Drug and Alcohol Dependence 188 (2018) 102–108

Contents lists available at ScienceDirect

Drug and Alcohol Dependence

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

Full length article

Predictors of positive drinking outcomes among youth receiving an alcohol brief intervention in the emergency department

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ARTICLE INFO

Keywords:
Risky drinking
Prevention
Adolescents
Emerging adults

ABSTRACT

Background: Reducing underage drinking is a public health priority given increased risk for injury and other consequences. Emergency department (ED) visits offer a potential "teachable moment" to initiate interventions among youth engaged in risky drinking. Given mixed findings for alcohol brief interventions (BIs), this paper examined baseline markers of BI response in order to inform future interventions.

Method: We conducted secondary analyses of data from a randomized controlled trial of an alcohol BI delivered to youth in an ED. Among 475 participants (M_{age} = 18.6, SD = 1.4; 48.7% Female, 78.6% White/Caucasian) receiving a computer or therapist BI, we examined baseline characteristics (i.e., demographic, substance use, mood, risk/protective factors, and readiness to change) that predicted positive intervention response (i.e., BI responder) at 3-month follow-up using AUDIT-C scores (cut offs: < 3 for ages 14–17; < 4 for ages 18–20).

Results: Mediated logistic regression analysis (controlling for demographics) showed that greater readiness to change at baseline was positively related to BI response and baseline alcohol consumption was negatively related to BI response. Having a mentor was indirectly related to BI response via baseline alcohol consumption. Baseline readiness to change and alcohol consumption mediated the association between positive peer influences and BI response, whereas readiness to change mediated the relation between depression and BI response.

Conclusion: Findings suggest that BI response is influenced by protective social factors, such as positive peers and mentors, and depression, via baseline alcohol severity indicators (i.e., readiness to change, consumption), thus providing clues for enhancing the content and dose of early interventions.

1. Introduction

Underage drinking in the United States (US) is an important public health problem (Johnston et al., 2014), and binge and high-intensity drinking (HID; 10+ drinks) are of particular concern (Patrick et al., 2016a, 2016b). For example, not only does underage drinking increase risk for developing an alcohol use disorder (Grant et al., 2001; Merline et al., 2008), which occurs in 3% of youth (aged 12–17) and up to 23% of emerging adults (aged 18–29) (Center for Behavioral Health Statistics and Quality, 2015; Grant et al., 2017), but risk for alcohol use consequences (e.g., psychosocial problems, alcohol-related injury, mortality) associated with alcohol use and binge drinking/HID is considerable (Dawson et al., 2008; Lim et al., 2012; Patrick et al., 2016a, 2016b). Taken together, these data underscore the importance of early screening, identification and Brief Intervention (BI) to divert risky alcohol use trajectories.

Screening, Brief Intervention, and Referral to Treatment (SBIRT) has been recommended by leading health-related organizations in the US (National Institute on Alcohol Abuse and Alcoholism, 2015; Academic ED SBIRT Research Collaborative, 2007; U.S. Preventive Services Task Force, 2013), while noting that evidence varies by setting, sample, and age. These approaches typically include universal alcohol screening, delivery of a BI to risky drinkers, and referral to treatment for those with a probable alcohol use disorder. A visit to the Emergency

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https://doi.org/10.1016/j.drugalcdep.2018.03.044
Received 23 October 2017; Received in revised form 30 March 2018; Accepted 31 March 2018
Available online 05 May 2018
0376-8716/

Department (ED) offers an important "teachable moment" for youth and is an ideal setting for implementing SBIRT. Supporting this notion, recent meta-analyses found significant, albeit modest, reductions in alcohol use following BIs in the ED (Schmidt et al., 2015; Elzerbi et al., 2015). Specific to youth, several studies conducted in the ED demonstrated the overall efficacy of BIs for reducing alcohol consequences (Cunningham et al., 2015; Walton et al., 2015; Maio et al., 2005; Monti et al., 1999; Monti et al., 2007; Spirito et al., 2004; Bernstein et al., 2010). However, the efficacy of BIs in reducing alcohol consumption is mixed across settings, with generally modest, short-term effects (Foxcroft et al., 2014; Carey et al., 2012; Cunningham et al., 2015; U.S. Preventive Services Task Force, 2013). For example, reviews of BIs delivered in primary care settings suggest that although data is positive for emerging adults and older individuals, findings are inconclusive among adolescents (U.S. Preventive Services Task Force, 2013). Moreoever, in a prior publication for the dataset examined in the present study, Cunningham et al. (2015) demonstrated that an alcohol BI delivered to youth in the ED was efficacious at reducing alcohol consumption and consequences in the short-term (3-months), but only consequences were reduced in the long-term (12-months).

Understanding which youth are more or less likely to respond to an alcohol BI could inform precision medicine approaches (Collins and Varmus, 2015) for risky drinkers. Theoretically, a social-ecological framework is potentially useful in identifying BI response markers because risk and protective factors at the individual, relational, and community level can be associated with the escalation and de-escalation of substance use (Connell et al., 2010; Nargiso et al., 2015).Consistent with this theory, individual factors such as greater readiness to change, cognitive and personality factors (e.g., interpersonal sensitivity, self-regulation, social comparison, future orientation), and female gender predicted better outcomes following an alcohol BI delivered to adults and college students in non-ED settings (Blankers et al., 2013; Carey et al., 2007; Riper et al., 2008). Few studies have examined within group variation in outcome among adolescents or adults following BIs delivered in an ED. For example, among adults, greater readiness to change predicted less substance use at 3-month follow-up (Myers et al., 2016), and among adolescents (aged 13–18), greater baseline alcohol use and female gender predicted a worse alcohol use trajectory during the 12 months following a BI (Becker et al., 2012). However, none of these studies examined relational or community influences such as peer influences, or community involvement, thus representing an important gap in understanding markers of BI response.

Among youth receiving a BI in the ED, studies identifying within group characteristics associated with BI response are lacking, which limits our ability to effectively allocate intervention resources and develop more intensive or adaptive interventions for those who are most likely to continue drinking at risky levels. Therefore, the current study conducted secondary data analyses of youth receiving a BI (Cunningham et al., 2015) to identify baseline patient characteristics that predicted positive BI response at 3-month follow-up. Based on theory and prior literature, baseline variables examined included demographics, substance use, mood, protective/risk factors, readiness to change, and alcohol use. Based on prior findings (Becker et al., 2012; Myers et al., 2016), we hypothesized that less problem severity (i.e., less alcohol use and greater readiness to change) at baseline would be associated with positive BI response at 3-months. Second, as an exploratory aim, and consistent with a social-ecological perspective (Connell et al., 2010; Nargiso et al., 2015; Yap et al., 2017), we tested hypotheses that BI responders would report more baseline community involvement (i.e., community engagement, has a mentor), positive peer influences, and parental support, and would report less baseline negative peer influences, parental approval of substance use, and parental substance use compared to non-responders. Moreover, given that depression and anxiety symptoms are individual-level factors associated with substance use among adolescents (Schwinn et al., 2010), we hypothesized BI responders would report fewer anxiety and depression symptoms at baseline compared to non-responders.

2. Method

2.1. Design and setting

The current study presents secondary data analyses of those receiving a BI as part of a randomized controlled trial of an alcohol BI delivered to 14–20 year olds in an academic level 1 ED (Project U-Connect: Cunningham et al., 2015; Walton et al., 2015; Walton et al., 2017). Youth screening positive for risky drinking on the Alcohol Use Disorders Identification Test – Consumption were randomized to a therapist-delivered BI (TBI; n = 277), computer-delivered BI (CBI; n = 278), or a control condition (n = 281). In the present study, we examined characteristics of BI response among those in the intervention conditions, so we excluded the control group. In addition, because the main outcomes of the RCT (Cunningham et al., 2015) revealed that both the TBI and CBI reduced alcohol consumption and consequences at 3-months compared to the control group, we combined intervention groups; thus, the present analyses included 475 participants who received either BI and completed the 3-month follow-up (n = 475/555; 85.5%). The Institutional Review Board at the University of Michigan approved the protocol and we obtained a Certificate of Confidentiality from the National Institutes of Health.

2.2. Procedure

Patients in the ED were approached by study staff between September, 2010 and March, 2013 (excluding holidays) and completed screening measures between the hours of ~2p.m.–2a.m., 7 days/week (Cunningham et al., 2015; Walton et al., 2015). Detailed exclusion/inclusion criteria are described elsewhere (Cunningham et al., 2015; Walton et al., 2015). Study staff used an electronic medical record to determine whom to approach, and excluded from approach any patient who presented with the following: psychosis, suicide attempt/ideation, sexual assault, or medical/psychiatric incapacitation. In addition, those aged 14–17 who did not have a parent/guardian present were not eligible for screening. Eligible patients provided consent/assent for the study (parental consent obtained for 14–17 year olds), and self-administered the computerized screening survey (15–20 min; $1 gift remuneration). Those screening positive for risky drinking on the AUDIT-C were eligible for the trial. Following a second-stage consent/assent process, trial participants then self-administered a computerized baseline survey (20–30 min; $20 remuneration) and were randomized to condition using a computer algorithm, stratified by gender, age group (14–17 or 18–20), and alcohol use disorder diagnosis. Following completion of their assigned condition (see details below), participants completed a post-test assessment. A computerized follow-up assessment was self-administered at 3-months ($35 remuneration).

2.3. U-Connect brief intervention content

Detailed descriptions of intervention content have been previously published (see Cunningham et al., 2015; Walton et al., 2015; Walton et al., 2017). Although there were differences in delivery mechanism, the CBI and TBI were similar in content and designed using the theory and principles of motivational interviewing (MI; e.g., exploring the reasons "why" to consider change followed by "how" to change; Miller and Rollnick, 2002; Resnicow and McMaster, 2012; Miller and Rose, 2009) to address problematic alcohol use. Both BIs included a review/discussion of personal strengths, goals/values, and normative feedback, followed by a review/discussion of potential alcohol use consequences and benefits of reducing consumption. Additionally, participants were able to explore and select tools for change (e.g., protective behavioral strategies, refusal skills, and coping with negative affect) and select alternative activities (e.g., sports). Average completion times were