



Electronic screening and brief intervention for risky drinking in Swedish university students – A randomized controlled trial

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ABSTRACT

Background: The limited number of electronic screening and brief intervention (e-SBI) projects taking place in young adult student populations has left knowledge gaps about the specific methods needed to motivate reduced drinking. The aim of the present study was to compare differences in alcohol consumption over time after a series of e-SBIs was conducted with two groups of young adult students who were considered risky drinkers. The intervention group (IG) ($n = 80$) received extensive normative feedback; the control group (CG) ($n = 78$) received very brief feedback consisting of only three statements.

Method: An e-SBI project was conducted in naturalistic settings among young adult students at a Swedish university. This study used a randomized controlled trial design, with respondents having an equal chance of being assigned to either the IG or the CG. The study assessed changes comparing the IG with the CG on four alcohol-related measurements: proportion with risky alcohol consumption, average weekly alcohol consumption, frequency of heavy episodic drinking (HED) and peak blood alcohol concentration (BAC). Follow-up was performed at 3 and 6 months after baseline.

Results: The study documented a significant decrease in the average weekly consumption for the IG over time but not for the CG, although the differences between the groups were non-significant. The study also found that there were significant decreases in HED over time within both groups; the differences were about equal in both groups at the 6-month follow-up. The proportion of risky drinkers decreased by about a third in both the CG and IG at the 3- and 6-month follow-ups.

Conclusions: As the differences between the groups at 6 months for all alcohol-related outcome variables were not significant, the shorter, generic brief intervention appears to be as effective as the longer one including normative feedback. However, further studies in similar naturalistic settings are warranted with delayed assessment groups as controls in order to increase our understanding of reactivity assessment in email-based interventions among students.

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1. Background

Alcohol use is a normal part of life for many university students. A recent survey of more than 18,000 students aged 17–30 years in 21 countries found that substantial numbers used alcohol, ranging from 29% of men and 6% of women in South Africa to 95% of men and 93% of women in Ireland (Dantzer, Wardle, Fuller, Pampalone, & Steptoe,

2006). Young adult students in Sweden also show evidence of high alcohol consumption. A survey conducted with 4575 undergraduate university students on four campuses in Sweden found that 96% of students had consumed alcohol in the preceding 12 months (Bullock, 2004). A recent study surveyed 1585 first-year students in Linköping University, and found that heavy episodic drinking (HED), defined as drinking 60 g of alcohol or more for men and 48 g or more for women on a single occasion at least once a month, was reported by 51% of the women and 71% of the men (Bendtsen, Johansson, & Akerlind, 2006). An earlier report about university students, also set in Linköping University, Sweden, found that of the 1297 third-semester students who completed electronic screenings and brief interventions (e-SBIs), 91% ($n = 1186$) reported that they had consumed alcohol in the preceding 3 months (Andersson, Wirehn, Olvander, Ekman, & Bendtsen, 2009). About 84% of men and 71% of women reported engaging in HED once a week or more.

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Given the high prevalence of alcohol use in young adult student populations, numerous projects have assessed the use of various forms of screening, partnered with brief interventions, in order to change drinking behaviors. Recently, a meta-analysis was published by [Moreira, Smith, and Foxcroft \(2009\)](#) comparing the effectiveness of various forms of alcohol interventions taking place in university or college settings that incorporated feedback on social drinking norms. The study analyzed findings from 22 randomized controlled trials (RCTs) involving 7275 students, comparing outcomes for processes involving e-SBIs, mailed feedback of pen and paper screening, individual face-to-face feedback, or group face-to-face feedback. The e-SBI methods appeared to interact with more factors related to alcohol, including peak blood alcohol concentration (BAC), drinking frequency, and drinking quantity, than other delivery methods, and were less expensive to use. However, more studies are needed to identify the specific approaches of e-SBIs that are associated with consistent evidence of reduced alcohol consumption over time. The authors of this review cite a general lack of SBI studies set outside the United States, and a lack of studies that include follow-up periods longer than 3 months. Many of the available studies described small study populations, often limited to convenience samples (i.e., psychology students) and/or involving only students who are waiting for care in health clinics ([Moreira et al., 2009](#)). Other factors affect the generalizability of e-SBI studies of young adult student populations: many required respondents to participate in e-SBIs taking place in controlled settings, rather than allowing students to access e-SBIs using their own computer ([Lewis, Neighbors, Oster-Aaland, Kirkeby, & Larimer, 2007](#); [Neighbors, Lewis, Bergstrom, & Larimer, 2006](#)). Only a handful of published studies have described projects that made more comprehensive use of electronic media, by recruiting large numbers of participants via email, and having participants complete e-SBIs at their own convenience, using their own or another computer.

Earlier studies have assessed the effectiveness of normative feedback in helping students change drinking behaviors. The meta-analysis by [Carey, Scott-Sheldon, Elliott, Bolles, and Carey \(2009\)](#) found that students receiving personalized normative feedback demonstrated reductions in harmful alcohol-related behaviors. [Moreira et al. \(2009\)](#) stated that computerized normative feedback was associated with short-term decreases in alcohol problems, peak BAC, the quantity of alcohol consumed over time, and associated with improved knowledge of realistic drinking norms. Their meta-analysis found that students who received normative feedback from electronic media continued to show improvement over medium-term follow-ups (4–16 months) in reducing alcohol problems, frequency of drinking occasions, quantity of alcohol consumed, and number of drinking events. Overall, the authors concluded that that "individual and personalized normative interventions over the immediate and medium term appear to reduce alcohol use, misuse and related problems amongst university or college students" ([Moreira et al., 2009](#), p. 42). However, the review documented a very limited number of RCTs involving e-SBIs that assessed changes over longer periods of time.

The limited number of e-SBI projects performed as RCTs has left knowledge gaps about how such approaches function in real life with students accessing emailed recruitment invitations and participating in e-SBIs on their own initiative, rather than in controlled settings. In particular, little is known about the specific methods needed to motivate reduced drinking in e-SBI participants. The aim of the present study was to compare differences in alcohol consumption over time, after a series of e-SBIs conducted among young adult students who were considered risky drinkers. The intervention group (IG) received extensive normative feedback; the control group (CG) received short feedback. The study's hypothesis was that at the end of the study period, the IG would have more members who were considered non-risky drinkers compared with the CG.

2. Methods

2.1. Study population and eligibility criteria

All third-semester students enrolled for the fall semester, 2007, at Linköping University (LiU) were eligible for participation in this study. The university is one of the largest in Sweden, with a population at the time of this study of more than 25,000 students. E-mails using university-issued addresses were distributed to all third-semester LiU students in October 2007, inviting them to participate in an e-SBI. Each message included a one-time-use-only hyperlink to the test. The students' e-mail addresses served as unique identifiers. After completing their first e-SBI, the test instrument asked the respondents if they would be willing to participate in follow-up e-SBIs 3 and 6 months later. The study was approved by the ethics committee in Linköping University (DNR 141-07).

2.2. Study definitions

Students were considered risky drinkers if, at baseline or follow-up measurements, they fell into either one or both of the following categories: (a) their weekly alcohol consumption exceeded 120 g alcohol (women) or 180 g alcohol (men) per week in a typical week in the last 3 months and (b) they engaged in HED occasions defined as consuming 48 g of alcohol or more (women) and 60 g or more (men) on two or more occasions in the preceding month. In addition, as both feedbacks included information on this statistic, we assessed changes in peak BAC. The formula used to compute the BAC for our study population is published elsewhere ([Andersson et al., 2009](#)).

2.3. The study intervention

After completing their screenings for alcohol use, but before receiving feedback, respondents were randomly assigned to either the CG or the IG. The CG then received very brief feedback, consisting of three statements summarizing their weekly consumption, their frequency of heavy episodic drinking, and their highest BAC in the last 3 months comparing the respondents' drinking patterns against safe drinking limits established by the Swedish Institute for Public Health. The IG received the summary statements received by the CG and more comprehensive normative feedback with information describing participants' alcohol use compared with peers at the university, and, if applicable, advice on reducing any unhealthy levels of consumption. The personalized advice received by the IG consisted of 12 possible statements or suggestions about the student's alcohol habits.

2.4. Sample size

The baseline e-SBI study obtained 1309 responses (46% of eligible participants), with 11 responses missing data, 5 with data error and 64 that was assigned to two groups or no group for technical reasons; the study thus analyzed responses from 1229 students. Participation in the e-SBIs was strictly voluntary and included all third semester students, so sample size was not set before the study.

Baseline responses identified 654 students who were considered risky drinkers. Three participants were categorized as such solely due to high weekly consumption. Most risky drinkers, 425 (65%), were categorized as such due only to self-reports of high frequencies of HED; the other 226 (35%) reported both high weekly consumption and HED.

Of the original 330 risky drinkers assigned to the IG, only 150 agreed to participate in the follow-up; 126 students actually participated in the 3-month follow-up and 80 in the 6-month follow-up, resulting in retention rates of 38% and 24%, respectively. Of the 324 students assigned to the CG, 145 agreed to participate in the follow-up; 114 actually participated in the 3-month follow-up and 78 participated in the 6-month follow-up, resulting in retention rates of 35% and 24%, respectively.

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