Addictive Behaviors 50 (2015) 13–21

Contents lists available at ScienceDirect

Addictive Behaviors

Effects of 21st birthday brief interventions on college student celebratory drinking: A systematic review and meta-analysis

Katarzyna T. Steinka-Fry [a,*], Emily E. Tanner-Smith [b], Sean Grant [c]

[a] Peabody Research Institute, Vanderbilt University, Box 0181 GPC, 230 Appleton Place, Nashville, TN 37203, USA
[b] Peabody Research Institute and Department of Human and Organizational Development, Vanderbilt University, Box 0181 GPC, 230 Appleton Place, Nashville, TN 37203, USA
[c] RAND Corporation, 1776 Main Street, P.O. Box 2138, Santa Monica, CA 90407-2138, USA

HIGHLIGHTS

- We meta-analyzed the effects of brief 21st birthday alcohol interventions (BAIs).
- We identified 10 individually-targeted, no-contact (email or letter-based) BAIs.
- There was no evidence that BAIs significantly reduced quantity of alcohol use.
- BAIs were associated with decreased 21st birthday estimated BAC.
- Methodological limitations made the quality of this body of evidence very low.

ARTICLE INFO

Available online 7 June 2015

Keywords:
Meta-analysis
Alcohol
Binge drinking
College students
21st birthday celebration
Prevention

ABSTRACT

Introduction: College students' 21st birthday celebrations often involve consumption of extreme amounts of alcohol as well as alcohol-related risks. This systematic review aims to determine whether birthday-focused, individually-targeted, no-contact (email or letter-based) brief alcohol interventions (BAIs) reduce college students' 21st birthday celebratory drinking.
Methods: A systematic search identified 9 randomized evaluations with 10 interventions to reduce 21st birthday drinking. Quantity of alcohol consumed and estimated blood alcohol concentration (BAC) were measured. Random-effects meta-analysis was used to summarize the effects of the interventions.
Results: There was no evidence that birthday-focused BAIs reduce quantities of alcohol consumed during birthday celebrations ($\bar{g} = 0.05$, 95% CI [−0.03 to 0.13]). The interventions were associated with significant reductions in estimated BAC levels ($\bar{g} = 0.20$, 95% CI [0.07 to 0.33]), but this effect was small in absolute terms. The quality of this body of evidence was very low, as evaluated using the GRADE approach. In particular, it was limited by substantial participant attrition post-randomization due to included studies' recruitment and randomization procedures.
Conclusions: There is no evidence that birthday-focused, individually-targeted BAIs reduce the quantity of alcohol consumed by students during 21st birthday celebrations, although these interventions may yield small beneficial effects on estimated BAC. Many methodological concerns were identified in included studies. This area of research would benefit from theory-based RCTs that are well-designed and executed. Future research should also investigate strategies other than birthday-focused, individually-targeted, brief interventions to curb 21st birthday celebratory drinking.

Contents

* Corresponding author. Tel.: +1 615 322 8540.
E-mail addresses: k.steinka-fry@Vanderbilt.edu (K.T. Steinka-Fry), e.tanner-smith@Vanderbilt.Edu (E.E. Tanner-Smith), sgrant@rand.org (S. Grant).

http://dx.doi.org/10.1016/j.addbeh.2015.06.001
0306-4603/

1. Introduction

Risky alcohol use is a serious public health issue among U.S. college students. In 2011, approximately 61% of full-time college students reported past-month alcohol use, 39% reported binge drinking, and 14% were heavy drinkers (SAMHSA, 2012). Heavy episodic drinking is associated with many negative consequences, including drunk-driving, traffic deaths, unintentional injuries, and physical and sexual assault (Dermody, Cheong, & Walther, 2012; Hingson, Zha, & Weitzman, 2009; NIAAA, 2002). Rapid consumption of large quantities of alcohol, and blood alcohol concentration (BAC) levels exceeding 0.26 have also been linked to severe medical outcomes including coma, respiratory paralysis, and heart failure (Berger, 2000; Neighbors, Spieker, Oster-Aaland, Lewis, & Bergstrom, 2005; Rutledge, Park, & Sher, 2008).

1.1. Event-specific drinking and 21st birthday celebrations

Most research on risky college drinking focuses on students' general alcohol consumption. However, researchers in the last decade have begun investigating specific events during which students purposefully drink more alcohol (Neighbors et al., 2007). Such event-specific, ritualistic heavy alcohol consumption typically occurs on holidays, spring break, sporting events, and 21st birthday celebrations (Del Boca, Darkes, Greenbaum, & Goldman, 2004; Lee, Maggs, & Rankin, 2006; Neighbors, Oster-Aaland, Bergstrom, & Lewis, 2006; Oster-Aaland & Neighbors, 2007; Smith, Bogle, Talbott, Gant, & Castillo, 2006).

Many school administrators are particularly concerned about 21st birthday celebrations. Given the symbolic nature of 21st birthdays, many students include alcohol in celebrating this rite of passage into legal-age drinking (Neighbors et al., 2005). Students may be subject to peer pressure, drinking games, and competitions, such as drinking 21 shots or as much as possible in one "power hour" (Hembroff, Atkin, Martell, McCue, & Greenamyer, 2007; Neighbors, Lee, Lewis, Fossos, & Walter, 2009; Neighbors et al., 2005; Rutledge et al., 2008). Two studies found that 90% of students reported drinking during their celebration, 75% went to a bar, and 61% had BACs above the legal driving limit (Neighbors et al., 2005, 2006). Also, 68% of female and 79% of male students participating in birthday celebrations reported binge drinking, while 35% of female and 49% of male birthday drinkers had estimated BACs of 0.26 or higher (Rutledge et al., 2008).

1.2. Event-specific prevention

Increased media focus on dangerous 21st birthday drinking traditions (Parker-Pope, 2008) and research confirming heavy alcohol consumption during these events have fueled interest in interventions targeting risky 21st birthday drinking. These efforts are part of a new "event-specific prevention" movement (Neighbors et al., 2007, 2012) with roots in traditional alcohol interventions for college students. Because drinking at these events is planned, researchers have proposed that hazardous, event-specific drinking is amenable to targeted interventions that coincide with the event (Neighbors et al., 2012).

Brief alcohol interventions (BAIs) are increasingly popular strategies to prevent heavy drinking during 21st birthday celebrations. Birthday-focused interventions may involve information about alcohol poisoning, guidance about harm reduction (e.g., Smith et al., 2006), personalized feedback (e.g., Neighbors et al., 2009), or messages highlighting misperceptions of peer drinking levels (e.g., Glassman, 2010). One example of BAIs, the B.R.A.D. birthday card, conveys the story of a Michigan student's death due to alcohol poisoning, provides information about alcohol poisoning symptoms, and reminds students to celebrate responsibly (B.R.A.D., 2013; Hembroff et al., 2007; Martell & Atkin, 2002). The B.R.A.D. card and similar interventions have been disseminated to students on over 100 campuses (Glassman, Dodd, Kenzik, Miller, & Sheu, 2010; Smith et al., 2006).

1.3. Objectives

Numerous systematic reviews and meta-analyses have examined the effectiveness of non-event specific interventions targeting college student drinking, generally reporting positive effects on alcohol consumption levels (Carey, Scott-Sheldon, Carey, & DeMartini, 2007; Carey, Scott-Sheldon, Elliott, Bolles, & Carey, 2009; Walters, Miller, &