International Journal of Drug Policy 56 (2018) 73–80

Contents lists available at ScienceDirect

International Journal of Drug Policy

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

Research Paper

The effect of Housing First on adherence to methadone maintenance treatment

Milad Parpouchi*, Akm Moniruzzaman, Stefanie N. Rezansoff, Angela Russolillo, Julian M. Somers

Somers Research Group, Faculty of Health Sciences, Simon Fraser University, Blusson Hall, Room 11300-8888 University Dr., Burnaby, British Columbia, V5A 1S6, Canada

ARTICLE INFO

Keywords:
Methadone maintenance treatment
Adherence
Medication possession ratio
Housing First
Homelessness
Mental illness

ABSTRACT

Background: Opioid overdose deaths have become a public health crisis in North America, and those who are homeless are particularly vulnerable. Methadone maintenance treatment (MMT) may prevent overdose and death among homeless people with opioid dependence, but suboptimal medication adherence is a common limitation. Previous research found that Housing First (HF) increases antipsychotic medication adherence among formerly homeless people. However, no experimental trials have examined whether HF has a significant impact on MMT adherence. We examined the intervention effect of HF on MMT adherence in a randomized sample of homeless adults experiencing mental illness and opioid dependence in Vancouver, Canada.

Methods: Comprehensive administrative and self-reported data from homeless adults living with serious mental illness recruited to the Vancouver At Home study were analyzed. Only methadone recipients were included (n = 97). The medication possession ratio (MPR) was utilized as the measure of adherence, and relevant data were obtained from provincial administrative pharmacy records. Study arms were HF and treatment as usual (TAU). Student *t*-tests were used to test for differences in MMT MPR between HF and TAU.

Results: No significant differences were observed in MMT MPR between participants in HF and TAU (0.52 vs. 0.57, p = 0.559) in the post-randomization period.

Conclusion: HF was not associated with significantly different MMT MPR compared to TAU. Additional interventions are indicated as HF alone was insufficient to facilitate improved MMT adherence among formerly homeless adults experiencing concurrent opioid dependence and serious mental illness.

Introduction

Opioid overdose deaths have increased and become a public health crisis in communities across North America (British Columbia Coroners Service, 2017; Rudd, Aleshire, Zibbell, & Gladden, 2016; Ruhm, 2017). Homeless people are at particular risk for nonfatal drug overdose (Fischer et al., 2004), and opioid overdose is reported as a major cause of death in this population (Baggett et al., 2013). Methadone maintenance treatment (MMT) has been shown to reduce illicit opioid use (Gowing, Farrell, Bornemann, Sullivan, & Ali, 2011; Mattick, Breen, Kimber, & Davoli, 2009) and related mortality (Brugal et al., 2005; Caplehorn, Dalton, Haldar, Petrenas, & Nisbet, 1996; Huang et al., 2011; Langendam, van Brussel, Coutinho, & van Ameijden, 2001), although little research has examined the effectiveness of MMT among opioid-dependent homeless people.

Inconsistent adherence to MMT can be problematic, as this can increase susceptibility to overdose (Wolff, 2002). Preliminary analysis of MMT adherence in a Canadian sample of homeless and mentally ill adults found that methadone was taken on fewer than half of the days over an average 6.5–year period after initiating treatment (Parpouchi, Moniruzzaman, Rezansoff, Russolillo, & Somers, 2017). A treatment schedule requiring MMT patients to visit a pharmacy daily for witnessed ingestion of methadone has been found to be difficult for some patients (Anstice, Strike, & Brands, 2009) and may hence pose barriers to consistent adherence. Illicit opioid use during treatment has also been found to be associated with poorer adherence (Raffa et al., 2007), and researchers have argued that doses should be titrated rapidly during induction to increase the proportion of people experiencing abstinence from illicit opioid use during MMT (Trafton, Minkel, Humphreys, 2006). However, it is important to note that the highest risk of overdose during MMT is during the induction phase (Baxter et al., 2013), and titrating doses too quickly can lead to respiratory

* Corresponding author.
E-mail addresses: spa16@sfu.ca (M. Parpouchi), akm_moniruzzaman@sfu.ca (A. Moniruzzaman), sra20@sfu.ca (S.N. Rezansoff), arussoli@sfu.ca (A. Russolillo), jsomers@sfu.ca (J.M. Somers).

https://doi.org/10.1016/j.drugpo.2018.03.012
Received 27 November 2017; Received in revised form 8 February 2018; Accepted 13 March 2018

depression and death (Modesto-Lowe, Brooks, & Petry, 2010), so clinical practice guidelines should be consulted. Lower adherence to MMT has also been found to be associated with methadone doses below 60 mg (Shen et al., 2016).

Homelessness is recognized as a barrier to adherence to a variety of treatments involving medication (Hunter et al., 2015; Milloy et al., 2012; Sajatovic, Valenstein, Blow, Ganoczy, & Ignacio, 2006). Competing priorities, such as securing shelter and other basic necessities, can compromise access to health care (Gelberg, Gallagher, Andersen, & Koegel, 1997; Krausz et al., 2013) and continuity of prescribed medication (Hunter et al., 2015). The perception of discrimination from health practitioners (Wen, Hudak, & Hwang, 2007), as well as mental health and substance use problems (Krausz et al., 2013) may also negatively affect access to health care among homeless people. In response to studies reporting suboptimal MMT retention or adherence among homeless people, researchers have called for housing as part of the solution (Appel, Tsemberis, Joseph, Stefancic, & Lambert-Wacey, 2012; Lundgren, Sullivan, Maina, & Schilling, 2007; Parpouchi et al., 2017).

Existing research suggests that Housing First (HF) may promote medication adherence among formerly homeless people (Appel et al., 2012; Rezansoff et al., 2017). HF includes the provision of housing, health care, and social supports, with no requirement of treatment or abstinence (Tsemberis, Gulcur, & Nakae, 2004; Tsemberis, 1999). Appel et al. (2012) investigated the effect of HF on MMT retention among homeless and mentally ill methadone patients who had recent involvement with the criminal justice system. Three years post-implementation, MMT retention was significantly higher among participants who received HF compared to the comparison group (52% vs. 20%). However, the study had important limitations; a randomized controlled trial (RCT) design was not used, and there were differences in the inclusion criteria for membership in the two groups. Moreover, the study measured treatment retention rather than medication adherence. It is thus unclear whether HF is responsible for increased MMT adherence. Using an experimental design, Rezansoff et al. (2017) found that when compared to "usual care" HF was associated with significantly higher adherence to antipsychotic medication among homeless adults diagnosed with schizophrenia. Experimental research is needed to determine whether HF has a similar effect on adherence to other drugs, including methadone.

The current study is the first randomized trial to examine the effect of HF on MMT adherence among homeless adults living with serious mental illness. We hypothesized that randomization to HF would be associated with significantly higher MMT adherence than randomization to treatment as usual (TAU).

Methods

Data sources and participant sampling

Data for the present study came from two randomized controlled trials (RCTs) which collectively comprise the Vancouver At Home (VAH) study (Current Controlled Trials: ISRCTN57595077 and ISRCTN66721740). The two trials investigated HF interventions among homeless adults (n = 497) experiencing serious mental illness in Vancouver, Canada (Somers et al., 2013). The current study was approved by the institutional ethics review board of Simon Fraser University.

A baseline interview was conducted involving a variety of interviewer-administered questionnaires addressing socio-demographics, community functioning, health/social service use, physical health conditions, mental disorders, and substance use behaviours. Each participant's level of need for support was formally assessed via an algorithm comprised of questionnaire responses and a clinical assessment. Further details are included in Somers et al. (2013).

All pharmacies in BC are connected to PharmaNet, an administrative database that captures drug dispensation information (Government of British Columbia, 2017b). An extract from PharmaNet was prepared for consenting participants, including all episodes of dispensed methadone any time from January 1, 1996 through the post-randomization period.

A low threshold model of access to MMT is used in communities across BC where methadone is prescribed by licensed physicians, and dispensed at approved pharmacies. Ingestion is directly observed and documented by pharmacists on a daily basis, although "carry" privileges may also be prescribed (College of Physicians & Surgeons of British Columbia, 2016). The costs of MMT are paid by the BC government for low-income patients (Government of British Columbia, 2017a).

Interventions

Housing and supports were based on the well-described Pathways to Housing model of Housing First (Tsemberis, 2010). An external team evaluated all interventions for fidelity using structured assessments (Tsemberis, 2010). There were three interventions and two TAU groups. One of the interventions involved market rental apartments in neighbourhoods throughout the Greater Vancouver Area. Participants chose the apartment they wanted to live in from those available. Assertive Community Treatment (ACT) with 24/7 availability was the model used for health and social service delivery (includes a multidisciplinary team of health and social service providers). The second intervention also involved market rental apartments, but, instead of ACT, intensive case management was used where participants were connected to services in the community by case managers. The third intervention involved an entire building designated to VAH and provided each resident with a private room and bathroom and shared space for additional amenities (e.g., dining area and kitchen). Health and social service providers were on-site and available 24/7. Recreational programming (e.g., sports activities) and work/volunteer opportunities were also integrated into this intervention. The two TAU conditions were comprised of those housing and support services available in Vancouver. Participants were assigned to study conditions based on their assessed level of need for support. Additional intervention details are contained in the VAH protocol (Somers et al., 2013).

Variables of interest

The dependent variable was the medication possession ratio (MPR), a validated (Steiner, Koepsell, Fihn, & Inui, 1988) and frequently used measure of medication adherence (Andrade, Kahler, Frech, & Chan, 2006). MPR represents the proportion of days during an observation period for which a person has been dispensed medication. We analyzed methadone dispensation using BC PharmaNet data, and our observation period included the number of days between randomization and the end of the study period (March 31, 2013) or date of death. We also tested for any difference between randomization groups in the period preceding the baseline interview, beginning with the date of their first methadone dispensation (any day between January 1, 1996 and VAH randomization) and ending with the date of VAH randomization. We assumed indefinite continuous treatment (Nosyk et al., 2012), because the desirability of treatment continuity is "widely accepted in Canada" (Nosyk, Marsh, Sun, Schechter, & Anis, 2010, p. 22). Data regarding prescribed methadone doses for each participant were unavailable, but we indirectly estimated daily methadone doses for each participant. This was done by dividing the quantity (mg) of methadone dispensed by the number of days of supply provided. For example, if the administrative record indicated that a participant received 150 mg of methadone for 2 days, the estimated dose for the participant would be 75 mg. A pharmacy transaction involving a 1 day supply of methadone was assumed to involve witnessed ingestion.

The amount of pharmacy transactions and MMT-associated costs