Research Paper

Employment and paid work among participants in a randomized controlled trial comparing diacetylmorphine and hydromorphone

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ABSTRACT

Background: Employment is one of the less studied but a significant outcome of medication-assisted treatment. Thus, we aimed to explore employment outcomes of medication-assisted treatment with hydromorphone (HDM) or diacetylmorphine (DAM). The secondary aim was to estimate characteristics of this population as well as treatment-related factors associated with these outcomes.
Methods: This was a secondary analysis of a randomized, double blind controlled trial. A total of 102 and 100 participants were randomized to receive injectable DAM or HDM for 6 months respectively. In stage 2, 144 participants were randomized again to receive either oral or injectable forms of the medication they received for another 6 months. Participants were interviewed at 5 timepoints: before and 3, 6, 9 and 12 months after treatment assignment. Generalized estimating equations (GEE) with a logit link was fitted to determine factors related to paid work in the past 30 days.
Results: Mean age of participants was 44.3 (SD = 9.6) and 59 (29.2%) participants were men. At each timepoint, 6–8 (3.6%–4.1%) participants reported employment in the past 30 days and 40 to 52 (19.7%–26.7%) reported minimum 1 day of paid work. University or college education [OR = 2.12: 95% CI = (1.25, 3.62), P = 0.01] was significantly associated with paid work after adjustment for age, gender, treatment arms, timepoints, days receiving study treatment, physical health, psychological health and crack cocaine use in the past 30 days.
Conclusion: The rate of employment was lower among participants of this study compared to similar studies on heroin-assisted treatment. Higher education was associated with increased odds of paid work. A large gap exists between employment rate and the proportion of participants who reported paid work. Supported employment and occupational therapy could optimize the employment outcomes of this population.

Introduction

Treatment with injectable opioids (mainly heroin-assisted treatment, HAT) seems to be effective in improving health-related outcomes such as treatment retention, substance use, physical and psychological health, quality of life, service utilization, and social reintegration in populations insufficiently responsive to conventional oral opioid treatments (Oviedo-Joekes et al., 2016; Oviedo-Joekes et al., 2008; Strang et al., 2015). Increasing evidence supports an association between employment and improvement in other treatment outcomes of

opioid dependence (Koo, Chitwood, & Sánchez, 2007; McCoy, Comerford, & Metsch, 2007; Parmenter et al., 2013; Platt, 1995). However, most studies of HAT have focused on changes in criminal activities or sex work as indicators of social reintegration and few have reported the effects on employment, yielding inconclusive results (Eugenia, March, Romero, & Perea-Milla, 2010; Güttinger et al., 2003; Verthein, Haasen, & Reimer, 2011). Verthein et al. showed increasing employment rates among participants of the German HAT trial after 12 months, which continued up to the fourth year of the follow-up period. The ability to work was the strongest predictor of successful social

Table 1
Variables included in the GEE analysis, their description and whether they were included in the GEE as a fixed variable at baseline or time-varying variable measured at follow-up visits.

Variable	Description	Baseline assessment	Follow-up assessment
Paid work	Working for at least 1 day in the past 30 days assessed by the question: "How many days were you paid for working in the past 30 days (Include legal 'under-the-table' work)?" measured with European version of Addiction Severity Index (EUROPASI) (Kokkevi & Hartgers, 1995; McLellan et al., 1985)	*	
Age	Self-reported calendar age measured with Socio Demographic instrument	*	
Gender	Self-identified as male or female. Due to the small number of individuals who identified as transgender female 3 (1.5%), they were not included in the final analysis measured with Socio Demographic instrument	*	
Aboriginal ethnicity	Self-identified as aboriginal ancestry, including Métis, First Nations, and Inuit measured with Socio Demographic instrument	*	
Treatment arms	Five arms assumed which were no treatment (baseline or drop-out), injectable heroin, injectable hydromorphone, oral heroin, oral hydromorphone.	*	*
Days with SALOME treatment	Number of days receiving diacetylmorphine or hydromorphone provided by the study clinic in the past 30 days	Assumed zero	*
Education	Participants whose highest level of education was technical school, some college/university or college/university diploma were categorized as having college/university education measured with Socio Demographic instrument	*	
Driving License	Possession of driving license measured with European version of Addiction Severity Index (EUROPASI) (Kokkevi & Hartgers, 1995; McLellan et al., 1985)	*	
Physical health	Maudsley Addiction Profile (MAP) range from 0 to 40. Higher scores indicate poorer physical or psychological health (Marsden et al., 1998)	*	*
Psychological health	Maudsley Addiction Profile (MAP) range from 0 to 40. Higher scores indicate poorer physical or psychological health (Marsden et al., 1998)	*	*
HIV status	Serostatus for Human Immunodeficiency Virus measured with lab test.	*	
HCV status	Serostatus for Hepatitis C Virus measured with lab test.	*	
Illicit heroin injection	Self-reported illicit heroin injection in the past 30 days measured with European version of Addiction Severity Index (EUROPASI) (Kokkevi & Hartgers, 1995; McLellan et al., 1985)	*	*
Cocaine powder injection	Self-reported cocaine powder injection in the past 30 days measured with European version of Addiction Severity Index (EUROPASI) (Kokkevi & Hartgers, 1995; McLellan et al., 1985)	*	*
Crack cocaine use	Self-reported crack cocaine use injection in the past 30 days measured with European version of Addiction Severity Index (EUROPASI) (Kokkevi & Hartgers, 1995; McLellan et al., 1985)	*	*
Sex work engagement	"In the past 30 days, how many days did you do sex work?" measured with European version of Addiction Severity Index (EUROPASI) (Kokkevi & Hartgers, 1995; McLellan et al., 1985)	*	*
Housing instability	Housing instability was defined as either unstable housing i.e., single-resident occupancy hotel rooms with restrictions or "couch surfing"; or street housing i.e., living outdoors, in vehicles, or in public places, such as train stations.	*	*
Marital status	Being or not being in marital/common law relationship measured with Socio Demographic instrument	*	*
History of incarceration	At each time point, participants were asked about the number of days spent in jail in the last 30 days. Lifetime history of incarceration was considered positive at each follow-up visit if participants had reported days spent in jail at any time point or during lifetime at baseline measured with European version of Addiction Severity Index (EUROPASI) (Kokkevi & Hartgers, 1995; McLellan et al., 1985).	*	*

integration (Verthein et al., 2011; Verthein, Schäfer, & Degkwitz, 2013). Similarly, a previous cohort study from Switzerland found a decrease in the unemployment rate from 73% to 48% as early as 6 months after HAT enrolment, which remained relatively stable up to the 18 months (Rehm et al., 2001). Conversely, Güttinger et al. (2003) described a slight increase of unemployment in their 6-year follow-up of Swiss HAT, and a rather large increase of dependence on welfare benefits (Güttinger et al., 2003).

The mentioned studies of HAT only focused on the official forms of employment (i.e. jobs with an attached contract which is recognized by the municipal or federal government). However, other forms of income generation such as "under-the-table" work may not only provide patients with a path to paid employment, but may be a sensitive indicator of participants' ability and motivation to work, as unofficial employment does not jeopardize social assistance and other benefits (Richardson, Wood, Montaner, & Kerr, 2012). Investigating both employment and other means of income generation in this population will help to better understand employment profiles, barriers, and facilitators to employment.

The present study explored employment outcomes among individuals with opioid dependence in treatment with diacetylmorphine (DAM) or hydromorphone (HDM).

Methods

Participants

The present study is a secondary analysis of data from SALOME, a randomized, double blind controlled trial in Vancouver, Canada, which compared medication-assisted treatment with DAM and HDM. Recruitment strategies and baseline characteristics of participants are published elsewhere (Oviedo-Joekes, Marchand, Guh et al., 2015; Oviedo-Joekes, Marchand, Lock et al., 2015). In summary, 202 participants were included between December 2011 and December 2013 if they: 1) were 19 years or older, 2) were diagnosed with opioid dependence for a minimum of 5 years, 3) self-reported regular current injection of opioids confirmed by positive urine toxicology, and 4) had received at least two prior treatment episodes for substance use disorder including at least one medication-assisted treatment. Participants were excluded if they had severe medical conditions precluding treatment with DAM or HDM (e.g., respiratory problems, stage II or greater hepatic encephalopathy), were pregnant or planning on becoming pregnant, or had an imminent period of extended incarceration.