Drug and Alcohol Dependence 178 (2017) 586–592

Contents lists available at ScienceDirect

Drug and Alcohol Dependence

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

Full length article

Examining the effects of illicit drug use on tobacco cessation outcomes in the Helping HAND 2 randomized controlled trial

Joanna M. Streck[a,*], Susan Regan[b,c,e], Yuchiao Chang[b,c], Jennifer H.K. Kelley[b,d], Daniel E. Singer[c,e], Nancy A. Rigotti[b,c,d,e]

[a] Department of Psychological Science, Vermont Center on Behavior and Health, University of Vermont, Burlington, VT, USA
[b] Tobacco Research and Treatment Center, Massachusetts General Hospital, Boston, MA, USA
[c] Division of General Internal Medicine, Department of Medicine, Massachusetts General Hospital, Boston, MA, USA
[d] Mongan Institute for Health Policy, Massachusetts General Hospital and Partners HealthCare, Boston, MA, USA
[e] Department of Medicine, Harvard Medical School, Boston, MA, USA

ARTICLE INFO

Keywords:
Inpatients
Hospitalization
Smoking cessation
Nicotine dependence
Substance use

ABSTRACT

Background: Individuals with substance use disorders (SUD) smoke at higher rates and have higher tobacco-related mortality than the general population. Despite having an interest in smoking cessation, smokers with SUDs may have greater difficulty quitting.

Methods: Analysis of data from a RCT testing a post-discharge smoking cessation intervention for hospitalized cigarette smokers interested in quitting. Past 7 day tobacco abstinence was self-reported at 1, 3, and 6 months and biochemically confirmed at 6 months post-discharge. Other drug use was assessed at baseline by self-report or a past-year discharge diagnosis of SUD. Multiple logistic regression compared tobacco cessation outcomes among participants with no recreational drug use (NDU; n = 942) vs. marijuana only (MU; n = 284) vs. other illicit drugs (IDU; n = 131).

Results: Groups differed at baseline on age, gender, race, education, other household smokers, alcohol use, and anxiety/depression (all $p < 0.05$). Confirmed 6-month tobacco abstinence was lower among IDU than NDU participants (9% vs 18%, $p = 0.01$; AOR = 0.43, CI: 0.22–0.84) after adjustment for study arm, smoking characteristics, demographics, quality of life, alcohol use and MU. Confirmed 6-month abstinence did not differ significantly between MU vs. NDU participants (14% vs 18%, $p > 0.05$; AOR = 0.77, CI:0.51–1.14). Counseling and medication use did not differ significantly among groups at any follow-up.

Conclusions: Hospitalized smokers who planned to stop smoking after discharge and used cessation assistance were less successful if they had used illicit drugs in the past year, but not if they had only used marijuana. More intensive or tailored interventions may be required to address smoking in this population.

1. Introduction

Tobacco smoking is the leading cause of preventable death in the U.S. (USDHHS, 2014). While smoking prevalence in the general population of smokers has declined to 15% (Jamal, 2016), prevalence remains much higher among vulnerable populations such as those with co-morbid drug dependence. Smoking rates in substance users vary between 65 and 94%, with the highest rates observed among opioid-dependent individuals and those enrolled in inpatient addiction treatment programs (Guydish et al., 2011, 2016; Richter et al., 2002). Substance users are more likely to die of tobacco-related disease compared to the general population, and substance users who smoke are four times more likely to die prematurely relative to substance users who do not smoke (Bandiera et al., 2015; Hser et al., 1994).

The high prevalence of smoking among substance users does not stem from disinterest in quitting smoking. Substance users, including hospitalized substance users, report an interest in quitting smoking and make quit attempts (Clemmey et al., 1997; Katz et al., 2008; Richter et al., 2001). Furthermore, smoking cessation treatment does not appear to jeopardize substance use outcomes, and may increase long-term sobriety (Dunn et al., 2009; Hurt et al., 1994; Prochaska et al., 2004; Shoptaw et al., 2002; Thurgood et al., 2016).

Providing smoking cessation interventions during substance abuse treatment and recovery can increase smoking abstinence (Thurgood et al., 2016), but substance users generally have lower absolute tobacco quit rates than non-users (Breslau et al., 1996; Hays et al., 1999;

* Corresponding author at: University of Vermont, 3100C Old Hall, MS 482 1 South Prospect Street, Burlington, VT 05405, USA.
E-mail address: jstreck@uvm.edu (J.M. Streck).

http://dx.doi.org/10.1016/j.drugalcdep.2017.06.005
Received 11 February 2017; Received in revised form 25 May 2017; Accepted 3 June 2017
Available online 08 July 2017
0376-8716/

Hughes, 1993; Humfleet et al., 1999; McClure et al., 2015; Richter et al., 2002; Lasser et al., 2000).

The majority of published studies on smoking cessation interventions among substance users have been conducted in addiction treatment settings. Less is known about whether smokers with substance use can benefit from smoking cessation interventions that are designed for the general population and provided in the context of routine health care. Numerous smoking cessation interventions have been developed for hospitalized smokers (See Riley et al., 2012, for a review), but, to our knowledge, none have focused on inpatients with recent substance use (Rigotti et al., 2012).

Recently, several states have decriminalized marijuana resulting in greater perceived acceptability and use of this smoked drug (Cerda et al., 2012; Marist College Institute for Public Opinion, 2017). How changes in the legal status of marijuana will influence tobacco smoking and quitting is uncertain. Research suggests that marijuana use does not reduce smoking cessation even when accounting for alcohol use (Humfleet et al., 1999; Metrik et al., 2011; Peters et al., 2012; Rabin et al., 2016), but less is known about outcomes among hospitalized marijuana users. Therefore, we will examine quit rates in this group separately.

Hospitalization provides a good opportunity to quit smoking because hospital policies require smokers to abstain temporarily from tobacco use when a health threat may increase their motivation to quit. In the general population, starting a smoking cessation intervention in the hospital increases smoking cessation rates after discharge (Rigotti et al., 2012). The present investigation aims to examine whether smokers with past year co-morbid substance use differ from non-substance using smokers in response to a cessation intervention beginning during hospitalization and continuing after discharge. We examine data from a multi-center randomized controlled trial of a smoking intervention for the general population of hospitalized smokers. It demonstrated the efficacy of a post-discharge intervention in improving self-reported tobacco abstinence rates at 1 and 3 months compared to standard care (Rigotti et al., 2016). We hypothesized that participants with recent illicit drug use would have lower quit rates than participants not using illicit drugs. With regard to exclusive marijuana users, we aimed to test the hypothesis that recent marijuana use among hospitalized users not seeking treatment for substance use, would decrease tobacco quit rates.

2. Material and methods

We analyzed data from the Helping HAND 2 Trial (HH2; NCT01714323), a multi-site randomized clinical trial conducted at 3 U.S. hospitals: Massachusetts General Hospital (MGH) in Boston, MA; University of Pittsburgh Medical Center (UPMC) in Pittsburgh, PA; and North Shore Medical Center (NSMC) in Salem, MA. Full study methodology has been published (Reid et al., 2015). This study was approved by Institutional Review Boards of Partners HealthCare (for MGH and NSMC) and at UPMC.

2.1. Participants

Inpatients were eligible for participation if they were > 18 years old, daily smokers (when smoking normally in the month prior to hospital admission), had smoked within the past 30 days, received > 5 min of smoking cessation counseling in the hospital, planned to try to quit smoking following discharge, and were willing to accept free smoking cessation pharmacotherapy at discharge. Participants were excluded if they did not have access to a telephone, did not speak English, had a psychiatric or cognitive impairment which precluded informed consent, were admitted to inpatient obstetric or psychiatric units, were admitted for an intravenous drug overdose, were medically unstable or had a life expectancy of less than one year. All eligible participants were offered pharmacotherapy and counseled by a tobacco cessation counselor at their bedside to help manage nicotine withdrawal symptoms and offer cessation assistance.

2.2. Study conditions

After providing informed consent, participants were randomly assigned to Sustained Care or Standard Care. In the Standard Care condition, participants received advice to call a free telephone quit line and a tailored recommendation for post-discharge pharmacotherapy. Participants randomized to the Sustained Care intervention received a free, refillable, 30-day supply of their choice of Food and Drug Administration (FDA)-approved tobacco cessation medication at hospital discharge as well as five automated interactive voice response (IVR) calls post-discharge. These automated calls allowed interested participants to be immediately transferred to a telephone quitline for counseling or medication refills.

2.3. Measures

2.3.1. Baseline demographic and smoking characteristics

The baseline survey, conducted during the hospitalization, assessed demographic variables (age, gender, race/ethnicity, education), tobacco use (cigarettes smoked per day, past 30-day use of other tobacco products, time to first cigarette of the day from the Fagerstrom Test for Nicotine Dependence [FTND; Fagerstrom and Schneider, 1989]), prior quit attempts, use of tobacco cessation treatments, intention to quit following discharge, perceived importance of and confidence in quitting (5-point Likert scales), and presence of another smoker at home. Depression and anxiety were assessed using a 4-item screening measure (PHQ-4; Melchior et al., 1993). Quality of life was assessed using the Euro-Qol-A (EQ-5D; EuroQol Group, 1990). Discharge diagnoses of a smoking-related disease (e.g., myocardial infarction, chronic obstructive pulmonary disease) were abstracted from the medical record using a definition consistent with the 2014 U.S. Surgeon General's Report.

2.3.2. Baseline drug and alcohol use

The baseline survey included questions on illicit drug and alcohol use in the past year. Alcohol use was assessed using the Alcohol Use Disorder Identification Test-Consumption (AUDIT-C; Bush et al., 1998). We created a post-hoc composite indicator of heavy alcohol use combining the AUDIT-C score with discharge diagnosis of alcohol use or dependence not in remission (ICD-9 codes 303.00, 303.01, 303.02, 303.9, 303.90, 303.91, 303.92, 305.00, 305.01, 305.02). Participants were classified as heavy alcohol users if they had a discharge diagnosis or an AUDIT-C score ≥7 (the median score among participants with an alcohol-related discharge diagnosis). Participants were also asked to report their recreational drug use in the past year including "marijuana or hashish, 'cocaine or crack,' "stimulants that were not prescribed by your doctor like amphetamines, uppers, speed, crank, crystal meth, or bam," and "opioids that were not prescribed by your doctor like heroin, morphine, codeine, or opium." Participants responded "Yes," "No," or "Don't know," to interviewer-administered drug use questions on the baseline survey. Injection drug use was assessed by asking about participants' lifetime and past year use. Discharge diagnoses of drug dependence (i.e., ICD-9 codes 304.0, 304.1, 304.2, 304.3, 304.4, 304.6) were abstracted from the medical record.

2.3.3. Follow-up assessment

Telephone surveys were administered by research staff at 1, 3, and 6 months after hospital discharge to assess use of tobacco products and tobacco treatment. At each call, participants were asked about their use of tobacco in the past 7 days (7 day point prevalence). Participants who reported past 7 day abstinence from tobacco at 6-months were asked to provide a mailed saliva sample to assay for cotinine, a nicotine metabolite, to verify self-reported abstinence, and were compensated $50 for providing the sample. Participants who reported NRT use were asked to provide an in-person measurement of expired air carbon monoxide (CO). Self-reported abstinence was considered verified if saliva cotinine