



## Effectiveness of guided and unguided online alcohol help: A real-life study

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### ARTICLE INFO

#### Keywords:

Alcohol drinking  
Alcoholism  
Internet based intervention  
eHealth  
Observational study  
Cognitive behaviour therapy

### ABSTRACT

**Aims:** Online interventions reduce the treatment gap between the number of people with alcohol misuse and people who actually receive help. This study investigated the effectiveness and predictors of success of a Belgian online help programme.

**Methods:** A real-life retrospective open cohort study evaluating the guided and unguided internet intervention on the Belgian online platform alcoholhulp.be. The intervention consisted of a 12-week programme based upon cognitive behaviour therapy, motivational interviewing and acceptance and commitment therapy. Inclusion criteria are age above 18 years, recording of alcohol consumption in the daily journal for at least 2 weeks, and minimum 2 chat sessions in the guided group.

Outcomes were weekly alcohol consumption after 6 and 12 weeks and treatment response (drinking less than 10 or 20 standard units (SU) per week). Additional analysis was done on predictors of success.

**Results:** A total of 460 participants in the guided group and 968 in the self-help group met the inclusion criteria. Average baseline alcohol consumption in the two groups was 40 SU per week. Alcohol consumption decreased by 31 SU (Cohen's  $d$  1.17,  $p < 0.001$ ) after 12 weeks in the guided group and 23 SU (Cohen's  $d$  0.83,  $p < 0.001$ ) in the self-help group. The treatment response below 20 SU per week was 88% for the guided group and 73% for the self-help group. Significantly better results were obtained in the guided group compared to the self-help group ( $p < 0.005$ ). Participants with a higher baseline alcohol consumption had a higher decrease in alcohol consumption in both groups. The personal goal to quit, the absence of drug use, a lower baseline alcohol consumption and a higher number of completed assignments predict a higher chance of treatment response. Attrition at 6 weeks was 26% in the guided group and 63% in the self-help group and increased to 59% and 82% respectively at 12 weeks. **Conclusions:** Both guided and unguided internet interventions are effective in reducing alcohol consumption and achieving the guideline for participants motivated to use the platform on a regular base, with better results in guided intervention.

### 1. Introduction

Harmful use of alcohol results in three million deaths worldwide every year, representing 5.3% of all deaths, and is a causal factor in more than 200 diseases. It also results in significant social and economic losses to individuals and society at large (World Health Organization, 2018).

Unhealthy use of alcohol includes risky drinking, harmful use and alcohol dependence (Babor et al., 2001). Risky or hazardous use includes alcohol consumption above the guidelines, which increases the risk of physical or mental harm (World Health Organization, 2016). In Flanders, the geographical area for this research, 14% of people drink

more than the recommended maximum of 10 standard units (SU) per week. The life-time prevalence in Belgium of alcohol-related disorders is 8% (VAD, 2016; VAD, 2019). There is a big treatment gap between the number of people with alcohol misuse and people who actually receive help (World Health Organization, 2018). Effective internet-based interventions may reduce this gap due to their low-threshold accessibility, high scalability and reduced stigmatisation (Riper et al., 2018). Moreover, internet- and mobile-based interventions are much more likely to be more cost effective than treatment as usual (Buntrock et al., 2019; Buntrock et al., 2021).

Internet-based interventions are a heterogeneous group in terms of

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modality, behaviour change techniques, intensity and duration of therapy and additional guidance. The general profile of participants in online alcohol interventions are adults with a mean age of about 41 years, 52% had tertiary education and 75% was employed. Participants were balanced in gender and showed a baseline weekly alcohol consumption of 38 SU (Riper et al., 2018).

Internet-delivered treatment was not inferior to face-to-face treatment in reducing alcohol consumption (Johansson et al., 2021a). Internet-based interventions lead to a small but relevant reduction in alcohol consumption compared to minimal intervention (Riper et al., 2018; Kiluk et al., 2019; Kaner et al., 2017; Sundström et al., 2017; Riper et al., 2014). When comparing guided with unguided internet-based interventions, recent systematic reviews found that guided interventions were superior to fully automated ones (Riper et al., 2018; Hadjistavropoulos et al., 2020). Earlier reviews did not find a significant association between guidance and outcome, however these investigated mainly self-help and low-intensity internet interventions (Sundström et al., 2017; Riper et al., 2014).

In Flanders, online alcohol help is available via the platform [www.alcoholhulp.be](http://www.alcoholhulp.be) which provides information, a self-help intervention module, a 12-week module with individually guided help and access to a closed discussion forum. It is important to understand the effectiveness of the online help platform in a real-life setup for guided and unguided help. A large observational study on unguided online intervention showed a clinically significant change to a lower level of alcohol use (Johansson et al., 2017). To our knowledge, no large observational study compared guided and unguided online interventions. This study investigated and compared for the guided and the self-help group the effectiveness of the programme in terms of evolution in alcohol consumption and the achievement of the guideline of less than 10 or 20 SU per week at 6 and 12 weeks. Additionally, we analysed predictors of success and the impact of intensity of use of the platform. We hypothesized that guided online help would be more effective compared to unguided online help.

## 2. Methods

### 2.1. Design

This research was a retrospective open cohort study and follows the EQUATOR recommendations published in the STROBE Statement ([Equator-network.org](http://Equator-network.org), 2007; Von Elm et al., 2007).

### 2.2. Setting and subjects

The cohort consists of the registered users of the free and publicly accessible website [alcoholhulp.be](http://alcoholhulp.be) from January 2016 till December 2019. The online platform is financed by the Flemish government since 2015. There is no active recruitment of participants and no advertising is allowed on the website. Participants find their own way to the online platform through publicly available websites on alcohol and drug use or they are informed about it through health workers or others.

The twofold objective of [alcoholhulp.be](http://alcoholhulp.be) is to provide first information and insight into alcohol consumption and second guided or unguided online help for people with unhealthy alcohol use and related quality-of-life issues. The requirements for access to the online self-help programme consist of an anonymous registration and a short questionnaire. The registration gathers information about age, gender, study level and work situation. The questionnaire inquires about initial alcohol consumption, alcohol related complaints, personal advantages and disadvantages of alcohol use and alcohol reduction and the initial goals on alcohol consumption. Registration takes about 20 min and is intended to create easy access to the online self-help program.

Access to the guided programme is also anonymous and free, but more detailed information is asked such as: the complete Alcohol Use Disorders Identification Test (AUDIT), drug consumption, health problems, medication, previous treatments for alcohol or mental problems,

suicidal risk, gambling, the reason for registration, the goals, motivation and confidence for changing alcohol consumption and practical questions about internet, chat experience and availability. The participant will be contacted to schedule a first-chat appointment with a dedicated psychotherapist. Both the self-help and guided help provide a 12-week programme based upon cognitive behaviour therapy, motivational interviewing and acceptance and commitment therapy. The participants determine their personal goals, take responsibility for their own commitment and time spent on completing the programme. Each participant is encouraged to complete nine specific assignments: daily journal on alcohol consumption, personal evolution, advantages and disadvantages of alcohol consumption, personal values and goals, alcohol use goals, self-control, risk situations, action plan, emergency plan, relapse evaluation. Each assignment consists of 3 parts: information about the exercise with background documentation and examples, the exercise itself, the specific results for the participant with visual presentation and personalized normative feedback.

The guided programme contains the same exercises as the self-help programme. Additionally, a dedicated professional psychotherapist conducts weekly chat sessions of about an hour, to discuss the exercises and specific questions or problems. While the guided programme is terminated after 12 weeks, access to the platform information, the assignments and the discussion forum is unlimited in time for both groups. In the appendix an overview of the guided and the self-help programme is given.

### 2.3. Inclusion criteria

The inclusion criteria for this research were the following:

- Participants should be 18 years or older.
- The recording of alcohol consumption in the daily journal for at least two weeks.
- For the guided group, participants should have a minimum of two chat sessions and the programme should be completed before 31 December 2019.

Participants of blended help are excluded; these are users of online help combined with outpatient treatment.

### 2.4. Data collection and variables

We obtained all data recorded by [alcoholhulp.be](http://alcoholhulp.be) from the two groups for the selected time period. Data was downloaded in the form of several csv files, and Excel was used to extract and compile one master table for each group.

To describe the characteristics of the participant population, we considered socio-demographic data and alcohol-related information. The sociodemographic data included age (9 categories), gender (male, female), study level (lower education, secondary education, higher education, other) and work situation (fulltime, part-time, student, unemployed, other). The alcohol related information included the alcohol consumption (SU/week), the personal goal (reduce but not quit, quit, other), previous treatment for alcohol problems (yes or no) and the alcohol related complaints. Thirteen different types of physical and mental alcohol related complaints such as stomach complaints, sweating, sexual problems, headache, obliviousness, .... were scored from 1 (rarely) to 5 (very often). Scores were combined into a total score (range 13–65), and subsequently categorized into a low, medium, high or very high score.

For the guided module, additional information was available including the AUDIT category (acceptable, medium risk, high risk and probable dependence), the personal goal (reduce but not quit, quit and other) and the motivation. The motivation was scored by the participants by providing a score from one (not important/confident) to ten (very important/confident) on the questions: "How important is it for

you to change your drinking behaviour?" and "How confident are you about succeeding?". Finally, drug use (yes or no), gambling (yes or no), suicidal attempt (yes or no) and suicidal thoughts (none, once, multiple, daily) was analysed. We examined the evolution in alcohol consumption using the reduction in alcohol consumption and the treatment response. We calculated the difference between the total weekly alcohol consumption (SU/week) at baseline and at 6 and 12 weeks follow-up from the journal data. In this study, one standard unit of alcohol contains 10 g of alcohol. Treatment response was calculated based on two levels of weekly alcohol consumption: a total not exceeding 10 SU per week as recently recommended in Flanders and a total not exceeding 20 SU per week which is close to the US guideline 14 units (14 g alcohol per unit) for men (VAD, 2016; NIAAA, n.d.).

To examine whether there are characteristics that are predictive for treatment response, we used as independent variables the patient characteristics described above, with the exception of the AUDIT parameter. We omitted the AUDIT parameter because of the overlap with the baseline alcohol consumption and for comparison between the guided and the unguided group where the AUDIT parameter was not available. To check the impact of intensity of use of the website on treatment response, we analysed the number of chat sessions (lasting longer than 5 min) and the number of assignments (maximum eight assignments excluding the journal). For the self-help group, only the number of assignments was available.

## 2.5. Handling of missing data

There were two types of missing data: loss to follow-up when participants filled in the journal for a period shorter than 6 or 12 weeks; and when days were missing in the journal. Due to the high loss to follow-up, two scenarios were investigated. The complete case scenario (CC), our main scenario, considered only those participants who filled in the journal for at least 6 or 12 weeks. For the back to baseline scenario (BL) the alcohol consumption was considered to be at the baseline level for participants lost to follow-up and assumed to be the worst-case scenario. For the second type of missing information, participants were excluded in all scenarios if they did not fill out their journal on any day of the week at 6 or 12 weeks. When only a few days were available in a week, we calculated the alcohol consumption per week based on the available days, assuming no alcohol was consumed on the other days. We verified this approach comparing the weekly alcohol consumption reported in the evaluation form, available only for the guided group, after 6 and 12 weeks and the calculated value from the journal. The average difference was two SU per week higher in the journal compared to the self-evaluation ( $p < 0.05$ , Cohen's  $d$  0.18).

## 2.6. Statistical analysis

We used MATLAB (version 2020a) for data handling of the daily journal on alcohol consumption and SPSS Statistics (version 27.0.0.0) for linear and logistic regression analysis.

When comparing categorical variables, *Chi-square test* was used. For continuous variables, we verified for normal distribution using the Kolmogorov-Smirnov test. In the case of non-normal distribution, the *Wilcoxon rank-sum test* was used for between-group comparison and the *Wilcoxon signed-rank test* for within-group comparison (Rosner, 2011). For the evolution in alcohol consumption, the between- and within-group effect size Cohen's  $d$  was calculated. A Cohen's  $d$  value of 0.2, 0.5, 0.8 and 1.2 is considered a small, medium, large and very large effect, respectively (Sawilowsky, 2009). Logistic regression analysis was performed for the examination of the predictors of success and the impact of intensity of use of the platform. Verification of correlation of covariables was conducted by calculating the Pearson correlation coefficient.

## 2.7. Ethics

This research (MP016407) was approved by the Ethical Committee of the University of Leuven on 18 November 2020.

## 3. Results

### 3.1. Participant flow

2859 participants in the guided group and 5086 in the self-help group registered, of which 460 and 968 respectively met the inclusion criteria. Over time, the journal was completed for 6 weeks by 327 participants for the guided module and by 289 for the self-help module and for 12 weeks by 180 and 131 respectively (Fig. 1).

### 3.2. Participants profile

As shown in Table 1, both groups had a median age between 45 and 54 years old, about half were female, the majority was full-time employed and had a baseline average alcohol consumption of about 40 SU per week. Comparable levels of alcohol-related complaints were present. Participants in the self-help group were more likely to have a higher study level (68% vs 30%,  $p < 0.0001$ ). More participants wanted to quit alcohol consumption in the guided group compared to the self-help group ( $p < 0.0001$ ). For the guided group additional information was available. The average AUDIT score was 23 and 75% of the participants were at high risk of dependence. The median motivation score was at the highest level, but the confidence in succeeding was lower.

### 3.3. Effect on alcohol consumption

For the guided group, alcohol consumption decreased from 40 to 9 SU/week at 6 weeks resulting in a very large within-group effect (Cohen's  $d$ : 1.18,  $p < 0.00001$ ) with similar results after 12 weeks (Table 2). For the self-help group, there was a decrease from 39 SU per week at baseline to 15 SU per week after 6 weeks, resulting in a large within-group effect (Cohen's  $d$ : 0.90,  $p < 0.00001$ ) again with similar effect sizes after 12 weeks. Between-group comparison resulted in a small effect size in favour of the guided group (Cohen's  $d$ : 0.27,  $p < 0.00001$ ) again with similar results after 12 weeks.

After 12 weeks, the treatment response below 10 SU per week is 77% and below 20 SU per week 88% for the guided group and 58% and 73% for the self-help group (Table 2). In all cases the treatment response was significantly higher in the guided compared to the self-help group ( $p < 0.001$ ).

### 3.4. Attrition

Attrition rate was higher in the self-help group compared to the guided group; 63% versus 26% at 6 weeks ( $p < 0.05$ ), and 82% versus 63% at 12 weeks ( $p < 0.05$ ).

Comparison of the profile of completers and non-completers (participants lost to follow-up) showed only a few significant differences. At 6 weeks in the guided group, the completers were more confident about succeeding ( $p = 0.011$ ) and there were more participants with a baseline alcohol consumption below the guideline ( $TR \leq 10$ ,  $p = 0.00003$ ). In the self-help group however, the completers had fewer participants with baseline alcohol consumption below the guideline ( $TR \leq 10$ ,  $p = 0.0019$ ) and a different personal goal ( $p = 0.0069$ ). At 12 weeks, the completers group had a higher percentage in the highest score for importance of change ( $p = 0.0444$ ). More details are shown in Appendix Table S1a-d.

### 3.5. Scenario comparison

The scenarios in Fig. 2 show different absolute reductions in alcohol. The best result is achieved in the CC scenario for the guided and the self-

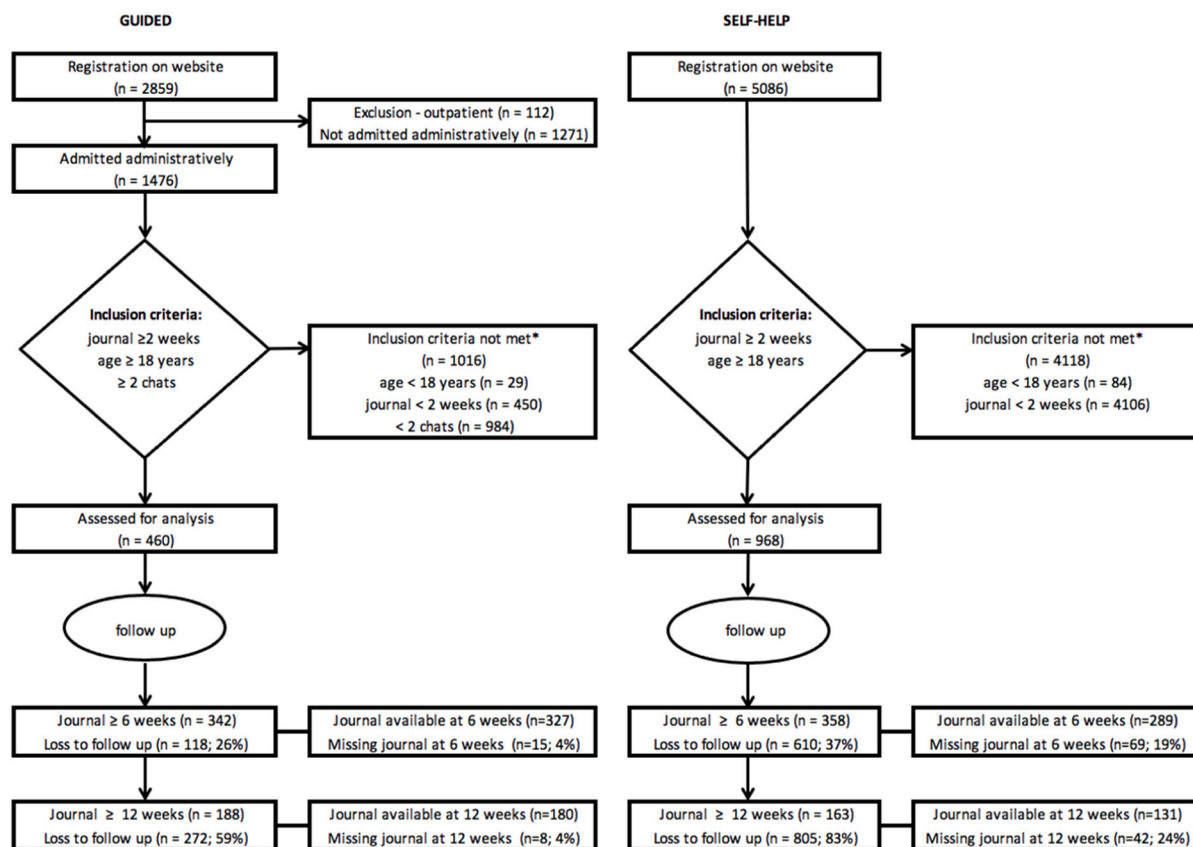


Fig. 1. Participant flow for the guided and self-help module.

(\*) Participants could be excluded for multiple reasons therefore, the numbers do not add up.

help group, with the smallest reduction in the BL scenario. However, the trend and overall conclusion is solid. In all scenarios the highest reduction in alcohol consumption is achieved in the first 6 weeks and the guided group achieved lower levels compared to the self-help group. Appendix Fig. S1 presents the detailed boxplots, Table S2a-b gives the effect size for the BL scenario.

In all but one scenario, the treatment response was significantly higher in the guided group compared to the self-help group, as presented in Fig. 3. Depending on the scenario, timing and treatment response level, the treatment response percentage ranged from 37% to 88% for the guided group and respectively from 12% to 73% for the self-help group. The details are shown in Table 2 for the complete case scenario and in Appendix Table S2a-b for the BL scenario.

### 3.6. Additional investigations: predictors of success

In the CC scenario, two patient characteristics were predictive for success in the majority of all analyses (Table 3). Participants with higher baseline alcohol consumption and goals other than “quitting” were less likely to achieve treatment response. In addition, for the guided group, the absence of drug use resulted in higher treatment response. Results for the BL were similar (Appendix Table S3a-d).

Table 4 shows the relation between the intensity of use of the online platform and treatment response at 12 weeks for the CC scenario. A higher number of completed assignments were correlated with a higher treatment response, however a higher number of chat sessions was not. When corrected for patient characteristics (as listed in Table 3) in a multivariate analysis, the correlation remained significant for the guided group but not for the self-help group. Participants in the guided group completed more assignments compared to those in the self-help group (5.1 versus 3.7,  $p < 0.05$ ).

## 4. Discussion

To our knowledge, this is the first large-scale research comparing guided ( $n = 460$ ) and unguided ( $n = 968$ ) internet intervention on a real-life operational online platform for people with unhealthy alcohol use. This research resulted in useful and new insights about the effectiveness and the predictors of success of online help. Both guided and unguided internet interventions seem effective in reducing alcohol consumption and achieving the guideline for participants motivated to use the platform on a regular base, with better results in guided help. People with a lower baseline alcohol consumption, personal goal to quit and a higher number of completed assignments had a higher chance of achieving the guideline.

Our results confirm that online interventions, delivered as a self-help as well as a guided programme, are effective at reducing alcohol consumption. Moreover, effects at 12 weeks' follow-up for the complete case scenario were large ( $d = 0.83$ ) for the self-help group and very large for the guided group ( $d = 1.17$ ). The effect size in our research was larger compared to results presented in earlier systematic reviews of RCTs. This could be explained by our strict inclusion criteria most likely resulting in a participant profile with higher initial motivation and the higher intensity guidance (Kaner et al., 2017; Riper et al., 2018; Kiluk et al., 2019). The guidance in this study consisted of weekly 1-hour chat sessions which can be considered as high-intensity guidance (Sundström et al., 2020).

Our results were in line with research based on web-based interventions with comparable intensity and setup (Blankers et al., 2011; Johansson et al., 2017; Sundström et al., 2020; Hadjistavropoulos et al., 2020). The large ( $n = 3898$ ) observational study by Johansson et al. (2017) on unguided online intervention reported an effect size of 0.74 amongst the completers ( $n = 1043$ ) which is comparable to our findings

**Table 1**  
Comparison of participant profile guided versus self-help group.

Variable	Guided (n = 460)	Self-help (n = 968)	p
<b>General data</b>			
Age category, median	45–54 yrs	45–54 yrs	
Women, %	51	45	<b>0.039</b>
Study level			<b>&lt;0.00001</b>
Lower, %	17	4	
Secondary, %	52	29	
Higher, %	30	68	
Work situation			<b>0.024</b>
Full-time, %	54	60	
Part-time, %	20	15	
Student, %	1	2	
Unemployed, %	6	8	
Other, %	19	15	
Alcohol-related complaints (range 13–65)			0.9807
Average	28	28	
Low, %	17	17	
Medium, %	48	46	
High, %	26	25	
Very high, %	9	8	
<b>Alcohol consumption</b>			
SU per week, mean (SD)	40 (27)	39 (26)	0.4961
Max per day, mean (SD)	8.6 (4.8)	8.9 (4.7)	0.1285
Baseline SU per week ≤10, %	7.4	4.5	<b>0.0270</b>
Baseline SU per week ≤20, %	21.3	20.4	0.6776
<b>Previous treatments</b>			
Yes, %	37	21	<b>&lt;0.00001</b>
<b>Goals</b>			
Quit, n	254	265	<b>&lt;0.00001</b>
Reduce but not quit, n	175	407	
<b>Motivation</b>			
Importance of change, median	10		
Confidence in succeeding, median	7		
<b>Audit score (range 0–40)</b>			
Mean score (SD)	23 (5)		
Acceptable, %	0		
Medium risk, %	8		
High risk, %	17		
Dependence, %	75		
<b>Drug use and gambling</b>			
Drug use, %	7		
Gambling, %	9		
<b>Suicide risk</b>			
Suicide attempt, %	13		
Suicidal thoughts last three months			
None, %	74		
Once, %	13		
Multiple, %	12		
Daily, %	0		

Note. Significant p-value <0.05 in bold. Yrs = years; SD = standard deviation.

in the self-help group. Regarding achievement of the guideline, our study found a high treatment response in both groups.

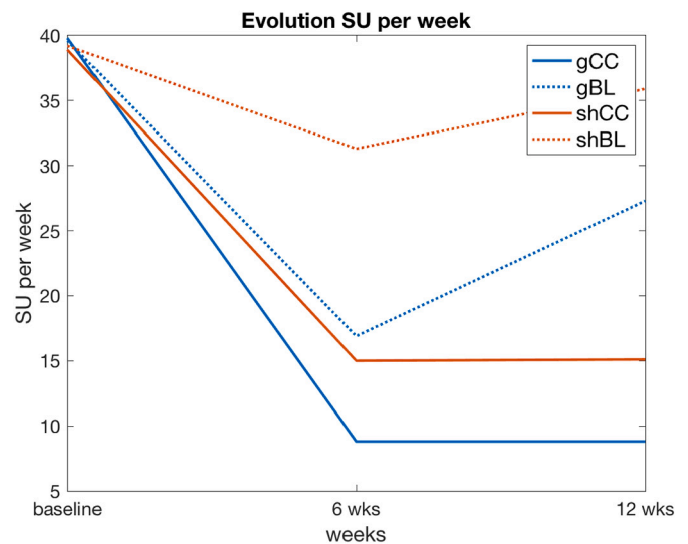
The reduction in alcohol consumption was 20 to 30% higher in the guided group compared to the self-help group. Better results for guided interventions were previously reported (Blankers et al., 2011; Riper et al., 2018; Hadjistavropoulos et al., 2020). In contrast, Sundström et al. (2020) and a recent RCT by Johansson et al. (2021a, 2021b) did not find a larger effect for the guided compared to the unguided intervention. The difference with our research might be explained by the longer follow-up period of six months respectively smaller groups and low or medium intensity guidance (Sundström et al., 2020; Johansson et al., 2021b). Future research should focus on longer follow-up periods, and systematic reviews should refine inclusion criteria towards a more homogeneous set of studies with respect to intervention setup.

Our research suggests that a lower baseline alcohol consumption, personal goal to quit and the absence of drug use are possible predictive factors of success. With regard to baseline alcohol consumption, similar results were found by Johansson et al. (2017). However, our results differ from findings by Riper et al. (2018), where drinking profiles were

**Table 2**  
Within- and between-group comparison of alcohol consumption and treatment response at 6 and 12 weeks, complete case scenario.

Outcome	6 weeks			12 weeks		
	G (n = 327)	SH (n = 289)	G vs SH	G (n = 180)	SH (n = 131)	G vs SH
<b>SU per week (SD)</b>						
Baseline	40 (26)	39 (26)	p = 0.433	40 (24)	38 (22)	p = 0.764
After × wks	9 (15)	15 (17)	p < <b>0.001</b>	9 (17)	15 (20)	p < <b>0.001</b>
Baseline–x wks	31 (26)	24 (27)		31 (26)	23 (28)	
Cohen's d	<b>d = 1.18</b>	<b>d = 0.90</b>	<b>d = 0.27</b>	<b>d = 1.17</b>	<b>d = 0.83</b>	<b>d = 0.29</b>
	<b>p &lt; 0.001</b>	<b>p &lt; 0.001</b>	<b>p &lt; 0.001</b>	<b>p &lt; 0.001</b>	<b>p &lt; 0.001</b>	<b>p = 0.005</b>
<b>TR ≤ 10 SU/wk</b>						
Baseline, %	5%	7%	p = 0.157	4%	7%	p = 0.240
After × wks, %	72%	50%	p < <b>0.001</b>	77%	58%	p < <b>0.001</b>
<b>TR ≤ 20 SU/wk</b>						
Baseline, %	19%	21%	p = 0.570	22%	19%	p = 0.502
After × wks, %	84%	70%	p < <b>0.001</b>	88%	73%	p < <b>0.001</b>

Note. Significant p-value <0.05 in bold. d = Cohen's d; SD = standard deviation; TR = treatment response; SU = standard units; wks = weeks; G = guided; SH = self-help; 6/12 wks = 6 respectively 12 weeks.

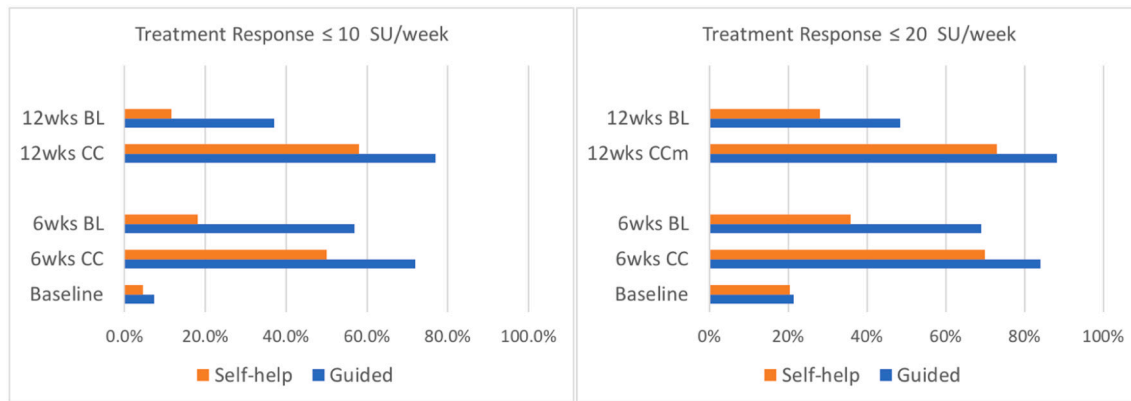


**Fig. 2.** Evolution of the average alcohol consumption per week for the guided and self-help group for the different scenarios.

Note. CC = complete cases; BL = back to baseline; g = guided, sh = self-help.

not associated with treatment outcomes. The difference could be explained because Riper compared two groups, heavy drinking profiles (>35/50 SU per week) versus non-heavy drinking profiles (<35/50 SU per week), whereas in our research a continuous drinking scale was investigated. Concerning the personal goal, we have found no similar research in the literature up to now. With respect to drug use, Johansson et al. (2017) also found that those who used other drugs at baseline were less likely to have low-risk consumption.

The intensity analysis showed a positive relationship between the number of assignments and treatment response. To our knowledge, this



**Fig. 3.** Treatment response for both groups and scenarios. Note. BL = Back to baseline value; CC = complete cases; wks = weeks.

**Table 3**

Predictors for treatment response with logistic regression coefficients presented as odds ratio (and 95% CI) for the guided and self-help group for the complete cases scenario.

Complete cases	Guided				Self-help			
	TR ≤ 10 SU wk		TR ≤ 20 SU wk		TR ≤ 10 SU wk		TR ≤ 20 SU wk	
	6 wks	12 wks	6 wks	12 wks	6 wks	12 wks	6 wks	12 wks
Age (G)	0.99	0.99	1.00	1.02	0.98	0.90	0.86	1.25
Age cat (SH)	(0.97–1.02)	(0.95–1.03)	(0.96–1.04)	(0.96–1.07)	(0.75–1.27)	(0.59–1.38)	(0.64–1.16)	(0.77–2.03)
Female	1.53	1.04	<b>2.37</b>	1.21	1.29	<b>2.68</b>	1.73	2.41
	(0.85–2.76)	(0.45–2.43)	(1.13–4.96)	(0.40–3.69)	(0.75–2.21)	(1.12–6.41)	(0.94–3.18)	(0.89–6.56)
Work situation								
Full-time	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)
Other	0.74	2.03	<b>0.34</b>	1.30	1.41	1.33	1.40	0.43
	(0.33–1.64)	(0.63–6.55)	(0.13–0.88)	(0.29–5.75)	(0.64–3.13)	(0.38–4.66)	(0.58–3.36)	(0.11–1.67)
Part-time	0.81	0.86	0.63	1.34	0.77	0.86	0.93	0.67
	(0.39–1.67)	(0.31–2.40)	(0.25–1.61)	(0.31–5.76)	(0.38–1.56)	(0.26–2.78)	(0.43–2.00)	(0.17–2.60)
Student	0.26	0.64	<b>0.10</b>	1.25	0.84			
	(0.04–1.77)	(0.13–3.09)	(0.01–0.67)	(0.13–12)	(0.13–5.41)			
Unemployed	0.43		0.34		1.53	5.50	0.88	2.33
	(0.13–1.48)		(0.09–1.38)		(0.62–3.79)	(0.87–35)	(0.34–2.29)	(0.36–15)
Study level	1.12	0.84	0.86	1.03	0.63	1.10	<b>0.55</b>	1.17
	(0.76–1.66)	(0.50–1.41)	(0.53–1.40)	(0.52–2.05)	(0.39–1.03)	(0.45–2.71)	(0.32–0.95)	(0.44–3.09)
Baseline Sum SU/wk per 10 U	<b>0.86</b>	0.86	<b>0.83</b>	<b>0.76</b>	0.91	0.85	<b>0.82</b>	0.84
	(0.78–0.95)	(0.74–1.00)	(0.75–0.93)	(0.63–0.91)	(0.83–1.01)	(0.70–1.03)	(0.74–0.92)	(0.67–1.04)
Previous treatment								
Yes	<b>1.41</b>	1.03	1.33	0.96	(ref)	(ref)	(ref)	(ref)
	(1.01–1.98)	(0.68–1.56)	(0.87–2.02)	(0.58–1.59)				
No	(ref)	(ref)	(ref)	(ref)	<b>0.53</b>	2.21	0.69	0.92
					(0.29–0.98)	(0.15–34)	(0.34–1.37)	(0.05–16)
Not specified	n.a.	n.a.	n.a.	n.a.	0.45	0.68	0.94	0.34
					(0.33–6.27)	(0.23–2.00)	(0.20–4.49)	(0.09–1.39)
Goal other than quitting	<b>0.41</b>	0.60	0.63	0.46	<b>0.69</b>	<b>0.43</b>	0.72	<b>0.35</b>
	(0.26–0.64)	(0.31–1.16)	(0.36–1.09)	(0.19–1.10)	(0.48–0.97)	(0.24–0.76)	(0.49–1.06)	(0.18–0.69)
No suicide attempts	1.10	1.00	1.29	0.90				
	(0.46–2.61)	(0.31–3.19)	(0.47–3.53)	(0.46–7.79)				
No drugs	<b>3.42</b>	1.76	<b>2.92</b>	0.84				
	(1.33–8.82)	(0.45–6.85)	(1.01–8.45)	(0.13–5.54)				
No gambling	0.49	2.32	1.20	1.30				
	(0.18–1.30)	(0.56–9.63)	(0.44–3.29)	(0.19–8.98)				
Importance of change	1.08	1.1	1.09	0.95				
	(0.87–1.33)	(0.84–1.44)	(0.84–1.41)	(0.67–1.35)				
Confidence in succeeding	<b>1.13</b>	1.16	1.15	1.19				
	(1.004–1.3)	(0.95–1.30)	(0.99–1.33)	(0.96–1.47)				

Note. SU = standard units; U = units; wks = weeks; TR = treatment response; () = confidence interval; ref. = reference category; n.a. = not applicable; significant odds ratios in bold.

is the first study investigating this relationship. Nordholt et al. (2020) investigated engagement with a web-based intervention measured by system usage data and did not find a conclusive relationship with reductions in alcohol consumption. However, system usage data does not capture time spent engaging with behaviour change. Our results suggest that developers of online platforms should increase the attractiveness of

assignments and stimulate participants to complete them.

The major strength of this study was the large scale and the real-life environment, reflecting the true flow and participation of patients seeking online alcohol help. Given the effectiveness of this platform in a real-life environment, there is potential for upscaling the number of participants. The second strength was the comparison between guided

**Table 4**

Relation between intensity of use of the platform and treatment response at 12 weeks with logistic regression coefficients presented as odds ratio (and 95%CI) for the complete case scenario.

Complete cases	Guided		Self-help	
	TR ≤ 10 SU wk	TR ≤ 20 SU wk	TR ≤ 10 SU wk	TR ≤ 20 SU wk
Chat sessions	0.94 (0.83–1.07)	0.89 (0.76–1.05)	n.a.	n.a.
Assignments	1.31 (1.10–1.56)	1.42 (1.13–1.78)	1.21 (1.04–1.4)	1.20 (1.02–1.41)
Chat sessions corrected for patient characteristics <sup>a</sup>	0.94 (0.83–1.07)	0.88 (0.74–1.04)	n.a.	n.a.
Assignment corrected for patient characteristics	1.32 (1.09–1.62)	1.51 (1.34–2.01)	1.06 (0.87–1.29)	1.01 (0.82–1.26)

Note. SU = standard units; U = units; wks = weeks; TR = treatment response; n.a. = not applicable; () = confidence interval; significant odds ratios in bold.

<sup>a</sup> Guided: Age, gender, work situation, study level, baseline alcohol consumption, previous treatment, goal, suicide attempts, drugs, gambling, importance of change, confidence in succeeding. Self-help: Age, gender, work situation, study level, baseline alcohol consumption, previous treatment, goal.

and unguided interventions on the same platform and an equal set of assignments. This study provided new insights into predictors of success. Lastly, the scenario analysis investigated the impact of attrition on outcomes.

This study has limitations. First, the attrition rate is high (59% G, 83% SH). Dropout is mentioned consistently as a major limitation in research on online interventions, ranging from 20% to 73% (Hadjistavropoulos et al., 2020; Riper et al., 2018; Johansson et al., 2017). Our assessment of potential patient characteristics for dropout, a comparison of the profile of completers and non-completers was made, showing only a few significant differences. To our knowledge, only one study investigated attrition; however, this was in a student population and had a different concept of intervention (Radtke et al., 2017). Possible reasons for 'drop out' could be that the patient relapses, that the patient is cured/thinks he is cured or that he/she has received help in other ways. In order to gain more insight into the impact of the high attrition rate, we introduced one additional scenario back to baseline (BL) on top of the complete case scenario. The absolute values differ in the BL scenario but the general trend remains the same. A second limitation is the inclusion criteria which may have resulted in the selection of participants with a high initial motivation to change. Only participants who completed the full two weeks of their journal were included. This might explain the very high treatment response rate and limits the generalizability of our results.

Thirdly, data were obtained on self-report and therefore may reflect recall bias and social desirability. Although reliance on self-report measures is standard in alcohol treatment trials, confirmation with objective ways of measuring alcohol consumption (i.e. blood tests) would strengthen future evaluations. Fourth, comparison of the guided and the self-help group was not always possible due to limited information available in the self-help group. Lastly, there was only a short follow-up period of 12 weeks.

Further research is needed to investigate the efficacy of online guided and unguided programmes with longer follow-up periods and to elucidate the predictors of success and drop-out.

In conclusion, this large-scale observational study of the online help platform alcoholhulp.be shows that guided as well as unguided internet interventions are effective in reducing alcohol consumption and achieving the guideline for participants motivated to use the platform on a regular base. All effects are better in the guided compared to the self-help group, nevertheless the self-help platform has unlimited upscaling

capacities. People with a lower baseline alcohol consumption, the personal goal and a higher number of completed assignments had a higher chance of achieving the guideline. Given the big treatment gap between the number of people with alcohol misuse and people who actually receive help, we believe that this platform should be further promoted amongst general practitioners as a cost-effective, low-threshold and anonymous helpline for patients with unhealthy alcohol use.

## Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

## Declaration of competing interest

Herwig Claeys is employed as project manager at alcoholhulp.be. Bert Aertgeerts and Catharina Matheï are Principal Investigators of the PINO research project, sponsored by the ABInbev foundation. All other authors declare no conflict of interest.

## Acknowledgements

The authors wish to thank Vincent Verbruggen for introducing us in the data setup, Ilse Goyens for clarifying the role of the therapist, Koen Raymaekers for reviewing the statistical approach, and Peter Van den Broeck for assisting us with data handling in MATLAB.

We would also like to dedicate this article to Professor and co-author Cathy Matheï who sadly passed away during the course of this research.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.invent.2022.100523>.

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