SUBSTANCE ABUSE PREVENTION

The Role of Emerging Strategies & Interventions

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INTRODUCTION

In the past two or three decades, the challenges surrounding public health have changed dramatically. As Hawkins et al. noted, the shift from communicable to noncommunicable disease has led to a focus on young people's *behavioral health problems*, such as anxiety, depression, alcohol, tobacco, and other drug use, violence and aggression and school drop-out. The challenge, according to public health experts, is to find appropriate, evidence-based interventions that can be scaled up to achieve population-level results. For example, while universal prevention programs are aimed at all young people, selected and indicated programs target young people at risk of behavioral health problems. A focus on reducing inequities in the public health system pushes states and communities to embrace "preventive interventions that reach the highest-risk children and youth" (2015, p. 10). In order to reach all public health sectors, a behavioral health ecology including medicine, public health, education, social work, and psychology, should be coordinated to make sure communities and states are making progress. This collaboration across diverse sectors and stakeholders is crucial to addressing complex behavioral health problems that affect different dimensions of social life.

Shea and Shern noted that SAMHSA's shift from a treatment/recovery model to a model advocating "emotional well-being and the prevention of substance abuse" is a critical change for public health (p. 3). In this model, a range of evidence-based programs is promoted in order to meet the particular needs of affected communities. Through a focus on a public health model that addresses known risk and protective factors, making sure programs, practices and policies are culturally and developmentally appropriate, states and communities respond to pressing substance use issues.

At the same time, advances in digital media and internet-mediated communication have begun to suggest that digital-based interventions may be effective tools for substance abuse prevention. Sinadinovic (2012) reported how internet-based interventions widely increase access by reaching groups "underserved by treatment," by providing instant access to support and resources with no stigma and/or cost.

The interventions listed below are part of a comprehensive, integrated approach to behavioral health. As many states and communities are familiar with established evidence-based programs such as Communities that Care, Prosper, and Strengthening Families, there is a need for information and analysis of emerging strategies and interventions that use innovative approaches to reduce the negative consequences of substance use and abuse. The five programs below represent new ways to promote public health through digital media or internet-based programming.

RealTeen

Schwinn, Schinke & Di Noia conducted a study on the effectiveness of an Internet-based intervention, *RealTeen*, aiming to prevent drug abuse among adolescent girls. Prevention is expressly needed for girls transitioning from middle to high school, due to the increase in social normalization of female alcohol and drug use and to the increased attention girls receive from popular alcoholic advertising. The 12-session, self-paced program is led by an older female animated character that guides the participants through the content and practice exercises. The program also includes news feeds, horoscopes, beauty tips, quotes of the day, fortunes, and access to a blog, penpal, and a chat forum. The sessions cover both general and personal skills (i.e., goal setting, decision making, coping, self-esteem, assertion, communication, media influences, peer pressure, and drug facts.) Sessions contained games, media, and skills-building exercises to complement the content, which participants could navigate at their own pace. Girls first completed nine theory-based sessions (i.e., goal setting, decision making) around drug facts, three of which contained quizzes. The authors found that girls exposed to the Internet-based intervention reported lower rates of use of substance (i.e., alcohol, marijuana, polydrug) as well as gains in normative beliefs and self-efficacy six months after the intervention.

Overall, *RealTeen* produced results comparable to live-group, school-based programs without the cost and labor associated with them. While post-test scores for self-efficacy did not differ between groups, girls in the intervention reported higher levels of self-efficacy at the 6-month follow-up. In addition, girls who participated in the intervention reported a decrease in 30-day alcohol, marijuana, poly drug, and total substance use at the 6-month follow up. The authors argue that the results indicate that girls require time and real-life opportunities to apply learned skills. The study therefore supports the efficacy of a female-specific Internet-based substance abuse program, highlighting the use of the Internet as an efficient way to recruit, custom tailor, and easily deliver a skills-based interactive intervention for adolescents.

AlcoholEdu for College

AlcoholEdu for College is an Internet-based alcohol misuse prevention program. Paschall, Antin, Ringwalt & Saltz conducted a multi-campus study to analyze the effectiveness of the prevention course, which is required for all incoming freshmen. *AlcoholEdu for College* is composed of five modules that describe standard drinks, define physiologic effects of alcohol, present the need to assess blood alcohol levels, along with social influences on alcohol use, alcohol laws, normative feedback, and alcohol harm-reduction strategies. Students have to pass an exam after the first four modules and take the fifth module 30-45 days later, in which they review materials and take a follow-up survey measuring past-30-day alcohol use. In the study, the randomized multi-campus design was intended to measure whether the Internet-based course impacted binge drinking among incoming freshmen during their first Fall semester, and whether any effects could be observed in the Spring semester.

Results showed significant reductions in alcohol use and binge drinking immediately after the completion of the prevention program. However, these effects did not did not persist in the Spring semester, even though analyses suggest stronger effects for colleges that had higher course completion rates. The authors concluded that the Internet-based alcohol prevention course provides short-term benefits on hazardous drinking behavior among first-year college students, but that the course itself may be insufficient to observe long-term effects. Another possibility is that the benefits of the intervention are eventually overcome by students' exposure to peer drinking behaviors. The authors suggest that programs like *AlcoholEdu for College* are particularly appropriate for freshmen who are new to campus, and should be offered and complemented with environmental strategies on college campuses in order to provide effective prevention strategies.

21st Birthday Drinking

Celebrations involving alcohol consumption, such as 21st birthday celebrations, are seen by many as a rite of passage. They are also often associated with extreme and dangerous levels of alcohol, sometimes resulting in hospitalizations or deaths. While previous research documented prevention efforts targeting 21st birthday celebrations, along with efficacious generalized interventions for reducing college student drinking, Neighbors, Lee, Lewis, Fossos & Walter indicated the need for a more comprehensive intervention approach that would include personalized normative feedback. To test the efficacy of an intervention focusing specifically on 21st-birthday drinking, the authors randomly assigned 295 college students who were planning to consume 2 or more drinks on their 21st birthday to a Web-based personalized event-specific prevention program. Participants in the intervention group received a link to the program two days before their birthdays, and were asked to fill out a post-survey four days later to assess their drinking behavior during the week of their 21st birthday. The intervention focused on drinking intentions, Blood-Alcohol-Content (BAC) information, normative information, and protective behavior strategies, accompanied by brief personalized feedback (i.e., birthday card).

The results showed the intervention effectiveness at reducing estimated BAC for students celebrating their 21st birthday, particularly for those who had intentions to reach higher BACs during their celebration. While, the authors found no support for protective behavioral strategies as a mediator, they stated that event-specific personalized interventions can help reduce drinking among college students. Prevention interventions should thus focus on events known to encourage college student drinking, specifically for students at higher risks of drinking. The authors concluded that due to their easy dissemination, delivery, and low cost, web-based personalized interventions have high potential for intervening immediately before known specific events related to extreme drinking.

Binge Drinking Interventions Review

Bhochhibhoya, Hayes, Branscum & Taylor reviewed fourteen binge drinking Internet-based interventions for college students and evaluated them in terms of intervention design and

methodological assessment. The rationale for this study is that previous studies looking at the efficacy of web-based interventions showed mixed results. The relevant studies were identified through an electronic search in scholarly databases using keywords related to binge drinking and Internet interventions. Only peer-reviewed articles published in English between 2000-2014 were selected. Average duration of interventions was 12 weeks, and short-term interventions focused on specific events (e.g., 21st birthday). Most studies used pre-existing web-based programs such as *mystudentbody.com*, *e-CHUG*, *Web-BASICS*, *CHOICES*, or *AlcoholEdu*. Except for one study, all interventions reported significant reductions in overall drinking quantity and frequency. The authors' review suggests that Internet-based interventions were cost-efficient, accepted by college students, they also facilitate a variety of communication tools (e.g., emails), and provide an assessment platform (e.g., online surveys) in addition to educational modules. In addition, anonymity is an advantage for populations that would typically not seek in-person help. The review showed that periodic interventions were more effective than one-time programs. In general, the authors agreed that 1) Internet-based interventions are more effective than no intervention, and 2) periodical Internet-based interventions are more effective than one-time interventions. While acknowledging that the literature supports the Internet as an efficient brief intervention method, the authors recommend considering potential risks associated with Internet-based interventions, such as misinformation, miscommunication, or data breaches.

Technology-Based Social Norms Intervention

In this study, Thombs, Olds, Osborn, Casseday, Glavin & Berkowitz designed a technology-based social norms intervention aiming to reduce and discourage alcohol use in college residence halls. Over a 2-year period, 384 freshmen in an intervention residence hall and a control residence hall participated in the study. Freshmen were specifically chosen as a population of study due to the incremental increase in drinking during the first year of college that the research literature has reported. The intervention was based on a social norms model, which has been shown to reduce self-reported alcohol use among undergraduates. The intervention comprised a measure of BAC to assess nighttime alcohol use, along with normative feedback. For that purpose, the researchers conducted brief nighttime interviews (i.e., number of drinks consumed that day, time since last drink) and breath tests in the two residence halls. Students had access to BAC data through a secure website the following day, through which participants could enroll to win in a lottery. The use of technology was central to the intervention to deliver next-day feedback about their drinking. In the control residence hall, participants only received their BAC levels. During the 2-year period, the researchers conducted a total of 7,087 interviews.

Overall, the researchers reported a positive impact of the intervention, yet no statistically significant results between the intervention hall and the control hall were found. The researchers also mentioned several challenges that might have hindered the study results. For instance, many residents forgot to visit the Website, despite multiple reminders, while others would forget their user ID or password, or even try to scam the lottery system. Rumors were also spread that the intervention would get students

in trouble if found drinking. Finally, a group of residents--mostly men--engaged in rebellious drinking in order to compete over higher BAC levels.

SYNTHESIS

In this review of emerging strategies and models of substance abuse prevention, we looked at a variety of studies relying on web-based technologies to provide interventions related to substance abuse:

- Schwinn, Schinke & Di Noia looked at the effectiveness of the Internet-based intervention *RealTeen* to prevent drug abuse among adolescent girls, and found that girls exposed to the intervention reported lower rates of use of substance, as well as gains in normative beliefs and self-efficacy six months after the intervention.
- Paschall, Antin, Ringwalt & Saltz conducted a multi-campus study to analyze the effectiveness of a prevention course for incoming freshmen, called *AlcoholEdu for College*, and saw that the prevention course provided short-term benefits on hazardous drinking behavior among first-year college students.
- Neighbors, Lee, Lewis, Fossos & Walter tested the efficacy of an intervention focusing specifically on 21st-birthday drinking among college students, and found that the intervention effectively reduced estimated BAC for students celebrating their 21st birthday.
- Bhochhibhoya, Hayes, Branscum & Taylor reviewed fourteen binge drinking Internet-based interventions for college students, and concluded that Internet-based interventions were cost-efficient, accepted by college students, facilitated a variety of communication tools, and provided an assessment platform in addition to educational modules.
- Thombs, Olds, Osborn, Casseday, Glavin & Berkowitz observed the effectiveness of a technology-based social norms intervention aiming to reduce and discourage alcohol use in college residence halls, and found positive impact of the intervention, although no statistically significant results between the intervention and control group were found.

Across all five studies, researchers highlighted the central use of Internet-based technologies to deliver feedback about alcohol or drug consumption to teenagers and young adults. From self-paced programs led by animated characters to Websites providing normative feedback, these technology-based interventions of substance abuse prevention rely on the affordances of technology to deliver personalized and timely feedback to participants. Overall, these studies underlined the use of the Internet as an effective tool to recruit, tailor, and deliver intervention in an age where adolescents and young adults access online content on a daily basis. Although some of the aforementioned studies reported limitations and potential challenges related to the use of technology in their interventions, such as data breaches or misinformation, most authors acknowledged that Internet technologies provide easy dissemination, delivery, and low cost to personalized interventions that can have immediate potential to support the youth in alcohol and drug-related risks.

AUTHOR INFORMATION

Benjamin Gleason is the Director of Applied Research for the Prospectus Group. He earned his PhD in Educational Psychology & Educational Technology at Michigan State University, researching how to best support communities of learners through educational technology. He is now Assistant Professor of Curriculum & Instructional Technology at Iowa State University. Before academia, Benjamin has worked in youth-serving learning spaces for almost fifteen years, from youth development and teaching high school in Richmond, California, to working as a university instructor in Guatemala. Benjamin is also a founder of the Prospectus Group.

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