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A therapeutic workplace for the long-term treatment of drug addiction and unemployment: Eight-year outcomes of a social business intervention ☆

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ABSTRACT

This study evaluated the long-term effects of a therapeutic workplace social business on drug abstinence and employment. Pregnant and postpartum women (N = 40) enrolled in methadone treatment were randomly assigned to a therapeutic workplace or usual care control group. Therapeutic workplace participants could work weekdays in training and then as employees of a social business, but were required to provide drug-free urine samples to work and maintain maximum pay. Three-year outcomes were reported previously. This paper reports 4- to 8-year outcomes. During year 4 when the business was open, therapeutic workplace participants provided significantly more cocaine- and opiate-negative urine samples than controls; reported more days employed, higher employment income, and less money spent on drugs. During the 3 years after the business closed, therapeutic workplace participants only reported higher income than controls. A therapeutic workplace social business can maintain long-term abstinence and employment, but additional intervention may be required to sustain effects.

1. Introduction

Drug addiction is often a chronic problem that can persist for many years and sometimes throughout a person's lifetime (Dennis & Scott, 2007; McLellan, Lewis, O'Brien, & Kleber, 2000). Treatments can promote drug abstinence in some patients, but relapse is common following discharge (Etter & Stapleton, 2006; Knapp, Soares, Farrel, & Lima, 2007; Lancaster, Hajek, Stead, West, & Jarvis, 2006; Sees et al., 2000; Tonstad et al., 2006; Veilleux, Colvin, Anderson, York, & Heinz, 2010) and sometimes after periods of drug abstinence that last a year or more (Galai et al., 2003; Shah, Galai, Celentano, Vlahov, & Strathdee, 2006). The development of enduring solutions to sustain abstinence over many years is perhaps the greatest challenge facing the substance abuse treatment and research communities.

The therapeutic workplace is a novel long-term, employment-based intervention designed to address the chronic nature of drug addiction by using a contingency management intervention that arranges abstinence-contingent access to paid employment to reinforce long-term drug abstinence (Silverman, 2004; Silverman, DeFulio, & Sigurdsson, 2012). Contingency management interventions are rooted in research that suggests that drug addiction is operant behavior that is maintained and modifiable by its consequences and should be modifiable through the strategic use of alternative reinforcement (Bigelow & Silverman, 1999). Based on these principles, Higgins and colleagues developed voucher-based reinforcement intervention in which patients receive monetary vouchers exchangeable for goods and services for providing drug-free urine samples (Higgins et al., 1991). Voucher-based reinforcement can increase abstinence from a wide range of drugs (Lussier, Heil, Mongeon, Badger, & Higgins, 2006) and has been identified as a highly effective behavioral treatment for drug addiction (Castells et al., 2009; Dutra et al., 2008; Knapp et al., 2007; Pilling, Strang, Gerada, & NICE, 2007). Importantly, increasing the value of the vouchers can initiate sustained abstinence in refractory injection drug users (Dallery, Silverman, Chutuape, Bigelow, & Stitzer, 2001; Silverman, Chutuape, Bigelow, & Stitzer, 1999), and arranging long-term exposure to the voucher-based abstinence reinforcement can maintain long-term abstinence and

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prevent relapse (Kirby et al., 2013; Silverman, Robles, Mudric, Bigelow, & Stitzer, 2004).

The demonstrated benefit of high magnitude and long duration abstinence reinforcement raises an obvious practical problem: How could such interventions be financed? The therapeutic workplace is designed to provide a practical solution to this problem. The essential features of the intervention are simple: Participants are hired and paid to work, as in typical employment. Unlike a typical employment site, however, participants in the therapeutic workplace must provide frequent objective evidence of drug abstinence to continue working and maintain maximum pay. The approach is useful because it does not require an independent source of funds to address abstinence, but instead harnesses the reinforcing effects of employment-based wages to reinforce abstinence. Since employment can be sustained for years, this approach also offers the potential advantage of maintaining employment-based abstinence reinforcement over long periods of time.

The therapeutic workplace was designed to treat low-income, chronically unemployed drug-dependent women. Since many of these women lacked job skills (Brewington, Arella, Deren, & Randell, 1987; Silverman, Chutuape, Svikis, Bigelow, & Stitzer, 1995), the intervention had two phases of treatment. During phase 1, each patient's "job" was to participate in an intensive stipend-supported training program designed to establish job skills while abstinence was initiated. Once a participant initiated abstinence and acquired needed skills, she progressed to phase 2 where she was hired as an employee in an on-going service business to perform data entry jobs (Silverman et al., 2005). Employment-based abstinence reinforcement was maintained throughout both phases. We previously reported that the therapeutic workplace could initiate (Silverman, Svikis, Robles, Stitzer, & Bigelow, 2001) and maintain (Silverman et al., 2002) heroin and cocaine abstinence for up to 3 years in a group of pregnant and recently postpartum methadone maintained women. During the initial 3 years of that study, participants were primarily enrolled in the phase 1 training phase of the therapeutic workplace. The phase 2 data entry business, Hopkins Data Services, was opened in April 2000, and therapeutic workplace participants who met the phase 2 entrance requirements were hired as data entry operators in that business. Those participants were eligible to remain as employees in that data entry business until it was closed in October 2002. We followed all participants until 8 years after intake. Here we report on the effectiveness of the therapeutic workplace business in maintaining drug abstinence and employment during the fourth year after intake when the participants were eligible for employment in the data entry business. We also report on the post-intervention effects of long-term exposure of the therapeutic workplace by comparing the two groups during the years after the data entry business closed and the opportunity to participate in the therapeutic workplace ended for all participants.

2. Materials and methods

Participants in this study were enrolled in a randomized controlled clinical trial between October 30, 1996 and January 21, 1998. At the time of enrollment, participants were receiving treatment at the Center for Addiction and Pregnancy (Jansson et al., 1996; Svikis et al., 1997), a comprehensive specialty treatment program designed for pregnant and postpartum substance-dependent women located at the Johns Hopkins Bayview Medical Center in Baltimore, Maryland. Interested individuals who met the eligibility criteria (see below) were randomly assigned to a therapeutic workplace or usual care control group. Both groups were initially enrolled in the study for 6 months and then were repeatedly re-enrolled in the study in 6-month blocks for 8 years. The main methods and results of the trial were reported previously (Silverman et al., 2001, 2002) as was a description of the data entry business (Silverman et al., 2005). Methods for the training and employment phases will be reviewed briefly with only methods specific to the period between the fourth and eighth year after intake described here in detail.

2.1. Recruitment and enrollment

Center for Addiction and Pregnancy patients were eligible for this study if they were between the ages of 18 and 50 years, unemployed, currently receiving methadone maintenance treatment, and provided at least one urine sample positive for opiates or cocaine during the 6 weeks prior to screening for study enrollment. Patients were excluded if they were considered at risk for suicide or had a psychiatric disorder that might disrupt their workplace functioning or limit their ability to provide informed consent (e.g., schizophrenia). Participants provided informed consent, and the study was approved by The Johns Hopkins University School of Medicine Institutional Review Board.

2.2. Experimental design and groups

Forty women who provided informed consent were randomly assigned to a therapeutic workplace ($n = 20$) or a usual care control ($n = 20$) group. There were no significant baseline differences between the two groups on any intake measures (Silverman et al., 2001). During the initial months of the study, therapeutic workplace participants were invited to participate in an intensive training program to learn basic academic skills and to become data entry operators (phase 1). When we opened the phase 2 data entry business, Hopkins Data Services, in April 2000, therapeutic workplace participants who met the phase 2 entrance requirements (described below; $N = 9$) were hired as data entry operators in that business while those who did not meet the phase 2 entrance criteria by the forty-eighth month in the study were no longer eligible for employment in the phase 2 data entry business. Eligible participants were allowed to continue their employment until Hopkins Data Services closed in October 2002 due to financial considerations. Since participants were enrolled in the study at different times, they started and ended employment in the phase 2 data entry business at different points in their study participation. Fig. 1 shows the amount of time spent by each participant in the two study phases. Both groups received standard treatment at the Center for Addiction and Pregnancy, including referrals to services after treatment at the Center for Addiction and Pregnancy ended. Usual care control participants only received the Center for Addiction and Pregnancy treatment and referrals.

2.3. Outcome assessments

The long-term outcome measures for this study were derived from assessments conducted once every 30 days for all participants in both groups from 18 to 48 months after treatment entry, and more extensive assessments collected every 6 months from 18 to 96 months after treatment entry. At each assessment a urine sample was collected, and interviews and questionnaires were administered. Results from the assessments conducted from 18 to 36 months after intake were reported previously (Silverman et al., 2002). This report will focus on data collected from 37 to 96 months after intake. Participants were contacted via phone, mail, or in person by outreach staff and were given cab transportation to and from the research unit. In addition, they were paid $30 in vouchers for each 30-day assessment and $50 in vouchers for every 6-month assessment.

2.3.1. Urine collection and toxicology

The primary outcome measures for this study were derived from urine samples collected at each follow-up assessment under procedures designed to ensure their validity (Silverman et al., 2002) and tested for metabolites of cocaine (benzoylecgonine) and opiates (morphine)