. 2016). In general FSWs in the Yunnan area have higher rates of STIs, such as trichomonas vaginalis, and douching vaginally, all of which increase the risk of transmission of HIV (Lou et al., 2016a; Lou et al. 2016b).

FSWs reported that they preferred to use condom. It is important for all sex workers to have access to condoms, education, STI, as well as ART access for those infected with HIV [8]. Importantly, these

services and should be available in safety and sex workers should be able to access with dignity and without harassment [8]. Furthermore, it is important to emphasize these service must target both FSWs and their male clients (Hesketh, Zhang & Qiang, 2005). Male clients (particularly older males) in the Yunnan province further report having numerous sexual partners and lower condom use with these partners, leaving FSWs a group vulnerable to acting as a bridge for HIV transmission (Jin et al., 2010; Zhu et al., 2019). A considerable number of women entered sex work due to financial difficulties [5]. Those women tended to be unemployed, and the financial situation reduced their negotiation power for the condom use. Considering the difficulties of negotiating condom use, the HIV pre-exposure prophylaxis (PrEP) among vulnerable FSWs is a prevention method with greater level of control [16]. However, due to the lack of awareness, HIV pre-exposure prophylaxis (PrEP) has not achieved its potential effectiveness in reducing HIV infections among FSWs [16].

Few workers reported using drink or illicit drugs while working, however those who self-identified as drug addicts engaged in risky behaviors. The need for drug harm reduction work to change risky drug behaviors has been an area identified as important to reducing the HIV transmission in the Yunnan (Xiao, Kristensen, Sun, Lu, and Vermund, 2007). Since around 2005, the literature has suggested that in the Golden Triangle drug using FSWs are more likely than non-drug using FSWs to have HIV (Chen, 2005; Li et al., 2019). The main risky behaviors identified among drug using FSWs have been needle and pipe sharing (Yu and Li, 2018). This study is unique as it provides further insight into the harm reduction education needed by identifying water sharing as a risk. Sharing water is a risk because it leads to sharing of blood contaminated water, injectors will often rinse the syringe right after use with blood still present in the syringe, increasing the risk of indirect transmission. Furthermore, if a syringe is to be reused it should be washed with bleach and water [17]. It is common knowledge in harm reduction that the re-use of a syringe causes further damage to the body's injecting sites, after the first injection the needle immediately becomes blunt. Further harm reduction advice is needed to support FSWs in the Yunnan

province. Engaging in risky behavior as illicit drug using FSWs has been linked to lower prevalence of condom use and higher likelihood of HIV (Wu et al., 2019). However, as mentioned most FSWs reported working sober or with a maximum of two drinks, this suggests there has been a shift where FSWs are engaging in less risky behavior, lowering their risky sexual behavior.

The current study has several limitations. First, Yunnan is a special geographic region for HIV study, and the findings may not represent the general FSWs situation in China. Second, the current study used a convenience sample were the researchers interviewed the first 20 workers who were easy to identify and contact. However, the more isolated FSWs (e.g., controlled by pimps) could have severe HIV related risk and are worthy of research in the future studies. Third, due to the limited resources, the researchers were not able to practically help FSWs in a boarder social contractual context, such as form a FSWs work union or develop mutual help group. Fourth, in order to understand the potential HIV transmission dynamic cycle, it is also important to know the clients of FSWs. We recommended future research could focus on both FSWs and their clients to explore the HIV related contexts. Finally, besides the HIV related risk, FSWs also face occupational risks including physical and verbal assaults, something this study did not focus on, this is another point for future research. Furthermore, as sex workers, the women face occupational stigma, an unsafe working environment, and health challenges [18]. It is also important to combat 'whorephobia', this can be done by focusing the narrative on sex workers within a narrative that seeks to empower those women who work in low and middle-income countries [19].

In conclusion, there is an urgent demand for HIV prevention among FSWs and their clients in the Chinese border regions. It is essential for governmental infrastructures to implement practical strategies in terms of both HIV prevention and long-term employment/social welfare assistants for FSWs in China. Further harm reduction work is needed with those who are most vulnerable, who in this study were: women who could not negotiate condom use, women who could not access gynecological services, women who has low HIV/AIDs literacy, and FSWs who were also injecting drugs.

Abbreviations

AIDS: Acquired Immune Deficiency Syndrome

FSWs: Female sex workers

HIV: Human Immunodeficiency virus infection

Declarations

Ethics approval and consent to participate

The study protocol was approved by the Wuhan University Research Ethics committee. Participants provided oral informed consent.

Consent to publish

Not Applicable

Availability of data and materials

The data used are not publicly available. Please contact corresponding author for the accessibility of the data.

Competing interests

The authors had no conflicts of interest in conducting this study or preparing the manuscript. This manuscript does not reports a clinical trial. All co-authors have seen and approved the manuscript.

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Authors' Contributions

HY, SYL, CP designed the study, TW, XY, YHW contacted participant, carried out data collection and record the data. YYW, WA and RSC analysed the data and wrote the manuscript under supervision of HY. All the authors read and approved the final manuscript.

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Table 1. Demographic information of participants

Participant Number	HIV Status	Age	Personal Characteristics	Drink or Drugs
1	Positive	40s (roughly)	Flower skirt, glasses, half leaning against the chair, feet locked under the stool, hands clasped together.	Drink occasionally, No drugs
2	Unknown	40s (roughly)	Leopard top, black trousers, legs crossed in front of the stool, standing upright .	Drink occasionally, No drugs
3	Unknown	52	Stripe pattern shirt, jeans, green trousers, sandals, sitting in a chair, keeping half a meter distance from the interviewer, the hand stays in the chair by, dragged lower jaw, legs natural place .	No drinking, No drugs
4	Unknown	Prefer not to respond	Flower top, red pants, legs crossed , sitting on a half chair, cautious	No drinking, No drugs
5	Unknown	Late 20s	Wearing a skirt , Lianmei responsible person Lina sister	Drinking ½ dozen beers, No drugs
6	Positive	37	Blue shirt, black and white pattern trousers, leaving the package did not put down	No drinking, Injecting drug user (heroin), methadone user, self-identified as drug addict
7	Unknown	30s	Purple blouse, black skirt , bag has been carrying, the interviewer called to put it down, has been shaking legs	No drink, No drugs
8	Positive	33	Purple flower tops, flower skirts, sandals, short hair, cross legs, hands on the chair, facing the interviewer .	Couple glasses of wine, No drugs
9	Negative	50s	Pink top, shorts with long hair , bag on the body, keep pulling the handle	No drink, No drugs
10	Positive	30s	None reported	No drink, Injecting drug user (heroin), methadone user
11	Unkown	37	Wearing a little ethnic costume, the temperament is very good , the speech is gentle	No drink, injecting drug user (heroin), Outpatient rehabilitation Centre,
12	Negative	30s	Slim, light skin , small sound	No drink, No drugs
13	Unknown	40s	Dressed in black, slightly fat	Occasionally wine identified as non-drinker,

14	Unknown	Prefer not to respond	Dark green T-shirt, bag hip skirt	Drink with familiar client, No drink with the unfamiliar client
15	Negative	Prefer not to respond	Classical, sleeveless square dress, always emphasizes that it is rarely introduced	Drink a little beer, No drugs
16	Negative	Prefer not to respond	Big flower dress, high heels, slightly fat, long hair	No drink, No drugs
17	Unkown	50s	All black clothes, slippers, very open, love laugh	Sometimes a little wine, No drugs
18	Negative	50s	Rose red top, black short skirt, black stockings, platform shoes	No drink, No drugs
19	Unknown	40s	White vest, black jacket, black sandals	Use to drink before married, No drugs
20	Unkown	37	White shirt, black pants, light makeup	No drink, No drugs