

RCT of the effectiveness of electronic
mail based alcohol intervention with
university students:

*dismantling the assessment and
feedback components*

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Aim

- The study aim was to evaluate the effectiveness of a brief online intervention, employing a randomized controlled trial design that takes account of baseline assessment reactivity, and other possible effects of the research process.

Study group

- All 5227 freshmen at Linköping University, Sweden.
- The official university e-mail addresses were used for the study.
- Randomisation into three groups based upon e-mail addresses (not on age and sex).
- The e-SBI has earlier been introduced as a routine operated by the student health care center

Design

- The study was a **three arm parallel groups trial** in which *routine provision* of e-SBI (Group 1) was compared with assessment only (Group 2) and a no contact control (Group 3) study conditions.
- Groups 1 and 2 completed identical assessments, the sole difference between them being that the latter received normative feedback as usual whereas the former did not.
- Group 3 was only be contacted after 2 months, at which time both Groups 1 and 2 also completed outcome data collection.

Mail addresses on **all freshmen** retrieved from the Universities official register

Randomisation

Feedback group

n=1742

Receiving a mail from *the student health care* offering them to test their alcohol habits by clicking on an enclosed link.

After answering the screening questions they received a personalized normative feedback.

Screening only group

n=1742

Receiving a mail from *the student health care* offering them to answer some questions about their alcohol habits by clicking on an enclosed link.

After answering the screening questions **they were thanked** for their participation and were given a link to a common used internet site in case they were interested to learn more about alcohol habits

Delayed intervention group

n=1743

No contact were taken with this group. The students were unaware that they were part of a study.

Follow-up (after 2-3 month)

n=5227

All three groups were invited in a mail by the principal research leader to participate in an alcohol survey among University students.

The mail contained a link to the 10 item AUDIT-questionnaire. After answering the questions all students received **a short feedback** based upon the individual score.

Blinding

- Groups 1 and 2 were unaware that they are participating in a research study when they respond to the initial e-mails.

Both groups expect that these e-mails are provided as routine practice by the student health care centres to help students think about their drinking.

- At follow-up, no explanation of the true nature of the study was given to students. Instead they are invited to participate in a seemingly unrelated alcohol survey

The mail

For you as a student in Semester 1 at Linköpings Universitet

Hi

Becoming a student often means facing a lot of new challenges, both of a work-related and social character. Most students also encounter a student culture with strong ties to alcohol consumption.

For some students this might lead to health problems or have a negative social impact. From time to time, it is good to reflect upon your alcohol consumption

The student health care service offers all students a possibility to consider their drinking habits. In this e-mail you will find a link to a questionnaire that enables you to think about your drinking habits.

The questionnaire takes about 5 minutes to complete.

To get to the questionnaire, please click on the link below. It is of course completely voluntary to answer the questionnaire. You can stop whenever you want.

[Click here to start the survey](#)

(If the link doesn't work please see at the far end of this email)

The questionnaire has been developed in cooperation between the Student Health Centres, the Swedish National Institute of Public Health and Linköping University.

For further information and questions, please contact marie.delsander@liu.se

We hope that you take the chance to think about your drinking habits!

Best regards

The student health care at Linköping University

Weekly consumption



Question 5 of 10

Linköpings Universitet

How much do you consume during a typical week?
Counting in standard drinks.

Monday	-	0	+
		standard drinks	
Tuesday	-	0	+
		standard drinks	
Wednesday	-	0	+
		standard drinks	
Thursday	-	0	+
		standard drinks	
Friday	-	0	+
		standard drinks	
Saturday	-	0	+
		standard drinks	
Sunday	-	0	+
		standard drinks	

A standard drink corresponds to:



One can (50 cl) beer



One bottle (33 cl) strong beer/cider/cooler



Small glass of wine (15 cl)



Strong wine (8 cl)



Spirits (4 cl)

One can (50 cl) beer 5% corresponds to 1,5 standard drinks
One can (50 cl) beer 7-8% corresponds to 2 standard drinks
One can (50 cl) beer 9-10% corresponds to 3 standard drinks



Previous

Next



Your summary - Student Services Alcoholtest

The advice applies to persons at least 18 years of age.

What does risky drinking mean?

Risky drinking doesn't necessarily mean that you already experiences any negative consequences, however what is certain is that you greatly increase the chances to gain several negative consequences, such as problems with social relations, studies, pshycological health, injuries, high blood pressure etc.

This summary shows your alcoholhabits i relation to the recommended consumption levels by Swedish standards.

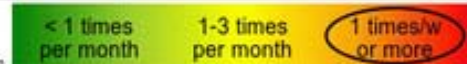
Weekly Consumption

Your total weekly consumption a typical week is **0** standard drinks, this implies a low risk for negative social and health consequences.



Drinking Pattern

Your frequency of intake of a greater amount of alcohol (*5 standard drinks or more*) on a single occasion is **> 12** times per month. This implies a risk for negative social and health consequences. For a more detailed explanation of this, please look at "Drinking Pattern" in "Personal advice" below.



Highest promille

On the occasion when you had the most to drink, you had a promille of **0.07**, which infers a low risk for negative social and health consequences.



Calories

Your total consumption of alcohol per week calculates to **0** calories.

Compared to other students

Your weekly consumption and your drinking pattern (frequency of consumption of 5 drinks or more on a single occasion) is presented below in relation to other 31+ year old male students.

The percentage of students that drink *less than you* are those to the **left** of the blue line.



What was your image of others?

You answered that in relation to other students you drink much less alcohol. Reflect upon this as you see how you actually drink compared to your peers according to the above charts.

Personal advice, based on your responses to the questionnaire

Weekly Consumption

Your *weekly consumption* of alcohol, counted in standard drinks, is 0 drinks per week. This implies that your consumption probably isn't an issue for your health, assuming your health is generally well, and if you don't take any medicine that interact with alcohol. If you are uncertain ask your physician for advice.

Drinking Pattern

Your *drinking pattern* infers a risk for health issues, since you > 12 times per month consume 5 or more standard drink on a single occasion, e.g. during an evening. *Experience has shown that if you continuously exceed this amount of alcohol when you drink, for instance during a night, the risk for negative consequences increases, however it should be set in proportion with the speed of drinking.* You should therefore consider limiting the number of times you drink 5 or more standard drinks on single occasion, since it exposes you to social, medical and physical dangers. The risk increases the more you drink above 5 or more standard drinks but also on the time it takes for you to consume a greater amount of alcohol. *If you drink slowly and make a habit of drinking "everyother water", you will feel better both when you drink and the day after.*

A good measure is to not to drink 5 or more standard drinks once a month, and then not significantly above 5 or more standard drinks, depending on the time it takes for you to consume a greater amount of alcohol. The slower you drink, the lower the concentration of alcohol in your blood, and hence a less risk of injuries.

Highest promille

You had *0.07 promille on the occasion when you had the highest consumption* the past three months. This probably doesn't infer any risk to your health, depending on where you were on this occasion. However there is always a risk for social and physical injuries when you aren't sober. If you want to avoid intoxication and not put your health in social, medical or physical danger, you should keep in mind to drink slowly, and keep your consumption to the recommended levels as mentioned above. Then there is a low risk for you to achieve a promille level that may infer negative consequences.

Motivation for change

There are a lot of reasons why an attempt to change your consumption habits might fail. However it's not unusual that it takes several attempts before you eventually succeed. You shouldn't give up on your goals regarding decreasing your consumption since you're at risk regarding ditt dryckesmönster. Start with listing the pros and cons for alcohol's role in your life, and it's affect on your health. You will feel better, as well as keeping the positive parts of alcohol. Take one step at a time, and make up your mind for change in those drinking occasions where you feel it is most easy to make a change.

Negative consequences

You answered that alcohol has been a factor for negative consequences regarding: I have had sex that I later regretted. Since your consumption does infer risks regarding your drinking pattern, you should consider making a decision about changing your habits. Start with pros and cons for alcohol's role in your life, and under what circumstances you consume alcohol – and choose those occasions where you easily could decrease your consumption or where you could abstain from drinking alcohol.



Keep an eye on your alcohol consumption with AlexIT's Android App.

You can find it by searching for "Alcotracker" on Android Market.

Alcodiary - a simple tool to track your alcohol habits.

If you want a better overview of how much you drink each week, you might get some help from the below alcodiary.

Your weekly alcohol consumption

Calculate your weekly alcohol consumption by counting in standard drinks:
One standard drink corresponds to:







One light beer 2-3% (50 d)	One strong beer/ cider or cooler, 5% (33 d)	One small glass of table wine (15 d)	Fortified wine 15-22% (8d)	Spirits (4 d)
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One can (50 d) strong beer 5% is **1,5** standard drinks
 One can (50 d) strong beer 7-8% is **2** standard drinks
 One can (50 d) strong beer 9-10% is **3** standard drinks

Write the number of standard drinks of alcohol that you drink on each day during a week. Summarize then the amount of standard drinks for each week.

Week	Mon	Tue	Wed	Thur	Fri	Sat	Sun	Total

You are drinking on a risky level if you drink the following amount of alcohol or more:

	Females	Males
Standard drinks per week	10	15
Standard drinks per occasion	4	5

The table shows the recommended levels of risky alcohol consumption for the population in general. However, even less amount of alcohol can accomplish negative consequences among younger persons, pregnant women and persons with various diseases and in combination with certain medicines.

It is important to consider both the total weekly consumption and the amount of alcohol that you consume during each drinking occasion.

Those occasions should be limited to once a month at the most and you should not exceed the recommended too much depending on how long it takes for you to consume this amount of alcohol.

Plan your drinking and minimize the risk for negative consequences

- Drink slowly and start later in the day than usual
- Decide a day or more each week when you won't drink any alcohol
- Set a limit for how much you are going to drink during a night - before you start drinking
- Drink a glass of water inbetween every drink
- Choose drinks with less alcohol - if you mix your own, then use less spirit
- Don't drink if you haven't eaten
- Don't be afraid to say No, it's your call!
- Tell your friends that you have decided to drink less - this should give your decision respect
- Avoid going out with people that you know always drink too much

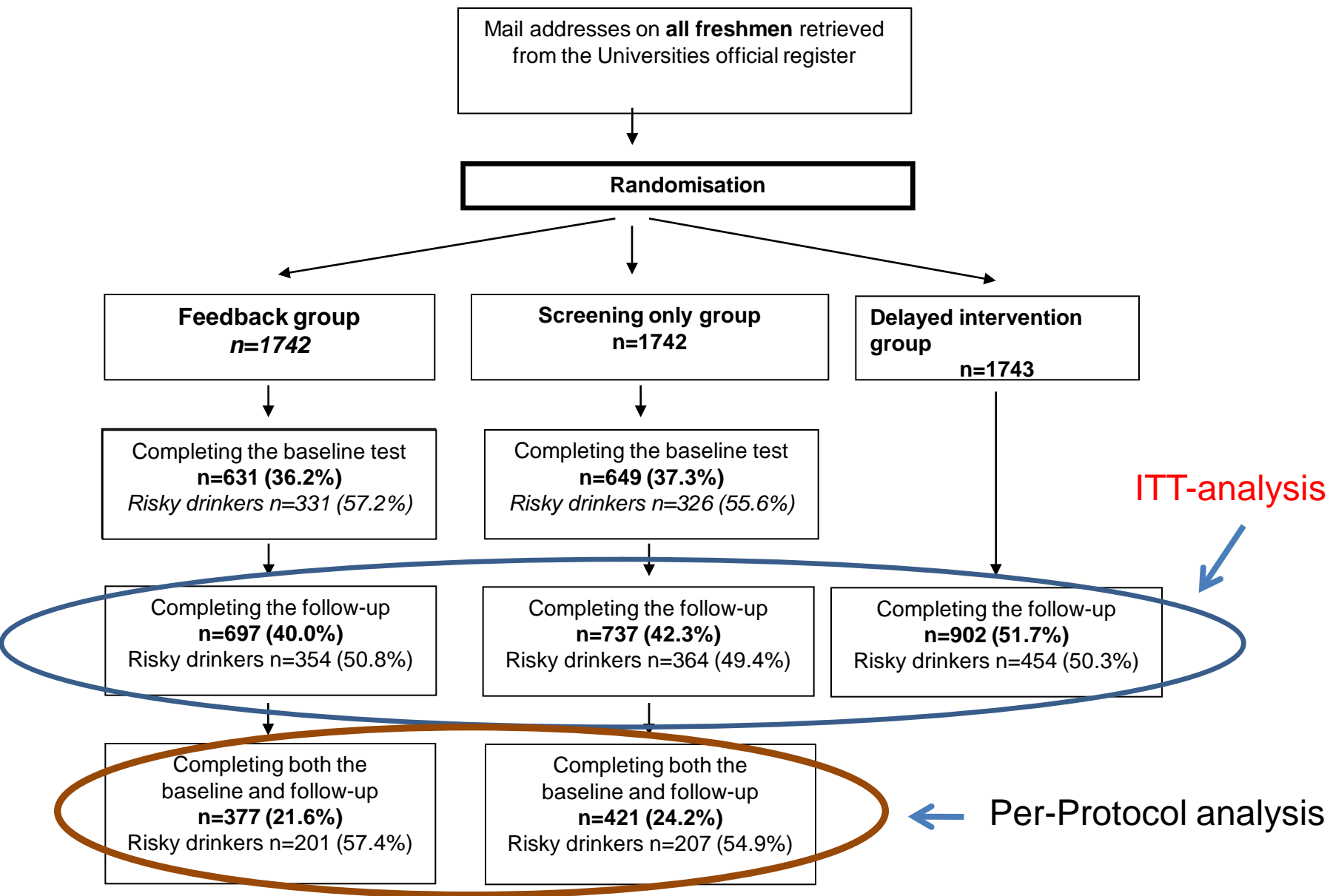


If you want more information please contact the Student Health Service:

Marie Delsander
 Studenthälsan
 Linköpings Universitet

Outcome

- Outcome was evaluated after 2 months among student populations as a whole including the no contact control group (**ITT analysis**).
- Outcome was also evaluated among those who at baseline were risky drinkers randomized to brief assessment and feedback (routine practice) or to brief assessment only (**Per-Protocol analysis**)



ITT analysis

Intention to treat analysis of group 1-3 at follow-up.

Including all who responded to the follow-up, irrespective of drinking status (n=2336)

	Group 1 n=697	Group 2 n=737	Group 3 n=902	p-value
Total AUDIT score (mean, SD)	7.3 (5.9)	6.9 (5.5)	7.3 (5.9)	0.44
AUDIT score \geq 8/6 (n, %)	354 (50.8%)	364 (49.4%)	454 (50.3%)	0.86
Audit problem score (mean, SD)	1.8 (2.7)	1.6 (2.4)	1.8 (2.6)	0.22
Dependence score (mean,SD)	0.8 (1.4)	0.7 (1.2)	0.8 (1.4)	0.53
Mean weekly consumption in g/week (median)	79.8 (48.0)	79.7 (48.0)	86.0 (48.0)	0.41
Frequency of monthly HED				0.71
Never	171 (24.5%)	189 (25.6%)	244 (27.1%)	
Less than monthly	158 (22.7%)	171 (23.2%)	196 (21.7%)	
Monthly	249 (35.7%)	238 (32.3%)	288 (31.9%)	
Weekly	117 (16.8%)	138 (18.7%)	173 (19.2%)	
Daily or almost daily	2 (0.3%)	1 (0.1%)	1 (0.1%)	

Results

Per-Protocol analysis

	Feedback (n=201)	Assessment only (n=207)	p-value
Weekly alcohol consumption			
Average weekly consumption (g) at baseline, mean (median)	135.9 (120.0)	133.4 (120.0)	0.75
Average weekly consumption (g) at follow-up, mean (median)	131.4 (108.0)	143.3 (108.0)	0.22
Absolute change in average weekly consumption,(g) between baseline and follow up, mean (median)	-4.5 (-12.0)	+9.9 (0.0)	0.06
Relative change (%) in average weekly consumption, between baseline and follow up, mean (median)	-8.3 (-14.3)	20.8 (0.0)	0.03

Results

Per-Protocol analysis

	Feedback (n=201)	Screening only (n=207)	p-value
Distribution of HED occasions at baseline			
Once a month	0 (0.0%)	2 (1.0%)	0.24
2-3 times a month	101 (50.2 %)	107 (51.7 %)	
1-2 times a week	85 (42.3 %)	90 (43.5 %)	
3 or more times a week	15 (7.5%)	8 (3.9 %)	
Distribution of HED occasions at follow-up			
Never	2 (1.0%)	3 (1.4%)	0.29
Less than monthly	21 (10.4 %)	22 (10.6%)	
Monthly	109 (54.2%)	97 (46.9%)	
Weekly	67 (33.3%)	85 (41.1 %)	
Daily or almost daily	2 (1.0 %)	0 (0.0%)	
Changed from risk to no risk, %	118 (58.7%)	108 (52.2%)	0.11
AUDIT score at follow-up			
(mean, SD)	11.6 (5.8)	11.0 (4.9)	0.62

Conclusion

- High attrition rate in both the baseline and follow-up survey.
 - **Economic incentive increases participation.**
- In the intention-to-treat analysis of all 3 groups the total AUDIT score, as well as the proportion with a positive AUDIT score for risky drinking, did not differ between the groups.
 - **No effect of assessment and/or feedback at baseline compared to no contact in an unselected student population**
- In the **per protocol analysis** of those students with a risky drinking a baseline we found a significant difference between the feedback group and screening only group, concerning reduction in average weekly consumption but not for HED at the time of follow-up
 - **Added effect of feedback in comparison with assessment only in students with risky drinking**

Further studies

- A much larger study with around 15.000 participants from two Universities in Sweden is under the way right now.
- Alcohol questions at the time of the follow-up are embedded in a general health survey

Thank you for listening

Statistical methods

- In the per protocol analysis of the change in alcohol consumption (Tabel 3), weekly consumption of alcohol was analyzed with negative binomial regression (Stata 11.2) with fixed effects for group. The relative change in weekly consumption and AUDIT score was compared between groups with Student's t test. Comparison of HED between groups was performed using chi-squared test. All tests were performed two-sided at $p < 0.05$.