Journal of Substance Abuse Treatment 54 (2015) 21–28

Contents lists available at ScienceDirect

Journal of Substance Abuse Treatment

Latent Class Analysis of Alcohol Treatment Utilization Patterns and 3-Year Alcohol Related Outcomes

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ARTICLE INFO

Article history:
Received 4 June 2014
Received in revised form 28 January 2015
Accepted 29 January 2015

Keywords:
Treatment utilization
Alcohol use disorders
Latent class analysis

ABSTRACT

People who obtain treatment for alcohol use problems often utilize multiple sources of help. While prior studies have classified treatment use patterns for alcohol use, an empirical classification of these patterns is lacking. For the current study, we created an empirically derived classification of treatment use and described how these classifications were prospectively associated with alcohol-related outcomes. Our sample included 257 participants of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) who first received alcohol treatment in the 3-year period prior to their baseline interview. We used latent class analysis to identify classes of treatment users based on their patterns of treatment use of 13 types of alcohol treatment. Regression models examined how classes of treatment use at baseline were associated with alcohol-related outcomes assessed at a 3-year follow-up interview. Outcomes included a continuous measure of the quantity and frequency of alcohol use and DSM-IV alcohol use disorder status. Four classes of treatment users were identified: (1) multiservice users (8.7%), (2) private professional service users (32.8%), (3) alcoholics anonymous (AA) paired with specialty addiction service users (22.0%), and (4) users of AA alone (36.5%). Those who utilized AA paired with specialty addiction services had better outcomes compared to those who used AA alone. In addition to elucidating the most common treatment utilization patterns executed by people seeking help for their alcohol problems, the results from this study suggest that increased efforts may be needed to refer individuals across sectors of care to improve treatment outcomes.

Published by Elsevier Inc.

1. Introduction

Receiving treatment for alcohol-related problems is associated with reduced alcohol consumption (Dawson, Grant, Stinson, Chou, et al., 2006) and symptoms of alcohol use disorder (Dawson, Grant, Stinson, & Chou, 2006). While many individuals do not seek treatment for their alcohol-related problems (Cohen, Feinn, Arias, & Kranzler, 2007; Kessler et al., 1996), the receipt of any alcohol treatment is associated with higher odds of recovery (Weisner, Matzger, & Kaskutas, 2003).

The array of available alcohol-related treatment services is vast. The treatment most frequently sought for alcohol-related problems is Alcoholics Anonymous (AA) (Cohen et al., 2007). Although the efficacy of AA represents a long-standing debate, current findings suggest that it is effective in reducing alcohol-related problems (Ferri, Amato, & Davoli, 2006; Kownacki & Shadish, 1999; Montgomery, Miller, & Scott Tonigan, 1995; Tonigan, Toscova, & Miller, 1996). The receipt of treatments delivered by persons or agencies specializing in addiction treatment is also common (Cohen et al., 2007). Generally, both inpatient (Keso & Salaspuro, 1990; Waisberg, 1990) and outpatient (Bottlender & Soyka, 2005) approaches to treating alcohol use can be efficacious, with outpatient treatments being more cost effective (Weisner, Mertens, Parthasarathy, Moore, et al., 2000). Primary care providers, other professionals, and treatment agencies that do not specialize in the treatment of addiction are also within the broader sector of treatment for alcohol-related problems. For instance, alcohol screening and brief intervention has the potential to reduce unhealthy alcohol use in a variety of service settings (Amaro, Reed, Rowe, Picci, et al., 2010; Hermansson, Helander, Brandt, Huss, & Rönnberg, 2010; Schonfeld et al., 2010), especially among persons with less severe alcohol problems (Saitz, Horton, Sullivan, Moskowitz, & Samet, 2003).

While it is common in alcohol research to operationalize treatment utilization as a binary event, such as the receipt of any alcohol treatment services versus none (Glass, Perron, Ilgen, Chermack, et al., 2010; Ilgen et al., 2011; Kessler et al., 1996; Mowbray, 2014), most individuals who seek help often report initiating multiple treatment episodes (SAMHSA, 2009) and seek treatment from a variety of service sectors (Cohen et al., 2007; Dawson, Goldstein, & Grant, 2012). To elucidate clinical and sociodemographic characteristics that predict the use of specific types of alcohol treatment, several prior studies have classified specific sources of treatment services into meaningful domains that pertain to the type of setting or format in which the treatment services were received

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http://dx.doi.org/10.1016/j.jsat.2015.01.012
0740-5472/Published by Elsevier Inc.

(Dawson et al., 2012; Hatzenbuehler, Keyes, Narrow, Grant, & Hasin, 2008; Kessler et al., 1996; Regier et al., 1993). For instance, Dawson et al. (2012) classified individuals' first utilization of alcohol treatment services hierarchically into mutually exclusive groups with respect to the setting of service delivery, including addiction specialty treatment settings, medical settings, non-medical settings, and no treatment, with specialty treatment taking precedence. Kessler et al. (1996) and Regier et al. (1993) used similar domains, but did not use mutually exclusive groupings. Another study classified treatments as either self-help, social services, alcohol or drug-specific services, and services received in emergency departments (Hatzenbuehler et al., 2008).

These previous methods to classify alcohol treatment services into categories have several strengths. Researcher-specified domains of service use can be tailored to answer questions about specific types of treatment settings, and provide a more parsimonious analytic approach than examining each source of treatment separately. However, researcher-specified domains tend to have limited empirical justification and may not reflect how individuals generally use alcohol treatment services. For instance, while many individuals often attend AA and specialty addiction treatments concurrently (Gossop, Stewart, & Marsden, 2008; Timko, Moos, Finney, & Lesar, 2000) and cross-sector treatment referrals are common (Humphreys, 1997; Riordan & Walsh, 1994), prior studies have considered these treatments as existing in separate domains (e.g., medical versus non-medical) to explore predictors of their use separately (Dawson et al., 2012). Perhaps more importantly, a major limitation of the current literature on alcohol treatment utilization patterns is that research describing the outcomes associated with executed treatment utilization patterns is scant and limited to studies that have analyzed retrospective reports (Dawson, Grant, Stinson, & Chou, 2006; Dawson, Grant, Stinson, Chou, et al., 2006). To our knowledge, no studies have examined outcomes associated with alcohol treatment utilization patterns with longitudinal data from the general population.

In the statistical and substantive literature, person-centered methods have become increasingly popular (Collins & Lanza, 2013), which have the ability to generate respondent profiles based on their prior utilization of specific sources of alcohol treatment. Through the use of person-centered methods, distinct patterns of treatment utilization can be established that are driven by an empirical classification of participant data and may more accurately reflect the actual histories of those who have been treated for alcohol-related problems.

The current study had two aims. First, we established empirically derived treatment utilization profiles of individuals with alcohol use problems to provide a better understanding of alcohol treatment utilization patterns in the general population. Second, we examined whether these utilization profiles were associated with differences in alcohol-related outcomes 3 years later. To accomplish these aims, we applied latent class analysis (LCA) in a longitudinal nationally representative sample of adults who sought treatment for alcohol use over a 3-year period to construct profiles of participants' utilization of thirteen different sources of alcohol treatment. Next, we examined whether these profiles of treatment utilization predicted levels of alcohol consumption, abstinence from alcohol, and the presence of alcohol use disorder 3 years later.

2. Materials and methods

2.1. Sample

Data are from waves 1 (2001–2002) and 2 (2004–2005) of the National Epidemiologic Survey on Alcohol Related Conditions (NESARC). NESARC is a population-representative survey of United States adults aged 18 or older living in noninstitutionalized settings (Grant, Kaplan, & Stinson, 2007; Grant, Moore, Shepard, & Kaplan, 2003; Hasin, Stinson, Ogburn, & Grant, 2007). The NESARC data are weighted to represent the U.S. general population based on the 2000 decennial census and to reflect survey design characteristics including oversampling of women, Black and Hispanic individuals, and persons of younger age (Grant et al., 2003). Our analytic sample included NESARC participants who reported their first episode of treatment for alcohol related problems no more than 3 years prior to wave 1 of the NESARC ($n = 257$). A 3-year time window was chosen to create roughly equivalent measurement periods for the baseline and follow-up measures, and also to reduce the amount of time between the exposure (treatment utilization) and outcome variables. The presence of prior treatment utilization was established at wave 1 through the question "Have you ever gone anywhere or seen anyone for a reason that was related in any way to your drinking…." For participants that affirmed, they were asked "How old were you the first time you went anywhere or saw anyone for help with your drinking?" We calculated the number of years since the participant's first treatment episode to establish parameters of the current sample (i.e., first utilized treatment no more than 3 years before the baseline interview). The University of Georgia Institutional Review Board approved this research.

2.2. Measures

2.2.1. Use of specific sources of alcohol treatment

Participants were queried about their use of 13 different sources of alcohol treatment services. The 13 sources of treatment services assessed included AA, family services or other social service agencies, alcohol detoxification services, inpatient programs, outpatient programs, alcohol rehab programs, emergency rooms, halfway houses, crisis centers, employee assistance programs, clergy/priest/rabbi, private professionals (private physician, psychiatrist, psychologist, social worker, or any other professional), and "other" services. Participant responses were dichotomous (i.e., used the service versus not) for each source of treatment. Although the NESARC treatment utilization instrument has not been validated against "gold standards" of treatment utilization such as medical records (Glass & Bucholz, 2011; Killeen, Brady, Gold, Tyson, & Simpson, 2004), it has been used in a number of landmark studies on alcohol treatment utilization (Cohen et al., 2007; Dawson, Goldstein, & Grant, 2007).

2.2.2. Sociodemographic characteristics

Sociodemographic variables included gender, race/ethnicity (categorized as White, not Hispanic; Black, not Hispanic, and other), age (categorized as 18–34, 35–55 and 55 or over), and annual household income ($0–19,999, $20,000–34,999, $35,000–69,999 and $70,000 or more).

2.2.3. Clinical variables

At wave 1, participants were classified as having a lifetime DSM-IV drug use disorder, including abuse or dependence of cannabis, cocaine or crack, tranquilizers, inhalants, stimulants, opioid painkillers, heroin, other prescription drugs, hallucinogens, and sedatives. Participants were also assessed for the presence of a lifetime DSM-IV diagnosis of substance-unrelated psychiatric disorder (i.e., "mental health" disorder), including major depressive disorder, mania, dysthymia, hypomania, panic disorder, any anxiety disorder, posttraumatic stress disorder, or any personality disorder. Both the drug use disorder and mental health disorder measures were dichotomized into any disorder versus none.

Additionally, a count of lifetime symptoms of DSM-IV alcohol dependence and alcohol abuse (range 0–11) was constructed for each participant using responses to the symptom measures of the Alcohol Use Disorder and Associated Disabilities Interview Schedule (AUDADIS-IV) (Grant et al., 2007; Ruan, Goldstein, Chou, Smith, et al., 2008). Age of alcohol use disorder onset was assessed with the question, "about how old were you the first time some of these experiences began to happen around the same time," where "these experiences" referred to alcohol use disorder diagnostic criteria assessed by the AUDADIS-IV.

For a measure of alcohol consumption, we calculated Alcohol Use Disorders Identification Test-Consumption (AUDIT-C; range 0–12) scores from the W1 data, which is a continuous measure of the quantity