Drug and Alcohol Dependence 167 (2016) 169–174

Contents lists available at ScienceDirect

Drug and Alcohol Dependence

journal homepage: www.elsevier.com/locate/drugalcdep

Full length article

HIV seroconversion and risk factors among drug users receiving methadone maintenance treatment in China: A qualitative study

Changhe Wang[a,1], Cynthia X Shi[a,b,1], Bo Zhang[c], Hong Chen[d], Hua Wang[c], Nanci Zhang[a], Keming Rou[a], Xiaobin Cao[a], Wei Luo[a], Zunyou Wu[a,*]

[a] National Center for AIDS/STD Control and Prevention, Chinese Center for Disease Control and Prevention, 155 Changbai Road, Beijing 102206, China
[b] Department of Epidemiology of Microbial Diseases and Center for Interdisciplinary Research on AIDS, Yale School of Public Health, 135 College Street, New Haven, CT 06511, USA
[c] Yunnan Institute for Drug Abuse, 471 Xifu Road, Kunming 650228, China
[d] Chongqing Center for Disease Control and Prevention, 8 Changjiang 2nd Road, Chongqing 400016, China

ARTICLE INFO

Article history:
Received 7 February 2016
Received in revised form 5 August 2016
Accepted 11 August 2016
Available online 21 August 2016

Keywords:
HIV/AIDS
HIV risk
Methadone maintenance treatment
Substance abuse treatment
Injection drug use
China

ABSTRACT

Objective: We sought to explore the experiences of drug users in China who were recently diagnosed with HIV infection while engaged in methadone maintenance treatment (MMT) and to better understand their perceptions of MMT, HIV risk, and HIV prevention.
Methods: We recruited clients of MMT clinics in Chongqing and Kunming who had a baseline HIV-negative test result upon entry to MMT and had been diagnosed with HIV within the past 12 months. We conducted semi-structured qualitative interviews and thematic data analysis to identify situations and factors that increased HIV risk.
Results: Among the 27 participants who were interviewed, 15 believed their infection was due to injection drug use, 7 attributed their infection to sexual contact, and 5 were unsure as to how they became infected. High risk behaviors were common; 18 participants continued to use drugs during treatment, and 10 engaged in unprotected sex. Common themes were the difficulty of drug abstinence despite receiving MMT, social pressure to continue using drugs, and low knowledge of effective HIV prevention measures.
Conclusion: While MMT is effective in reducing drug usage and needle sharing, many clients remain at risk of HIV infection due to continued injection drug use and unprotected sex. Clients may benefit from additional counseling on HIV prevention methods as well as structural interventions to increase the availability of clean injection equipment.

1. Introduction

In 1989, the first outbreak of HIV in China was identified among injection drug users (Sullivan and Wu, 2007). Ten years later, the HIV prevalence among drug users reached peaks of 15% nationwide and 30% in the five most heavily affected provinces (Wang et al., 2015a). The rise of the HIV epidemic in this population has been characterized by high rates of injection and needle-sharing, proximity to drug trafficking routes, and overlap with sexual risk behaviors, including commercial sex (Sullivan and Wu, 2007). As of the end of 2011, an estimated 221,000 individuals were thought to have acquired HIV through drug use, accounting for 28.4% of the national HIV-positive population (Ministry of Health of the People's Republic of China, 2012). National data from 2015 showed that drug users continue to be heavily affected by the HIV epidemic with an estimated prevalence of 6.0% (National Health and Family Planning Commission, 2015). In order to address the dual epidemics of drug addiction and HIV, China initiated a national methadone maintenance treatment (MMT) program in 2004 (Pang et al., 2007). By the end of 2014, a total of 767 MMT clinics had been established in 28 provinces with an average of 240 clients at each clinic (National Health and Family Planning Commission, 2015). MMT clinics are affiliated with local Centers for Disease Control (CDCs) and/or medical institutions.

Over two decades of research has documented the impact of MMT on reducing HIV incidence among drug users (MacArthur et al., 2012; Metzger et al., 1993; Williams et al., 1992). Opioid substitution therapy, including MMT, is now accepted in many

* Corresponding author at: Zunyou Wu, National Center for AIDS/STD Control and Prevention, Chinese Center for Disease Control and Prevention, 155 Changbai Road, Beijing, 102206, China.
E-mail addresses: wuzy@263.net, wuzunyou@chinaaids.cn (Z. Wu).
[1] These authors contributed equally as joint first authors.

http://dx.doi.org/10.1016/j.drugalcdep.2016.08.014
0376-8716/

countries as an integral component of harm reduction and HIV prevention strategies (Mathers et al., 2010). MMT has been shown to reduce HIV risk behaviors, including injecting drugs, sharing needles, and engaging in unprotected sex, and has demonstrated effectiveness in both developing and developed countries and across culturally diverse settings (Lawrinson et al., 2008; Sullivan et al., 2014; Wang et al., 2015b; Woody et al., 2014).

However, barriers to achieving optimal clinical outcomes in MMT include continued use of illicit drugs, poor retention rates, suboptimal dosing, and limited program resources (Marsch, 1998; Sullivan and Wu, 2007). Many MMT clients remain at risk for HIV infection through injection drug use and unsafe sexual contact (Qian et al., 2008; Sullivan et al., 2014; Zhang et al., 2012). Factors associated with concurrent opioid use and other HIV risk behaviors among MMT clients included HIV and Hepatitis C infection, longer duration of past drug use, younger age, being male, being unmarried, having drug-using family members and friends, and lower MMT adherence (Chen et al., 2013; Li et al., 2012; Zou et al., 2015).

Although MMT has demonstrated substantial effectiveness in reducing HIV incidence in the overall client population (Zou et al., 2015), a small number of clients still become HIV-infected each year. Based on annual HIV testing and monitoring data, the National Center for AIDS/STD Control and Prevention (NCAIDS) reported in 2011 that approximately 300 new cases of HIV were diagnosed among the 144,000 clients enrolled in MMT (Ministry of Health of the People's Republic of China, 2012; National Center for AIDS/STD Control and Prevention, 2012). Cohort studies have found similar HIV seroconversion rates of 0.20-0.66/100 person-years (Chang et al., 2014; Duan et al., 2011; Zou et al., 2015). In this study, we sought to explore the socio-behavioral context in which HIV transmission occurred despite MMT engagement. We undertook a series of qualitative interviews with MMT clients who were recently diagnosed with HIV to better understand their experiences and their HIV risk perception.

2. Methods

2.1. Study sites and participants

Clients are tested for HIV infection upon entry to the national MMT program, and HIV-negative clients are re-screened every 6 months. MMT eligibility criteria and other policies have been described elsewhere (Sullivan et al., 2014; Yin et al., 2010). The daily cost of MMT to the client is maximum 10 CNY per day (approximately 1.50 USD), irrespective of dose. In 2011, 308 MMT clients who had previously tested HIV-negative were newly diagnosed with HIV infection (National Center for AIDS/STD Control and Prevention, 2012). Cases were reported to the national MMT database from 155 clinics in 76 cities in 17 province-level divisions (Mao et al., 2010).

To ensure sufficient participant recruitment, we selected the two cities, Chongqing and Kunming, reporting the most cases (44 and 33, respectively) as our study sites and verified the number of new HIV infections through records at the local CDCs. Participants were recruited at 13 MMT clinics and invited to participate in this study by their regular provider or a local CDC staff member if they were HIV-negative at the time of MMT entry and were subsequently diagnosed with HIV infection through positive screening and Western blot test results. In order to reduce recall bias, we further limited participant eligibility to clients who received their HIV diagnosis within the past 12 months. Recruitment was conducted in person during clients' daily MMT visits; however, if an eligible participant failed to present to the clinic for 2–3 consecutive days, a local CDC staff member contacted the individual by phone.

2.2. Ethical approval

This study was reviewed and approved by the Institutional Review Board of the National Center for AIDS/STD Control and Prevention (NCAIDS), Chinese Center for Disease Control and Prevention (Protocol #: X120331212). Study participants were notified that their participation in the study was strictly voluntary and refusing to participate would not influence their MMT and HIV care. Written informed consent was obtained from all study participants. Each study participant received a voucher for 2 free days of MMT, valued at 20 CNY (3 USD) as compensation for their time.

2.3. Data collection and analysis

Data collection was conducted in April–May 2012. We conducted semi-structured interviews to gather data on sociodemographic characteristics, medical history, experience with the MMT program, drug use behaviors, and sexual risk behaviors. We compared the demographics of the study participants and the newly-diagnosed HIV-positive MMT clients nationwide using two-sided exact binomial and multinomial goodness-of-fit tests in R v3.3 (Engels, 2015). Participants were asked to identify the most likely way that they became infected with HIV and to describe their experiences and risk perceptions. The semi-structured interviews were conducted one-on-one in a private room by trained and experienced interviewers, and the duration of the interview was approximately 60 min. Interviewers were guided by a pre-written questionnaire, which is provided as a Supplementary file. In order to assess the credibility of the interview data, the interviewers had access to treatment records, including the date of MMT entry, past urine test results, and methadone dosage. If there were obvious inconsistences between a participant's record and his or her self-reported information, the discrepancy was noted, and the interviewer asked the participant to elaborate on the issue.

Study interviews were not audio-recorded because most participants did not grant consent for doing so. During the interview, the interviewer wrote down key quotes and themes. Immediately after the end of the interview, the interviewer prepared a detailed written record that approximated a transcript of the session. The field notes were hand-coded and analyzed using Braun and Clarke's (2006) six-step approach to thematic data analysis: 1) preparing data and becoming familiar with the data; 2) generating initial codes; 3) searching for themes; 4) reviewing themes; 5) defining and naming themes; 6) reporting. Coding and analyses were completed in Chinese. Selected quotes were translated into English and checked for accuracy by another author.

3. Results

3.1. Participant demographics and main modes of transmission

Table 1 presents the sociodemographic characteristics of the 27 participants and of all MMT clients nationwide who were newly diagnosed with HIV in 2011 (except for 7 participants who were missing demographic data). Two-thirds of the participants were male, and approximately half were 40 years of age or older. Most participants had used opioid drugs for over 5 years (85.2%), and all except for one reported using drugs through injection. There was a wide range of time intervals between initiating MMT and being diagnosed with HIV with a mean of 2.1 years. In comparison to the national population of newly-diagnosed MMT clients, the study participants were significantly more likely to be of Han ethnicity ($p = 0.002$), to have a high school education ($p = 0.003$), and to be unemployed ($p = 0.026$).