Journal of Substance Abuse Treatment 50 (2015) 3–10

Contents lists available at ScienceDirect

Journal of Substance Abuse Treatment

Regular articles

A randomized trial of computerized vs. in-person brief intervention for illicit drug use in primary care: Outcomes through 12 months☆,☆☆,★

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ARTICLE INFO

Article history:
Received 7 March 2014
Received in revised form 29 August 2014
Accepted 5 September 2014

Keywords:
Brief intervention
Drug misuse
Primary care
Computerized intervention
SBIRT

ABSTRACT

This study examined outcomes through 12 months from a randomized trial comparing computerized brief intervention (CBI) vs. in-person brief intervention (IBI) delivered by behavioral health counselors for adult community health center patients with moderate-level drug misuse ($N = 360$). Data were collected at baseline, 3-, 6-, and 12-month follow-up, and included the Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST) and laboratory analysis of hair samples. Repeated measures analyses examined differential change over time. There were no significant differences in drug-positive hair tests over time or by condition. Global ASSIST scores decreased in both conditions ($p < .001$), but there were no significant differences between conditions in overall change across 12 months of follow-up ($p = .13$). CBI produced greater overall reductions in alcohol ($p = .04$) and cocaine ($p = .02$) ASSIST scores than IBI, with initial differences dissipating over time. Computerized brief interventions present a viable alternative to traditional in-person brief interventions.

1. Introduction

Illicit substance use poses a serious public health problem in the United States and throughout the world. The vast majority of individuals who meet diagnostic thresholds for substance use disorders never receive treatment (Substance Abuse & Mental Health Administration (SAMHSA), 2012). Moreover, most of the aggregate health and social harms resulting from substance use are experienced by the large segment of the population whose substance use does not yet rise to such a level that it prompts treatment-seeking (Rossow & Romelsjo, 2006; Spurling & Vinson, 2005).

Primary care and other healthcare settings are promising venues in which to provide services along the full spectrum of substance use problems. Recent years have seen increased momentum for integrating screening, brief intervention, and referral to treatment (SBIRT) service models into medical settings. Brief interventions are designed to be short but potent encounters that can catalyze motivation and behavior change (Burke, Arkowitz, & Menchola, 2003; Madras et al., 2009; Moyer, Finney, Swearingen, & Vergun, 2002; Rubak, Sandbaek, Lauritzen, & Christensen, 2005).

There is a strong evidence base supporting the effectiveness of brief interventions (BIs) for alcohol misuse (Bertholet, Daeppen, Wietlisbach, Fleming, & Burnand, 2005; Cuijpers, Riper, & Lemmers, 2004; Moyer et al., 2002; Whitlock, Polen, Green, Orleans, & Klein, 2004; Wilk, Jensen, & Havighurst, 1997). Several randomized trials have found support for BIs in reducing drug use in non-treatment-seeking populations (Bernstein et al., 2005; Bernstein et al., 2009; D'Amico, Miles, Stern, & Meredity, 2008; Humeniuk et al., 2012; Ondersma, Svikis, & Schuster, 2007; Ondersma, Svikis, Thacker, Beatty, & Lockhart, 2014; Zahradnik et al., 2009), although two recent large trials have not found such interventions to be effective (Roy-Byrne, Bumgardner, Krupski, et al., 2014; Saitz, Palfai, Cheng, et al., 2014).

Adoption and sustainability of BIs in clinical settings have been stymied by a number of factors. Screening and BI for alcohol misuse are among the highest ranked preventive services in terms of cost-effectiveness, yet it is highly underutilized compared to similarly ranked services (Solberg, Maciosek, & Edwards, 2008). Many health settings face substantial constraints with respect to time, personnel, and costs. For the typical primary care physician, simply delivering all of the preventive

☆ Declarations of interest and source of funding: The study was supported through National Institute on Drug Abuse (NIDA) grant R01 DA026003 (PI Schwartz). NIDA had no role in the design and conduct of the study; data acquisition, management, analysis, and interpretation of the data; and preparation, review, or approval of the manuscript.
☆☆ Disclosures: No financial disclosures were reported by Drs. Gryczynski, Mitchell, O'Grady, Gonzales, Moseley, Peterson, or Schwartz. Dr. Ondersma is part owner of Interva, Inc., which markets the intervention authoring tool that was used to develop the intervention for this study.
★ Clinical trials registration: Clinicaltrials.gov NCT01131520.
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http://dx.doi.org/10.1016/j.jsat.2014.09.002
0740-5472/

services alone that are currently recommended would take the entire working day (Yarnall, Pollak, Ostbye, Krause, & Michener, 2003).

One approach to providing screening and BI services in primary care is to have dedicated behavioral health staff that can deliver BIs. Yet not all clinics can afford to support such staff. Computerized, self-directed BIs represent another approach. A growing body of evidence shows that computerized interventions can be effective for health promotion and reducing risk behaviors (Portnoy, Scott-Sheldon, Johnson, & Carey, 2008), including alcohol misuse (Carey, Scott-Sheldon, Elliott, Bolles, & Carey, 2009), illicit drug use (Gilbert et al., 2008; Ondersma et al., 2007; Ondersma et al., 2014), and HIV sex risk behaviors (Gilbert et al., 2008; Grimley & Hook, 2009). Computerized BIs have the potential to avoid some of the common challenges that have stymied widespread adoption and sustainability of staff delivered BIs. Importantly, such interventions can be deployed by computer with minimal staff involvement. Eventually, integration of computerized self-administered screening and brief interventions could have major efficiency advantages. However, an important question is the comparative effectiveness of computerized and in-person brief interventions.

1.1. Focus of the present study

The current study examines outcomes through 12 months of follow-up from a randomized trial comparing a computerized brief intervention (CBI) with an in-person brief intervention (IBI) delivered by a behavioral health counselor for adult primary care patients with moderate-level illicit drug use. We originally hypothesized that both CBI and IBI conditions would show improvements from baseline, that the CBI condition would show greater improvements than the IBI condition in the first 3 months, and that CBI would maintain its advantage over IBI through 12 months. We made this hypothesis under the premise that the computerized, self-directed format may have a disarming quality for dealing with the potentially sensitive topic of drug use, thereby creating greater comfort in disclosing risky behaviors and higher receptivity to suggestions to modify behaviors. Moreover, the CBI would deliver the same "ideal form" intervention consistently, which may not be possible for IBI due to competing demands in a busy healthcare environment.

We previously reported outcomes from this study at a 3-month endpoint, which found no significant differences between CBI and IBI conditions in the primary outcomes of ASSIST global drug risk scores or drug-positive hair tests (Schwartz et al., 2014). However, there were some encouraging secondary findings supporting the computerized intervention, which showed significantly lower marijuana and cocaine ASSIST scores at a 3 month endpoint compared to the in-person brief intervention.

The current study extends our earlier findings by considering a longer follow-up window and using an analytical strategy that examines change over time as opposed to status at a single endpoint.

2. Materials and methods

2.1. Design

This study was a randomized controlled trial in which participants with moderate-risk drug use were randomly assigned to receive a single-session brief intervention delivered either by a computer or by a behavioral health counselor [see Schwartz et al. (2014), for a detailed description]. In summary, the IBI was conducted by experienced, master's-level behavioral health counselors. The CBI was designed to have similar content as the IBI. Participants were randomly assigned to conditions using a block randomization procedure. The primary outcome was the reduction in global ASSIST score and results of hair testing for drug use. We also examined substance-specific ASSIST scores as secondary outcomes. The study was approved by the Institutional Review Boards of Friends Research Institute and Christus Health, and all participants provided written informed consent. The study was monitored by an independent Data and Safety Monitoring Board and registered on the national clinical trials registry (NCT01131520). Participants were paid $20 for completing each study assessment.

2.2. Setting

The study was conducted at two rural community health centers in New Mexico. Both of the clinics contracted with Sangre de Cristo Community Health Partnership (SDCCHP), the non-profit organization that administered the State of New Mexico's SAMHSA SBIRT grant (Gonzales et al., 2012; Madras et al., 2009).

2.3. Participants

Participants were adult clinic patients, of whom 46% were female, 90% were white, and 47% were of Hispanic ethnicity. The mean age was 36.2 years ($SD = 14.6$). The majority were unemployed (59%), 78% had completed high school or equivalent education, 22% were married, and 66% owned a computer at home. There were no significant differences between conditions in demographics or computer ownership (Schwartz et al., 2014).

2.4. Eligibility and recruitment

Patients were approached in the clinic waiting area by a research assistant and invited to be screened for a "health study." The research assistant then administered the ASSIST in a private office. The eligibility criteria were designed to reflect the criteria of the World Health Organization ASSIST brief intervention trial (Humeniuk et al., 2012). Adult patients (ages 18 and older) were eligible if they scored in the moderate risk range (ASSIST scores between 4 and 26) for non-medical use of any of the following: marijuana, cocaine, amphetamines or methamphetamine, inhalants, sedatives, hallucinogens, or opioids. Patients were excluded and referred to the behavioral health counselor if they scored in the high risk range for any of the drugs listed above, or alcohol (ASSIST score >26). Other exclusion criteria included past 3-month drug abstinence, receipt of drug abuse treatment within the past year, receipt of a brief intervention within the past month, or plans to move out of New Mexico in the next year (to allow for appropriate follow-up).

2.5. Random assignment

Following the informed consent and baseline assessment, participants were randomized within each site to either CBI or IBI using a block randomization approach (Fig. 1). Three hundred sixty participants were enrolled in the study and randomized, but one was withdrawn post-randomization because of the participant's subsequent disclosure of being enrolled in buprenorphine treatment for opiate dependence. Research assistants and participants were blinded to the assignment at the time of the baseline assessment, after which the research assistant would open the next opaque envelope to reveal the participant's condition. For those assigned to the in-person brief intervention, the research assistant accompanied the participant to the clinic behavioral health counselor, who would deliver the IBI. For those assigned to the CBI, the research assistant set up the tablet computer with headphones, gave the participant a brief tutorial on navigating the intervention, and allowed the participant to complete the computerized intervention privately.

2.6. Study conditions

2.6.1. In-Person Brief Intervention (IBI)

The IBI was based on motivational interviewing, and was the standard BI that the behavioral health counselors had been delivering at the clinics for several years as part of the SAMHSA-supported SBIRT