Treatment Readiness, Attitudes Toward, and Experiences with Methadone and Buprenorphine Maintenance Therapy Among People Who Inject Drugs in Malaysia

Aishwarya Vijay, B.S. a, Alexander R. Bazazi, M.Phil. a,b, Ilias Yee, M.B., Bch, B.A.O. c, Adeeba Kamarulzaman, M.B.B.S. a,c, Frederick L. Altice, M.D., M.A. a,b,c,*

a Yale University School of Medicine, Department of Medicine, Section of Infectious Diseases, AIDS Program, 135 College Street, New Haven, CT 06510, USA
b Yale University School of Public Health, Department of Epidemiology of Microbial Diseases, New Haven, CT, USA
c Centre of Excellence for Research in AIDS (CERiA), University of Malaya, Kuala Lumpur, Malaysia

Article history:
Accepted 30 January 2015
Received 20 November 2014
Received in revised form 29 January 2015

A R T I C L E   I N F O

Keywords:
Opioids
Methadone
Buprenorphine
Opioid substitution therapy
SOCRATES
Treatment readiness

A B S T R A C T

Background: Little is known about attitudes toward and experiences with opioid maintenance therapy (OMT) among people who inject drugs in Malaysia, a country where people who inject drugs comprise 1.3% of the adult population.

Methods: In 2010, 460 people who inject drugs in Greater Kuala Lumpur, Malaysia were surveyed to evaluate attitudes toward and experiences with OMT and treatment readiness. Attitudes towards OMT with both methadone and buprenorphine were assessed using an opinions scale. Multivariable linear regression was used to assess correlates of treatment readiness, measured with the 19-item Stages of Change Readiness and Treatment Eagermess Scale (SOCRATES).

Results: All 460 participants used opioids and nearly all (99.1%) met criteria for opioid dependence. Few had had previous experience with methadone (9.3%) or buprenorphine (12.6%) maintenance therapy, yet many had used methadone (55.2%) or buprenorphine (51.7%) outside of treatment settings. Fifteen percent had injected buprenorphine in the past month, and of the few who were currently receiving buprenorphine maintenance therapy, almost all were injecting it. The majority of subjects exhibited a moderate level of treatment readiness and a preference for methadone over buprenorphine. Those with low treatment readiness scores were more likely to have previous experience with compulsory drug detention centers (p < 0.01), needle/syringe exchange programs (p < 0.005), or be of Indian ethnicity (p < 0.001). Past use of methadone (p < 0.01), older age (p < 0.001), higher stress symptom severity (p < 0.001), and sharing of needles or syringes (p < 0.05) were associated with higher treatment readiness scores.

Conclusion: There are suboptimal levels of OMT experience among people who inject drugs that may be improved by addressing factors that influence patient attitudes. Those individuals with moderate treatment readiness may be targeted by brief motivational and cognitive interventions in primary care, prisons or OMT clinics aimed at improving entry into and retention in treatment.

© 2015 Elsevier Inc. All rights reserved.

1. Introduction

1.1. Opioid dependence and treatment in Malaysia

Globally, people who inject drugs (PWID) experience elevated morbidity and mortality, primarily related to opioid use (Degenhardt et al., 2013b). Opioids contribute to profound health and economic consequences for both individuals and society (Altice, Kamarulzaman, Soriano, Schechter, & Friedland, 2010; Mathers et al., 2010). In Malaysia, opioids are the most commonly injected substances, 1.3% of adults are PWID, or about 170,000 individuals, which is among the highest rates of injection drug use globally (Bachireddy et al., 2011; Degenhardt et al., 2008; Fu, Bazazi, Altice, Mohamed, & Kamarulzaman, 2012; Mathers et al., 2008). Among PWID in Malaysia, HIV prevalence is estimated at 15.9%–19.0% (Bazazi et al., 2014; Ngadiman, Anita, & Yuswan, 2014). Unlike the remainder of Southeast Asia where HIV-related mortality has decreased, HIV-related mortality has increased in Malaysia (Joint United Nations Programme on HIV/AIDS (UNAIDS), 2014), primarily related to inadequate access to harm reduction program and antiretroviral therapy (ART) for PWID (Degenhardt et al., 2013a). Until recently, the primary approach to address addiction in Malaysia was detention in prisons or compulsory drug detention centers (CDDCs), where evidence-based treatment for opioid dependence is not available (Fu et al., 2012; Reid, Kamarulzaman, & Sran, 2007).

The high relapse rates following detention in CDDCs and other non-evidence-based approaches and a high HIV prevalence among PWID led...
the Malaysian government in 2005 to introduce evidence-based HIV prevention strategies that included both needle/syringe exchange programs (NSEPs) and opioid maintenance therapy (OMT) (Mesquita et al., 2008; Reid et al., 2007). Buprenorphine maintenance therapy (BMT) was introduced in 2001 by family doctors; however, this was followed by problems with diversion and misuse via injection, leading to its withdrawal from the market and replacement with co-formulated buprenorphine/naloxone in 2007 (Bruce, Govindasamy, Sylla, Kamarulzaman, & Altice, 2009; Bruce et al., 2008; Vicknasingam, Mazlan, Schottenfeld, & Chawarski, 2010). Methadone maintenance therapy (MMT) was introduced in 2006 (Noordin, Merican, Rahman, Lee, & Ramly, 2008; Razali, 2008), with a three-phase MMT expansion to addiction specialty clinics, primary care settings and then prisons (Sharifa Ezat, Noor Azimah, Rushidi, Raminder, & Ruhani, 2009; Wickersham, Marcus, Kamarulzaman, Zahari, & Altice, 2013a). Despite global recognition of the effectiveness of MMT for treating opioid dependence and preventing transmission of blood-borne infections, access to MMT in low- and middle-income countries like Malaysia is limited, and barriers to implementation persist (Degenhardt, Mathers, et al., 2013a; Wolfe, Carrieri, & Shepard, 2010).

1.2. Opioid maintenance therapy for treatment of opioid dependence

Treatment of opioid dependence with MMT or BMT is an evidence-based practice that reduces opioid use, criminal behavior, HIV risk behaviors and consequently HIV transmission (Mattick, Breen, Kimber, & Davoli, 2005; Mattick, Kimber, Breen, & Davoli, 2008). For HIV-infected patients, OMT also contributes to improved HIV treatment outcomes, from diagnosis to linkage and retention in antiretroviral therapy (Altice, Kamarulzaman et al., 2010; Altice et al., 2011; Binford, Kahana, & Altice, 2012; Kamarulzaman & Altice, 2015; Thompson et al., 2012). BMT has similar efficacy as MMT, although retention is improved by using higher doses of methadone (Amato et al., 2005; Mattick et al., 2008). Methadone, however, has also been documented to have more adverse side effects and pharmacokinetic drug interactions (Chou et al., 2014; Saber-Tehrani, Bruce, & Altice, 2011; Weimer & Chou, 2014), especially with antiretroviral therapy (Altice et al., 2010; Bruce, Moody, Altice, Gourevitch, & Friedland, 2013; Saber-Tehrani et al., 2011).

1.3. The importance of attitudes of people who inject drugs toward opioid maintenance therapy

Factors beyond the individual can limit OMT utilization; however, as access to OMT increases, individual attitudes and stigma toward OMT become more relevant barriers to treatment entry and retention (jin et al., 2014; Wolfe et al., 2010). Although both MMT and BMT are effective, patients often have strong preferences for a particular medication (Kelly et al., 2012; Schwartz et al., 2008a; Zule & Desmond, 1998). A study of attitudes toward OMT can identify barriers to entry and retention in treatment that could be targeted by future interventions. Additionally, characterizing treatment readiness and motivation to change drug use behaviors is important because motivation is associated with increased treatment retention and lower relapse rates (Brocato & Wagner, 2008; Demmel, Beck, Richter, & Reker, 2004).

1.4. Rationale for the study

Negative attitudes and inaccurate beliefs about OMT have been documented among HIV-infected PWID in a Malaysian prison in 2007 (Bachirreddy et al., 2011). No study in Malaysia has documented attitudes towards OMT among a more representative sample of community-recruited PWID, including those without HIV infection, and no study has evaluated treatment experiences of active PWID who are not necessarily treatment seeking. Here we use data from a sample of 460 community-recruited active PWID from Greater Kuala Lumpur to provide the first estimates in this population of access to, attitudes toward, and experience with OMT as well as evaluate treatment readiness and its correlates in this population.

2. Methods

2.1. Study procedures

In 2010, 460 PWID were recruited to participate in a structured survey with HIV testing at three locations in Greater Kuala Lumpur. Eligibility criteria were: age ≥ 18 years; self-reported drug injection in the prior 30 days, confirmed by physical examination of injection sites and demonstration of knowledge of drug preparation methods; residing in Greater Kuala Lumpur; willingness to undergo rapid HIV testing and urine toxicology screening; and ability to communicate in Bahasa Malaysia or English. Respondent-driven sampling (RDS) was used to recruit participants (Heckathorn, 1997). Interviews were conducted at three private MMT clinics. Two initial participants (“seeds”) were selected with the help of outreach workers from the area surrounding each of the interview sites. Each participant received three coupons to recruit eligible peers. Participants were remunerated with RM50 (~16 USD) for participation and RM25 (~8 USD) for each eligible peer they recruited. This study was approved by the institutional review boards at the University of Malaya Medical Centre and Yale University.

2.2. Measures

Sections relevant to this analysis from the 60-min interviewer-administered survey include demographics, general medical history, drug use behaviors, opioid dependence, and experience with the criminal justice system. Standardized measures were used to assess methadone and buprenorphine use, treatment history, and medication administration practices. Additionally, attitudes towards both MMT and BMT, and motivations, attitudes and barriers towards entering OMT were examined.

Income and education were dichotomized at the urban monthly poverty line (RM800) and graduation from high school (Form 5/SPM), respectively. Both marital status and stable housing (not homeless or in a temporary living situation) were treated as binary variables. Participants reported both buprenorphine and buprenorphine/naloxone use, but unless otherwise noted, we use the term buprenorphine to refer to either formulation. Opioid dependence in the past 12 months was evaluated using the Mini-International Neuropsychiatric Interview (Sheehan et al., 1998). The 21-item Depression, Anxiety and Stress Scale (DASS-21), validated in the Malaysian context (Musu, Fadzil, & Zain, 2007), was used to measure the severity of symptoms for depression, anxiety, and stress (Lovibond & Lovibond, 1995; Shire, 2011).

We differentiated engagement in OMT (daily use of buprenorphine or methadone prescribed by a medical provider to treat opioid dependence) from intermittent use of methadone or buprenorphine. For both MMT and BMT, we assessed treatment experiences and perceived barriers to access. We also examined individual beliefs about the effects of buprenorphine and methadone.

We used the 19-item Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES) to assess participants’ readiness for treatment. The SOCRATES has been validated among PWID (Gossop, Stewart, & Marsden, 2007; Miller & Tonigan, 1996; Miller, Yahne, & Tonigan, 2003), and it has been adapted for use in the Malaysian context (Fauziah et al., 2010). The SOCRATES is composed of 3 subscales: Recognition, Ambivalence, and Taking Steps. Previously-established cutoffs were used for these subscales (CASAA, 2014; Miller & Tonigan, 1996).

Questions evaluating attitudes towards OMT were adapted from a 28-item Likert-style survey assessing attitudes towards both methadone and buprenorphine (Schwartz et al., 2008b). We selected 11 identical items for both methadone and buprenorphine. A t-test was used to evaluate the difference between attitudes toward methadone and buprenorphine.
3.2. Drug use

Nearly all participants (98.7%) had ever used heroin, and over half (61.1% for each) had ever used methamphetamine or benzodiazepines. Within the past 6 months, 95% had used heroin. Methamphetamine (42.8%), and benzodiazepine (40%) use was high in the past 6 months as well; 73.5% of the sample reported using more than one substance in the same day in the previous 30 days.

3.3. Alternative approaches to substance dependence

Aside from OMT, 40% of participants had experience with some alternative approach to opioid dependence. Most (61.5%) had been at least once to a compulsory drug detention center, historically the government’s primary response to addressing substance dependence. Almost half (43.8%) had participated in a detoxification without medication assistance with a religious healer; 7.8% had participated in Narcotics Anonymous. 7.6% had experienced hospital detoxification, and 5.2% had undergone treatment in Pengasih (a therapeutic community and abstinence-oriented residential program). In the past six months, only 5.5% of participants had participated in any of these approaches. None of these strategies have been documented to be effective.

3.4. Intermittent and regular use of methadone and buprenorphine

Overall, only 18.7% of our sample had had any previous experience with OMT. While 55.2% had taken methadone intermittently at some point and 43.5% had used methadone in the past 6 months, only 9.3% had ever received MMT as a treatment for drug dependence from a licensed clinic. Of those who had received MMT (n = 43), about half (53.5%) were currently receiving MMT. Of those who had never participated in MMT (n = 417), the most frequently cited reason was a lack of interest (35.7%), followed by prohibitive costs (6.3%) and mistrust by staff (12.1%).

Similar to methadone, a slight majority (51.7%) had ever taken buprenorphine. Twenty eight percent had taken buprenorphine in the past 6 months, and 15% had injected it in the previous 30 days; however, only 12.6% had ever been enrolled in BMT. Of those who had enrolled (n = 58), 36% had received BMT in the last 6 months and 30% were currently receiving BMT. For the 39.1% who had never been enrolled in BMT, lack of interest was the most commonly-cited reason (35.6%), followed by prohibitive costs (6.3%) and mistrust by staff (12.1%).

Of the 36% who had received BMT in the past 6 months, most (81%) had injected the buprenorphine prescribed to them from the clinic and only one person had consistently taken buprenorphine sublingually. Out of those who had ever used buprenorphine in the past 30 days (n = 53), the majority (74.6%) received it directly from a doctor, 50.7% reported splitting buprenorphine tablets with others, and 63.4% reported pooling their money with others to purchase buprenorphine.

3.5. Characterization of attitudes towards opioid maintenance therapy

Most participants had favorable attitudes toward OMT with methadone or buprenorphine, although attitudes toward methadone were significantly more favorable. When asked about the best way to treat opioid addiction, 63.3% of participants agreed that methadone was the best option, while only 51.5% agreed that buprenorphine was best when asked the same question. As shown in Fig. 1, attitudes towards methadone were more favorable for a number of other questions. Additionally, most participants disagreed with the statement that methadone (67.8%) or buprenorphine (66.7%) providers treated clients poorly. Over half (54.6%) of participants, however, believed that buprenorphine encouraged people to use more of other drugs, and over three-quarters of participants felt that OMT with methadone...
(78.7%) or buprenorphine (75.5%) was problematic because they were “replacing one addiction for another.” A full description of these attitudes is shown in Fig. 1.

3.6. Evaluating treatment readiness using the SOCRATES

Overall, the majority of the subjects (82.6%) demonstrated moderate treatment readiness. For the Recognition subscale, 2.0% had a high score and 24.1% had a low score. For the Ambivalence subscale, 12.2% had a high score and 7.4% had a low score. For the Taking Steps subscale, 8.3% had a high score and 41.0% had a low score. Complete data for SOCRATES total and subscale scores are shown in Fig. 2.

In multiple linear regression, variables significantly and positively associated with treatment readiness included use of methadone in the past 6 months ($\beta = 2.4; 95\%$ Confidence Interval [CI]: [0.8, 4.0]), whether the subject had shared a syringe or needle in the past month ($\beta = 1.7$; $P<0.05$), and whether the subject had received any other specific addiction treatment ($\beta = 0.9; P<0.01$). The relationship between treatment readiness and the use of methadone in the past 6 months is illustrated in Fig. 3.

![Fig. 1. A comparison of attitudes towards buprenorphine and methadone. Overall, participants demonstrated more positive attitudes towards methadone.](image)

![Fig. 2. SOCRATES composite scores overall and for the 3 subscales of the survey tool. Most participants were found to be in the moderate category, with an exception being the “Taking Steps” subscale.](image)
OMT has been challenging in many low- and middle-income countries where PWID contribute greatly to the moderate (82.6%) treatment readiness. We also lack of interest as a reason for not entering treatment (35.7%), followed by prohibitive costs (6.3%) and mistreatment by staff (12.1%).

We assessed correlates of treatment readiness in the private sector, OMT providers both prescribe and dispense OMT, creating a conflict of interest that may adversely influence the way OMT is prescribed. Methadone and buprenorphine are typically priced at a fixed price for daily treatment (irrespective of dose). Thus, there is an incentive for prescribers to sell OMT medications to patients at whatever dosage and frequency patients can afford to purchase them, which can result in suboptimal dosing and sporadic, “informal” use of these medications. Patients’ experience with low-dose, intermittent treatment may adversely affect their perceptions of the efficacy of these medications to treat opioid dependence. To optimize treatment outcomes, systemic changes are needed in the way OMT medications are dispensed to align prescriber incentives with patient financial needs and to improve patient health outcomes, including substance abuse treatment and HIV prevention outcomes.

The only previous study to examine attitudes toward OMT in Malaysia was conducted in 2007 among 102 HIV-infected Malaysian prisoners and found that while 51% believed that OMT would be helpful, only 33% believed they needed OMT to prevent relapse after prison release (Bachireddy et al., 2011). This is a dramatic difference from the 85% of incarcerated prisoners that actually do experience a relapse after release (McLellan, Lewis, O’Brien, & Kleber, 2000; Reid et al., 2007), which indicates a need for education of PWID about treatment.

In our study, only 36% believed that BMT could help prevent relapse, although this figure was higher at 62% for MMF.

We found that participants generally preferred methadone over buprenorphine. Strong preferences for different forms of OMT previously have been documented outside of Malaysia (Kelly et al., 2012; Schwartz et al., 2008a). Whereas methadone was introduced in a controlled fashion, first in specialized addiction centers in 2007, buprenorphine was introduced in less controlled settings by family doctors in primary care clinics in 2001 (Gill & Habil, 2007; Wickersham, Marcus, Kamarulzaman, Zahari, & Altice, 2013a). Buprenorphine was initially available without naltrexone, and its injection has been commonplace since its introduction (Bruce et al., 2008, 2009; Vicknasingam et al., 2010). Because injection of buprenorphine has been commonplace and examples of its proper use are less common than methadone, participants may not perceive buprenorphine to be as efficacious.

Our data also showed evidence of buprenorphine misuse. In our sample, 15% had injected buprenorphine in the past month, and of the few that were currently on BMT, almost all were injecting rather than taking it sublingually. Previous research suggests that people inject buprenorphine because they cannot afford to take it sublingually (Bruce et al., 2008, 2009; Vicknasingam et al., 2010). While MMF is available in both private and government facilities, buprenorphine is only available in the private sector. Buprenorphine also has higher bioavailability when injected, so patients are able to maintain themselves on a lower, more affordable, dosage if buprenorphine is injected. Although few participants cited cost as a barrier to accessing BMT, this might be because most are purchasing low, subtherapeutic doses. The widespread misuse of buprenorphine, driven by economic motivations, may be responsible for more negative attitudes toward buprenorphine than methadone.

Systemic factors influencing how OMT is prescribed may affect willingness to engage in treatment and shape potential interventions to increase treatment engagement. As of 2013, referral into OMT was set as a performance indicator for NSEPs; however, NSEPs in Malaysia have reported low referrals into OMT programs (Nagdiman et al., 2014). In the private sector, OMT providers both prescribe and dispense OMT, creating a conflict of interest that may adversely influence the way OMT is prescribed. Methadone and buprenorphine are typically priced by the milligram rather than a fixed price for daily treatment (irrespective of dose). Thus, there is an incentive for prescribers to sell OMT medications to patients at whatever dosage and frequency patients can afford to purchase them, which can result in suboptimal dosing and sporadic, “informal” use of these medications. Patients’ experience with low-dose, intermittent treatment may adversely affect their perceptions of the efficacy of these medications to treat opioid dependence. To optimize treatment outcomes, systemic changes are needed in the way OMT medications are dispensed to align prescriber financial incentives with patient health outcomes, including substance abuse treatment and HIV prevention outcomes.

### Table 2: Correlates of treatment readiness from multivariable linear regression.

<table>
<thead>
<tr>
<th>Explanatory Variable</th>
<th>Coefficient Estimates</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Characteristics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.2</td>
<td>0.1−0.4</td>
</tr>
<tr>
<td>High school graduate</td>
<td>0.9</td>
<td>0.5 to 2.3</td>
</tr>
<tr>
<td>Married</td>
<td>1.6</td>
<td>−0.3 to 3.6</td>
</tr>
<tr>
<td>Stable housing</td>
<td>0.5</td>
<td>−1.5 to 2.4</td>
</tr>
<tr>
<td>At or above poverty</td>
<td>−1.1</td>
<td>2.8−0.6</td>
</tr>
<tr>
<td>HIV infection</td>
<td>−0.8</td>
<td>−2.8 to 1.2</td>
</tr>
<tr>
<td><strong>Indian ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chinese ethnicity</td>
<td>−6.2</td>
<td>−9.0 to −3.3</td>
</tr>
<tr>
<td>Ever hospitalized</td>
<td>−2.5</td>
<td>−7.0 to 1.9</td>
</tr>
<tr>
<td>Ever incarcerated</td>
<td>−1.3</td>
<td>−3.9 to 0.9</td>
</tr>
<tr>
<td>Unprotected sex</td>
<td>0.3</td>
<td>−1.8 to 2.4</td>
</tr>
<tr>
<td>Past drug use</td>
<td>−0.7</td>
<td>−2.6 to 1.1</td>
</tr>
<tr>
<td>Years of injection drug use</td>
<td>−0.1</td>
<td>−0.2 to 0.1</td>
</tr>
<tr>
<td>Heroin</td>
<td>−2.3</td>
<td>−5.4 to 1.6</td>
</tr>
<tr>
<td><strong>Methadone</strong></td>
<td>2.4</td>
<td>0.8−4.0</td>
</tr>
<tr>
<td>Suboxone</td>
<td>0.2</td>
<td>−2.2 to 2.3</td>
</tr>
<tr>
<td>Subutex</td>
<td>2.1</td>
<td>−0.9 to 5.1</td>
</tr>
<tr>
<td>Benzodiazepines</td>
<td>0.2</td>
<td>−1.5 to 1.8</td>
</tr>
<tr>
<td>Methamphetamine</td>
<td>0.2</td>
<td>−1.4 to 1.6</td>
</tr>
<tr>
<td><strong>Non-OMT Treatment History</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compulsory drug detention center</td>
<td>−2.3</td>
<td>−4.0 to −0.6</td>
</tr>
<tr>
<td>Religious detoxification</td>
<td>1.3</td>
<td>−3.8 to 6.6</td>
</tr>
<tr>
<td>Narcotics Anonymous</td>
<td>2.7</td>
<td>−1.3 to 6.7</td>
</tr>
<tr>
<td>Hospital detoxification</td>
<td>4.7</td>
<td>−5.3 to 9.7</td>
</tr>
<tr>
<td>OMT Treatment History</td>
<td>6.2</td>
<td>−1.8 to 7.4</td>
</tr>
<tr>
<td>Methadone</td>
<td>−0.6</td>
<td>−2.5 to 1.9</td>
</tr>
<tr>
<td>Buprenorphine</td>
<td>−0.6</td>
<td>−2.8 to 1.2</td>
</tr>
<tr>
<td>Injection practices</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Needle exchange use</td>
<td>−2.7</td>
<td>−4.2 to −1.1</td>
</tr>
<tr>
<td>Needle or syringe sharing</td>
<td>1.7</td>
<td>0.1−3.4</td>
</tr>
<tr>
<td><strong>DASS-21</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>−0.1</td>
<td>−0.2 to 0.1</td>
</tr>
<tr>
<td>Anxiety</td>
<td>−0.1</td>
<td>−0.1 to 0.3</td>
</tr>
<tr>
<td>Stress</td>
<td>0.3</td>
<td>0.1 to 0.5</td>
</tr>
</tbody>
</table>

**Notes:**
- Significant (p < 0.05) explanatory variables are presented in bold.
- Ethnicity is as compared to Malay ethnicity.
- Assessed in the past 30 days.
- Assessed as prior 6 months.
- Assessed as lifetime.

CI: 0.1, 3.4), age (β = 0.2; CI: 0.1, 0.4), and stress symptom severity score on the DASS-21 (β = 0.3; CI: 0.1, 0.5). Indian ethnicity (β = −6.2; CI: −9.0, −3.3), previous detention within a CDDC (β = −2.3; CI: −4.0, −0.6), and participation in a NSEP (β = −2.7; CI: −4.2, −1.1) were negatively correlated with treatment readiness. Estimated coefficients and confidence intervals for all explanatory variables in the final model are shown in Table 2.

### 4. Discussion

This study is the first in Malaysia to document attitudes of active PWID toward both MMT and BMT and, to our knowledge, is the first in Asia to evaluate correlates of treatment readiness among PWID. We find that a high proportion of PWID had ever used methadone (55.2%) or buprenorphine (51.7%), primarily in non-treatment settings, while comparatively few had ever been prescribed methadone (9.3%) or buprenorphine (24.3%) within OMT settings. For those who had never been in treatment, approximately a third of the sample (35.7%) cited a lack of interest as a reason for not entering treatment (35.7%), followed by prohibitive costs (6.3%) and mistreatment by staff (12.1%). We also found that the majority of subjects demonstrated a low (15.9%) or moderate (82.6%) treatment readiness.

This study confirms recently-described barriers to accessing OMT in Malaysia and other key countries where PWID contribute greatly to the HIV epidemic (Degenhardt, Mathers, et al., 2013a). Expanding access to OMT has been challenging in many low- and middle-income countries (Carriero et al., 2006; Wickersham, Marcus, Kamarulzaman, Zahari, & Altice, 2013a). Our finding that 18.7% of subjects had previous experience with OMT is markedly lower than a 2008 WHO study of access to OMT in low- and middle-income countries where previous OMT enrollment was 37%, ranging from 4% in Ukraine to 60% in Thailand (Lawrinson et al., 2008).

Despite recent efforts to scale up OMT in Malaysia, treatment capacity remains low compared to the number of PWID (Mazlan et al., 2006; Sylla, Bruce, Kamarulzaman, & Altice, 2007; Wickersham, Marcus, Kamarulzaman, Zahari, & Altice, 2013a).

Malaysia and other key countries where PWID contribute greatly to the moderate (82.6%) treatment readiness.
The finding that NSEP participation was associated with lower readiness for treatment may represent baseline differences between clients who do and do not utilize NSPs. NSEP outreach workers target PWID with riskier behaviors and a higher demand for injection equipment, and it has been documented elsewhere that these higher-risk individuals are more likely to enroll in and be retained in NSEP (Fisher, Reynolds, & Harbke, 2002; Hagan et al., 2000; Hahn, Vranizan, & Moss, 1997). These individuals may also be less ready for drug treatment, which is reflected in our data here.

The majority of our sample (82.6%) was moderately ready for treatment. Brief motivational interventions have been successfully deployed in clinical and community outreach (e.g., NSEP) settings to increase patients' readiness for treatment (Booth, Kwiatkowski, Iughci, Pinto, & John, 1998; Kidor et al., 2005; Stratthdee et al., 2006). Brief cognitive interventions, while originally tested on individuals with alcohol use disorders (Maisto et al., 2001; Rollnick, Heather, Gold, & Hall, 1992; Wilk, Jensen, & Havighurst, 1997), have been efficacious in increasing treatment entry for cocaine, heroin and amphetamine users (Baker, Boggs, & Lewin, 2001; Bernstein et al., 2005; Saunders, Wilkinson, & Phillips, 1995). These sessions consist of a single, structured encounter targeting cessation of drug use conducted by a healthcare professional in a primary care setting. In our study, many subjects interface with OMT providers to purchase methadone or buprenorphine for intermittent use. Therefore, it may be possible to provide interventions through OMT clinics or community outreach settings that already have contact with patients in order to promote engagement in OMT.

Related to this brief interventional practice is the finding of Brocato and Wagner (2008) that motivation to change, particularly recognition of a drug problem, is positively related to the strength of the therapeutic alliance between health care provider and patient. Our study showed that a majority of our participants demonstrated a positive attitude towards providers. In addition to systemic changes in OMT medication dispensation, educating providers about evidence-based practices for OMT will be instrumental in encouraging users to enter treatment. The therapeutic alliance is thus important for the effectiveness of brief interventions and represents another potential target area for improving OMT.

This study was conducted in 2010. By 2011, MMT had been expanded into the prison system (Singh, Chawarski, Schottenfeld, & Vicknasingam, 2013; Wickersham, Marcus, Kamarulzaman, Zahari, & Altice, 2013a; Wickersham, Zahari, Azar, Kamarulzaman, & Altice, 2013b). By 2013, OMT had expanded to approximately 380 general medical practice offices that treated approximately 10,000 patients. In addition, 27,756 patients were actively enrolled in 333 general medical practice offices and government-operated MMT centers (Singh et al., 2013). Expansion of methadone in the time since this study was conducted may have led to a higher proportion of PWID now having accessed structured MMT.

Beginning July 2011, in addition to the community-based (MMT) program provided by the Ministry of Health and private practitioners, the National Anti-Drug Agency (NADA-AADK) underwent a transformation that saw a shift away from compulsory detention by converting the CDDCs into Cure & Care Centers which provide voluntary comprehensive client centered treatment and support services including MMT (Ghani et al., 2015; Degenhardt, Mathers, et al., 2013a). There are currently 59 Cure and Care centers operated under National Anti-Drug Agency (NADA-AADK) which are client-friendly (Ghani et al., 2015; Ngadiman et al., 2014). Furthermore, AADK has plans to convert 18 of the 28 CDDCs into voluntary treatment centers by 2015 (Kaur, 2013). To date, NADA-AADK reports that more than 36,000 PWID have accessed these services, with a total of 6500 people currently receiving MMT (Kaur, 2013). Nonetheless, there are an estimated 170,000 PWID, most of whom use opioids (Ngadiman et al., 2014), indicating that coverage is low and many individuals are not enrolled in treatment.

Our findings are most applicable to the Malaysian setting. Although the SOCRATES scale has been validated in PWID in Malaysia, the cutoffs determining whether someone has “high”, “moderate” or “low” levels of treatment readiness may not be valid in this setting, making it possible that a higher number of subjects were treatment-ready than we found. Even if these cutoffs were slightly different, however, readiness for treatment would still be extraordinarily low in this sample of PWID. Also, the SOCRATES measures general treatment readiness, which we interpret solely in the context of MMT, the primary evidence-based treatment for opioid dependence. Finally, it is important to acknowledge that there are a number of external barriers, apart from attitudes, that prevent PWID from obtaining and being retained in OMT. One such complication is the fact that 42.8% and 40% also use methamphetamine and benzodiazepines, respectively, suggesting that OMT alone may not be sufficient and would likely be most effective in combination with behavioral interventions. Stimulant and benzodiazepine abuse and dependence negatively influence OMT outcomes, but the treatments for these substances are more complex (Brands et al., 2008; Kamal et al., 2007). Drug use stigma and social factors affecting readiness for treatment are also worthy of future study, as are structural barriers such as the cost and accessibility of treatment. Notwithstanding these limitations, we have been able to document experiences with and attitudes toward OMT as well as correlates of treatment readiness in a community-based sample of PWID in Malaysia.

5. Conclusions

OMT is the most effective treatment for opioid dependence and is an important strategy for primary and secondary HIV prevention. HIV prevention efforts among PWID have been limited by inadequate scale-up of OMT. By understanding the factors that contribute to patients’ unwillingness to enter or return to treatment, we can target areas of improvement and potentially improve the health of PWID in Malaysia. Interventions should target PWID who display moderate levels of treatment readiness to transition them to a higher state of treatment readiness. The preference for MMT over BMT, coupled with the evidence of buprenorphine misuse, indicates the need for education of both PWID and providers with respect to evidence-based OMT practices. Finally, addressing attitudinal factors and barriers to entering treatment will be essential in enrolling and retaining PWID in treatment.

Acknowledgements

This work was supported by the National Institutes for Drug Abuse for career development (K24 DA017072; FLA), research (NIDA R01 DA032106; FLA, AK), and training (T32GM07205, T32MH020031; ARB) grants as well as University Malaya’s High Impact Research Grant (E-000001-20001; AK) and the Yale Downs Fellowship (ARB). OraSure Technologies, Inc. provided discounted rapid HIV tests. Funders had no role in study design; in the collection, analysis and interpretation of data; in the writing of the report; or in the decision to submit the paper for publication.

References


