



**Karolinska
Institutet**

The effects of extended internet based interventions designed to reduce alcohol problems

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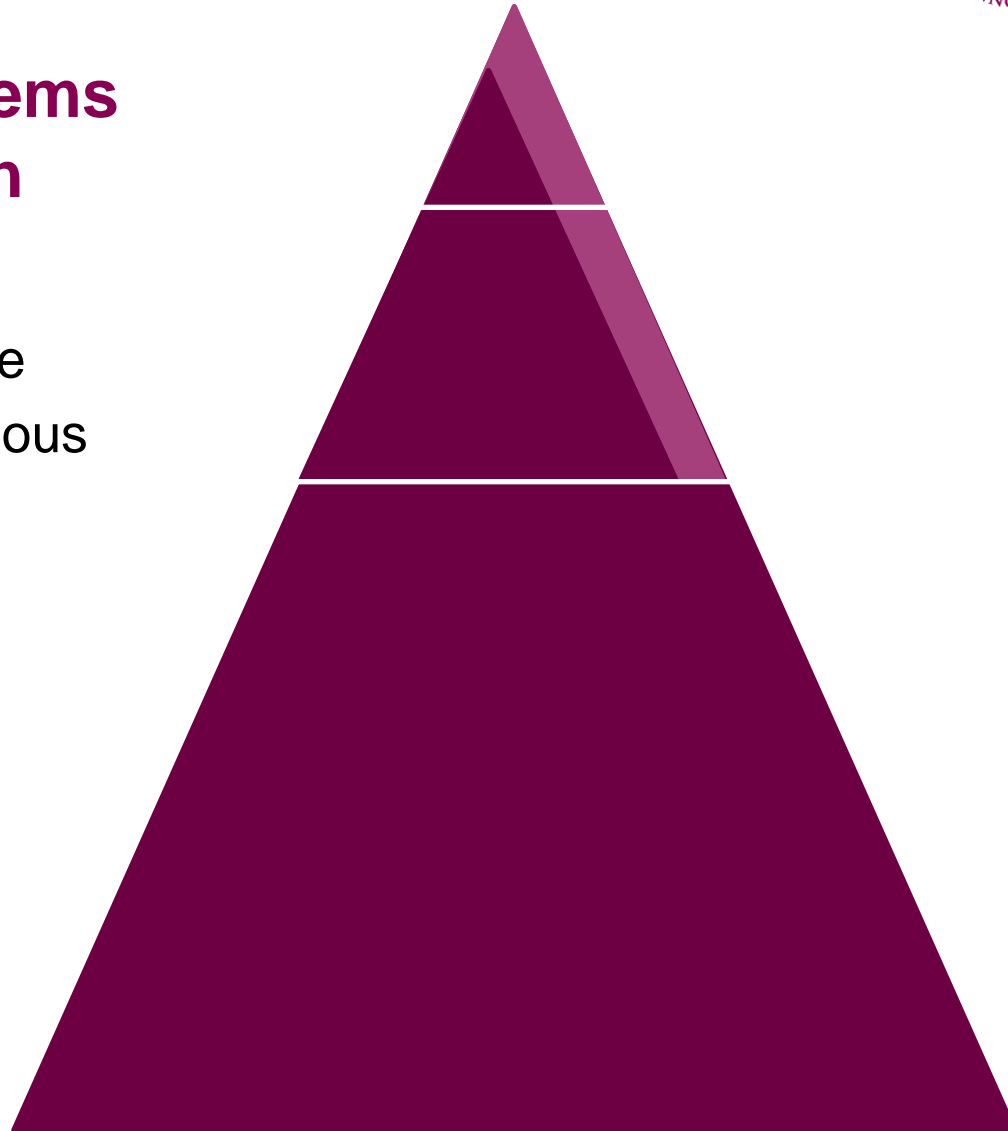
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Alcohol problems in the Swedish population

- ✦ 5% Dependence
- ✦ 10-15% Hazardous or harmful.
- ✦ Only 1/5 ever seek help.



Why Internet?

- ✦ 91% of Swedes use the internet.
 - ✦ Survey: People stated they are much more likely to search the internet than, ask health care professional or family member about alcohol or other drugs.
 - ✦ Focus groups: Internet as an attractive first step for assessment of alcohol use and guidance to treatment but not for actual treatment (Wallhed 2014)
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Internet-based interventions could reach people who do not seek help due to

- ✦ stigma of going to a clinic
- ✦ willingness to stay anonymous
- ✦ problems of accessing care where they live
- ✦ need to access care without leaving work or home
- ✦ not comfortable with available treatment ideology
- ✦ not comfortable with available treatment goals

Some other possible reasons for using internet:

- ✦ intervention delivered in a similar way every time
- ✦ cost does not increase with every user (self-help)
- ✦ ability to test information content rather than therapist skills

Different kinds of internet-based interventions

- ✦ Brief – Extended
- ✦ Screening – Assessment – Feedback – Programs
- ✦ Self-help – Guided – Therapy
- ✦ Riskgroups – Helpseekers

Previous reviews including extended internet-based interventions

2010. (White, Kavanagh et al. 2010)

Review 17 RCT. 12 with university students. 12 brief feedback.

Users can benefit from online alcohol interventions

Particularly useful for groups less likely to access traditional care

2011. (Khadjesari, Murray et al. 2011)

Meta-analyses. 19 RCT. Stand-alone computer-based. Mostly student populations

More effective than assessment-only.

2011. (Riper, Spek et al. 2011)

Meta-analysis. 9 RCT, e-self-help interventions.

Medium effect size ($g = 0.44$). Difference between single-session and more extended.

Effective in curbing adult problem drinking in high-income countries

Previous reviews including extended internet-based interventions

2014. (Danielsson, Eriksson et al. 2014)

Review of 36 studies on the effects of internet-based support for alcohol use.
Evidence to a large extent inconsistent.

2014. (Riper, Blankers et al. 2014)

Meta-analysis. 16 RCT guided and unguided internet interventions,
Small but significant effect size ($g = 0.20$) No differences in potential moderators.

2014. (Quanbeck, Chih et al. 2014)

Review mobile interventions.
Many mobile applications exist but no evidence of effectiveness.

2015 (Dedert, McDuffie et al. 2015)

Meta-analysis. 28 RCT. Low-intensity e-interventions with inactive/minimal controls
Small reductions in alcohol consumption at 6 months, No evidence for longer-term or clinically significant effects”

Aim

- ✦ Investigate the effects of **extended** (more than 1 session) internet-based interventions designed to reduce alcohol consumption or alcohol-related problems.

Questions

- ✦ Which extended internet-based interventions designed to decrease alcohol consumption or alcohol related problems have been used and evaluated for effects?
- ✦ What are the effects of extended internetbased interventions designed to decrease alcohol consumption or alcohol related problems?

Identification:
978 entries
Web of science = 301, Pubmed=267,
Psycinfo=301, Cochrane=209
361 duplicates removed

617 entries remained

Screening:
Screening abstract and titles
470 removed

147 articles remained

Eligibility:
Review of full abstracts
28 added from references
120 removed

53 articles remained

Included:
39 trials, 32 interventions
Some interventions documented in 2-4 articles

Reason for exclusion

130 brief intervention
43 prevention
36 young participants
24 smoking
20 other drugs
7 gambling
26 surveys

20 on measures
8 qualitative

29 reviews
17 protocols
4 intervention development
10 conference abstracts

Included in this review

53 ARTICLES, 39 STUDIES, 32 INTERVENTIONS

- ✦ 21496 participants.
- ✦ Mean age 40,2 (varied from 19 to 51).
- ✦ Included participants had diagnosed alcohol use disorder (AUD) or AUDIT score corresponding with harmful use or dependence.
- ✦ All studies were conducted in Western, High income countries. (USA 18 studies and Netherlands 9 studies).
- ✦ 27 of the studies were randomized controlled trials (RCT).
- ✦ The first study (Hester) was published in 1997, then it was a ten year gap until the next one in 2007. Since then the number of studies have been steadily increasing every year.

Name (Year)		Sign	Control	Follow-up	Computer or phone	Guide or therapy	Clinical	CBT	Intervention length sessions or weeks
Hester, R. K. and H. D. Delaney (1997)			w		☐		outpatient		*****
Riper, H., et al. (2008)			i						*****
Finfgeld-Connett, D. (2009)			i						*****
Kay-Lambkin, F. J., et al. (2009)			+						*****
Kramer, J., et al. (2009)			w						****
Fals-Stewart, W. and W. K. Lam (2010)			p		☐		resident		*****
Postel, M. G., et al. (2010)			w						*****
Carroll, K. M., et al. (2008)			+		☐		outpatient		*****
Wallace, P., et al. (2011)			p						***
Hester, R. K., et al. (2009)			+						*****
Blankers, M., et al. (2011)			w						*****
Kay-Lambkin, F. J., et al. (2011)			+						*****
Cunningham, J. A. (2012).			a						*****
Agyapong, V. I. O., et al. (2012)			p		☎		after		*****
Hasin, D. S., et al. (2013)			+		☎		outpatient		
Tensil, M. D., et al. (2013)			i						**
Verduin, M. L., et al. (2013)			p		☐		outpatient		
Hester, R. K., et al. (2013)			+						
Schulz, D. N., et al. (2013)			w						***
Brief, D. J., et al. (2013)			w						*****
Campbell, A. N., et al. (2014)			+		☐		outpatient		*****
Gustafson, D. H., et al. (2014)			+		☎		after		
Sinadinovic, K., et al. (2014)			a						*****
Brendryen, H., et al. (2014)			i						*****
McGeary, J. E., et al. (2014).			p				after		*****
Andersson, C. (2015)			a		☎				**
Gonzalez, V. M. and P. L. Dulin (2015)			i		☎				
Wiers, R. W., et al. (2015)			p						***
Farren, C. K., et al. (2015)			p		☐		resident		****
Krentzman, A. R., et al. (2015).			p				outpatient		*****

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Riper, H., et al. (2009)								*****
Finfgeld-Connett, D. (2009)								*****
Kay-Lambkin, J., et al. (2009)								*****
Kramer, J., et al. (2009)		w						*****
Fals-Stewart, W. and W. K. Lam (2010)		p		<input type="checkbox"/>		resident		*****
Postel, M. G., et al. (2010)		w						*****
Carroll, K. M., et al. (2008)		+		<input type="checkbox"/>		outpatient		*****
Wallace, P., et al. (2011)								***
Hester, R. K., et al. (2011)								*****
Blankers, M., et al. (2011)		w						*****
Kay-Lambkin, J., et al. (2011)		+						*****
Cunningham, J. A. (2012)		a						*****
Agyapong, V. I. O., et al. (2012)		p		<input type="checkbox"/>		after		*****
Hasin, D. S., et al. (2013)		+		<input type="checkbox"/>		outpatient		*****
Tensil, M. D., et al. (2013)		i						**
Verduin, M. L., et al. (2013)		p		<input type="checkbox"/>		outpatient		*****
Hester, R. K., et al. (2013)		+						*****
Schulz, D. N., et al. (2013)		w						*****
Brief, D. J., et al. (2013)		w						*****
Campbell, A. N., et al. (2014)				<input type="checkbox"/>				*****
Gustafson, H., et al. (2014)								*****
Sinadinovic, K., et al. (2014)		a						*****
Brendryen, H., et al. (2014)		i						*****
McGeary, J. E., et al. (2014)		p				after		*****
Andersson, C. (2015)		a		<input type="checkbox"/>				**
Gonzalez, V., et al. (2015)				<input type="checkbox"/>				*****
Wiers, R. W., et al. (2015)		p						***
Farren, C. K., et al. (2015)		p		<input type="checkbox"/>		resident		*****
Krentzman, A. R., et al. (2015)		p				outpatient		*****

Overall: participants (except those already abstinent) had a lower level of alcohol consumption at follow-up compared to baseline.

Significant effect over control on primary outcome:

- ★ **Yes: 44% (17)**
- ★ **No: 28% (11)**

- ★ **No control-group: 23% (9)**
- ★ **Alcohol not primary outcome: 5% (2)**

Follow-up:

- **4-6 weeks: 13% (5)**
- **3-6 months: 59% (23)**
- **9-12 months: 25% (10)**

Controls

- **Placebo or information: 34% (13)**
- **Waiting list or assesment: 25% (10)**
- **Added to other intervention face-to-face or on-line: 20% (8)**

Study quality: Attrition biggest issue.

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Riper, H., et al. (2008)		i						*****
Finfgeld-Connett, D. (2009)		i						*****
Kay-Lambkin, F. J., et al. (2009)		+						*****
Kramer, J., et al. (2009)		+						*****
Fals-Stewart, W. and W. K. Lam (2010)		p		<input type="checkbox"/>		resident		*****
Postel, M. G., et al. (2010)		w						*****
Carroll, K. M., et al. (2010)		+		<input type="checkbox"/>		outpatient		*****
Wallace, P., et al. (2011)		p						***
Hester, R. K., et al. (2009)		+						*****
Blankers, M., et al. (2010)		w						*****
Kay-Lambkin, F. J., et al. (2011)		+						*****
Cunningham, J. A. (2012)		a						*****
Agyapong, O., et al. (2012)		p		<input type="checkbox"/>		after		*****
Hasin, D. S., et al. (2013)		+		<input type="checkbox"/>		outpatient		*****
Tensil, M. D., et al. (2013)		i						**
Verduin, M., et al. (2013)		p		<input type="checkbox"/>		outpatient		*****
Hester, R. K., et al. (2013)		+						*****
Schulz, D. N., et al. (2013)		w						***
Brief, D. J., et al. (2013)		w						*****
Campbell, A. N., et al. (2014)		+		<input type="checkbox"/>		outpatient		*****
Gustafson, D. H., et al. (2014)		+		<input type="checkbox"/>		after		*****
Sinadinovic, et al. (2014)		p						*****
Brendryen, H., et al. (2014)		i						*****
McGeary, J. E., et al. (2014)		p				after		*****
Andersson, C. (2015)		a		<input type="checkbox"/>				**
Gonzalez, V. M. and P. L. Dulin (2015)		i		<input type="checkbox"/>				*****
Wiers, R. W., et al. (2015)		p						***
Farren, C. K., et al. (2015)		p		<input type="checkbox"/>		resident		*****
Krentzman, A. R., et al. (2015)		p				outpatient		*****

Type of intervention

★ Webb: 27

★ Computer: 15% (6)

★ Phone: 15% (6)

★ Un-guided: 51% (20)

★ Guided: 28% (11)

★ Therapy: 20% (8)

★ 2-3 sessions/weeks: 13% (5)

★ 5-8 sessions/weeks: 28% (11)

★ 12-24 sessions/weeks: 23% (9)

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Riper, H., et al. (2008)		i						*****
Finfgeld-Connett, D. (2009)		i						*****
Kay-Lambkin, F. J., et al. (2009)		+						*****
Kramer, J., et al. (2009)		v						*****
Fals-Stewart, W. and W. K. Lam (2010)		p		<input type="checkbox"/>		resident		*****
Postel, M. G., et al. (2010)		w						*****
Carroll, K. M., et al. (2008)		+		<input type="checkbox"/>		outpatient		*****
Wallace, P., et al. (2011)		o						***
Hester, R. K., et al. (2005)		+						*****
Blankers, M., et al. (2011)		w						*****
Kay-Lambkin, F. J., et al. (2011)		+						*****
Cunningham, J. A. (2012)		a						*****
Agyapong, O., et al. (2013)		o				after		*****
Hasin, D. S., et al. (2013)		+		<input type="checkbox"/>		outpatient		*****
Tensil, M. D., et al. (2013)		+						**
Verduin, M., et al. (2013)		p		<input type="checkbox"/>		outpatient		*****
Hester, R. K., et al. (2013)		+						*****
Schulz, D. N., et al. (2013)		w						***
Brief, D. J., et al. (2013)		w						*****
Campbell, A. N., et al. (2014)		+		<input type="checkbox"/>		outpatient		*****
Gustafson, B. H., et al. (2014)		+		<input type="checkbox"/>		after		*****
Sinadinovic, K., et al. (2014)		a						*****
Brendryen, H., et al. (2014)		i						*****
McGeary, J. E., et al. (2014)		p				after		*****
Andersson, C. (2015)		a		<input type="checkbox"/>				**
Gonzalez, V. M. and P. L. Dulin (2015)		i		<input type="checkbox"/>				*****
Wiers, R. W., et al. (2015)		p						***
Farren, C. K., et al. (2015)		p		<input type="checkbox"/>		resident		*****
Krentzman, A. R., et al. (2015)		p				outpatient		*****

Theory behind interventions

✦ CBT/MI most common 77% (30)

✦ Positive psychology (Krentzman 2014)

✦ Cognitive rehabilitation (Fals-Stewart 2010)

✦ Attention modification (McGeary 2014)

✦ 12-step (Klein 2012)

✦ Contingency management (Cambell 2014)

✦ Location based monitoring (Gonzalez 2015)

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Riper, H., et al. (2008)		i						*****
Finfgeld-Connett, D. (2009)		i						*****
Kay-Lambkin, F. J., et al. (2009)		+						*****
Kramer, J.								*****
Fals-Stewart, W. and W. K. Lam (2010)		p		<input type="checkbox"/>		resident		*****
Postel, M. G., et al. (2010)		w						*****
Carroll, K. M., et al. (2008)		+		<input type="checkbox"/>		outpatient		*****
Wallace, P., et al. (2011)		p						***
Hester, R. K. et al.								Information on other help accessed during, after 10% (4) or before 18% (7)
Blankers, M., et al. (2011)		w						*****
Kay-Lambkin, F. J.								Measures of alliance (0) or satisfaction 34% (13)
Cunningham, J. A. (2012).		a						*****
Agyapong, V. O. et al. (2012)				<input type="checkbox"/>		after		Information about non-responders or adverse events 5% (2)
Hasin, D. S., et al. (2013)		+		<input type="checkbox"/>		outpatient		
Tensil, M. D. et al. (2013)								Length of the intervention, in approximate time of usage or pages 20% (8)
Verduin, M. L., et al. (2013)		p		<input type="checkbox"/>		outpatient		
Hester, R. K., et al. (2013)								Conflict of interest 25% (10)
Schulz, D. N., et al. (2013)		w						***
Brief, D. J., et al. (2013)		w						*****
Campbell, A. N., et al. (2014)		+		<input type="checkbox"/>		outpatient		*****
Gustafson, D. H., et al. (2014)		+		<input type="checkbox"/>		after		
Sinadinovic, K., et al. (2014)		a						*****
Brendryen, H., et al. (2014)		i						*****
McGeary, J. E., et al. (2014).		p				after		*****
Andersson, C. (2015)		a		<input type="checkbox"/>				**
Gonzalez, V. M. and P. L. Dulin (2015)		i		<input type="checkbox"/>				
Wiers, R. W., et al. (2015)		p						***
Farren, C. K., et al. (2015)		p		<input type="checkbox"/>		resident		*****
Krentzman, A. R., et al. (2015).		p				outpatient		*****

Information missing

◆ Information on other help accessed during, after 10% (4) or before 18% (7)

◆ Measures of alliance (0) or satisfaction 34% (13)

◆ Information about non-responders or adverse events 5% (2)

◆ Length of the intervention, in approximate time of usage or pages 20% (8)

◆ Conflict of interest 25% (10)

Conclusion

- ✦ Extended computer or internet based interventions are associated with reduced drinking, increased abstinence and reduced alcohol related problems.
- ✦ But the evidence on this association being causal is not conclusive
- ✦ Other factors that could explain effects have to be further studied.

Discussion

- ✦ Important to do more controlled studies to establish if there is an effect of extended internet interventions.

Next step?

- ✦ What would we do if we can not show effects? Will we stop using the internet?
 - ✦ What kind of intervention over the internet will have the best effects?
 - ✦ What makes it work better or worse? Mechanisms
 - New review (Black 2016)
-

Discussion – How can it be used?

- ✦ Students with hazardous habits
 - ✦ Publicly on the internet for helpseekers

 - ✦ How can it be used in health-care
 - Recruiting
 - Screening and feedback
 - Assessment
 - Self-help
 - Treatment (instead of, add-on, handle co-morbidity)
 - Monitoring and follow-up
 - Boosters
-

Thank you!

Ongoing projects

- ✦ RCT comparing control, internet-based self-help and counselor support.
- ✦ RCT comparing internet-based treatment with treatment at clinic

- ✦ RCT on internet-based training for family members (CRAFT) vs waitinglist.
- ✦ RCT on internet-based treatment for cannabis users vs waitinglist.

- ✦ RCT comparing internet-based treatment with TAU in primary care.

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Name Year	Significant effect	Control	Follow-up	Intervention	CBT	sessions or weeks	Guide	Clinical
Hester, R. K. and H. D. Delaney (1997)	■	w		computer	■	*****	■	outpatient
Linke, S., et al. (2007)	□			www	■	*****		
Riper, H., et al. (2008)	■	i		www	■	*****		
Finggeld-Connett, D. (2009)	■	i		www	■	*****	■	
Blankers, M., et al. (2008)	□			www	■			
Kramer, J., et al. (2009)	■	w		www	■	****		
Riper, H., et al. (2009)	□			www	■	*****		
Kay-Lambkin, F. J., et al. (2009)	■	+		www	■	*****	■	
Postel, M. G., et al. (2010)	□			www	■	*****	■	
Fals-Stewart, W. and W. K. Lam (2010)	■	p		computer	□	*****	■	resident
Wallace, P., et al. (2011)	■	p		www	■	***		
Carroll, K. M., et al. (2008)	□	+		computer	■	*****	■	outpatient
Blankers, M., et al. (2011)	■	w		www	■	*****	■	
Hester, R. K., et al. (2009)	■	+		www	■	*****	■	
Postel, M. G., et al. (2011)	□			www	■	*****	■	
Kay-Lambkin, F. J., et al. (2011)	■	+		www	■	*****	■	
Agyapong, V. I. O., et al. (2012)	■	p		Phone	□	*****		after
Cunningham, J. A. (2012).	■	a		www	■	*****	■	
Klein, A. A., et al. (2012)	□			www	□	*****	■	after
Tensil, M. D., et al. (2013)	■	i		www	■	**		
Schulz, D. N., et al. (2013)	■	w		www	■	***		
Brief, D. J., et al. (2013)	■	w		www	■	*****		

Name Year	Significant effect	Control	Follow-up	Intervention	CBT	sessions or weeks	Guide	Clinical
Verduin, M. L., et al. (2013)		p		computer				outpatient
Hasin, D. S., et al. (2013)		+		Phone				outpatient
Hester, R. K., et al. (2013)		+		www				
Dulin, P. L., et al. (2014)				Phone		*****		
McGeary, J. E., et al. (2014).		p		www		*****		after
Sinadinovic, K., et al. (2014)		a		www		*****		
Campbell, A. N., et al. (2014)		+		computer		*****		outpatient
Brendryen, H., et al. (2014)		i		www		*****		
Gustafson, D. H., et al. (2014)		+		Phone				after
Andersson, C. (2015)		a		Phone		**		
Wiers, R. W., et al. (2015)		p		www		***		
Farren, C. K., et al. (2015)		p		computer		****		resident
Postel, M. G., et al. (2010)		w		www		*****		
Krentzman, A. R., et al. (2015).		p		www		*****		outpatient
Gonzalez, V. M. and P. L. Dulin (2015)		i		Phone				
Elison, S., et al. (2015), UK				www				