iDEAS Stakeholder Summit

Wednesday 8th February 2023
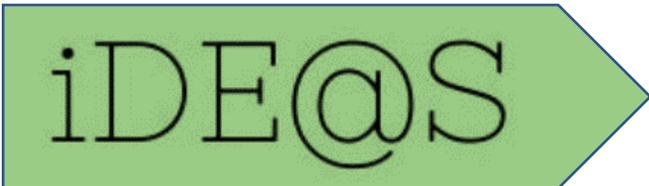
Structure

- Presentations (3:30pm)
  - "Introduction to the Drink Less app and iDEAS trial " – Claire Garnett
  - "Evaluating the effectiveness of the Drink Less app" – Melissa Oldham
  - "Acceptability of the Drink Less app " – Gemma Loebenberg
  - "Engagement with the Drink Less app" – Larisa Dinu
  - "Next steps" – Claire Garnett

- Panel discussion (4:20pm)
  - Margaret Ogden – member of the independent trial steering committee and expert by experience
  - Adrian Chiles – TV and radio presenter, and author of 'The Good Drinker'
  - Felix Greaves – Director of Science, Evidence and Analytics at NICE
  - Aideen Dunne – Acting Consultant in Public Health, Prevention Team, NHS
  - Clive Henn – Senior Alcohol Advisor at OHID

Drink Less and the iDEAS trial

Dr Claire Garnett

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The views expressed are those of the authors and not necessarily those of the NIHR or the Department of Health and Social Care.

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Acknowledgements

- Trial Steering Committee
  - Keith Humphreys (Chair), Simon Coulton, John Cunningham, Zarnie Khadjesari, Margaret Ogden, Fiona Paterson
- Data Monitoring Committee
  - Jim Lewsey (Chair), Sara Hitchman, Felix Naughton
- PPI groups
  - Sheffield Addiction Recovery Research Panel (ShARRP)
  - UCL-Tobacco and Alcohol Research Group Patient and Public Involvement and Engagement Group
- NIHR Research Managers
  - Donna White, Justyna Rafalik, Alan Marshall

Background

- Alcohol consumption is a major public health problem in the UK

- Digital interventions for alcohol:
  - Reduce alcohol consumption[1,2]
  - Improve accessibility of support
  - Low incremental cost
 - Potential to help disadvantaged groups when designed with appropriate user input[3]

[1] Kaner et al. Cochrane Library (2017); [2] Riper et al. Plos Medicine (2018); [3] Brown et al. Lancet Respir Med (2014)

Background

- Smartphone apps are a promising mode of intervention delivery
  - Increasingly affordable to end users
  - Prevalent among the UK population[1]

- Many alcohol reduction apps available
  - However, little evidence on their effectiveness
 - Majority developed without reference to scientific evidence or theory[2]

[1] Ofcom Communications Market Report 2020/2021; [2] Crane et al. JMIR (2015)

Drink Less – the timeline

2014-2016
- Development of version 1 of Drink Less

2016
- Drink Less launched on the app store

2018-2019
- Refinement process of Drink Less

2020-2023
- iDEAS trial to evaluate the app in a RCT

Open Science Framework: https://osf.io/q8mua/
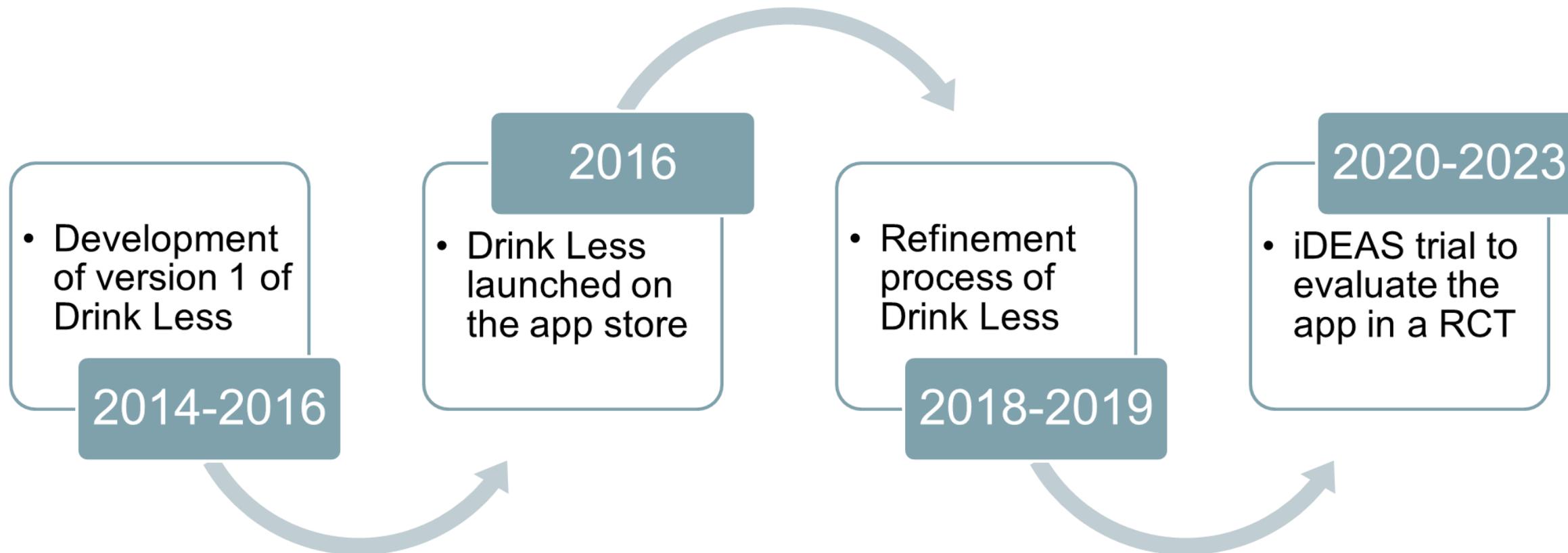
Drink Less – Development

- Designed to help people reduce their alcohol consumption

- Intervention content informed by:
  - COM-B model of behaviour[1]
  - Multiple sources of evidence[2,3,4,5]
    - Expert consensus exercise
    - Content analysis of existing interventions
    - User testing
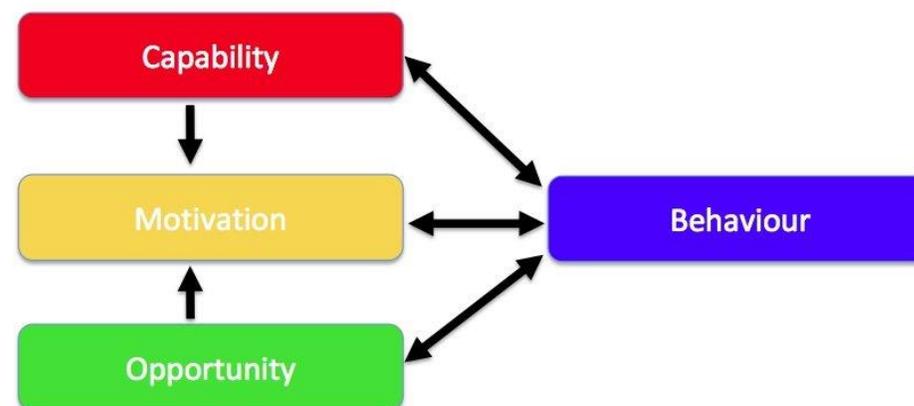
[1] Michie et al. Implementation Science (2011); [2] Garnett et al., JMIR mhealth and uhealth (2015); [3] Crane et al., JMIR (2015); [4] Garnett et al., Addictive Behaviours(2015); [5] Crane et al., Frontiers in Public Health (2017).

Drink Less – Refinement

- Stage 1: Identifying changes to app content
  - Results from a factorial screening trial of Drink Less v1.0
  - Update of meta-regression on effectiveness of components in digital alcohol interventions
  - Content analysis of user feedback

- Stage 2: Design and translation of new content into app modules
  - Paper prototypes
  - Public involvement through an Alcohol Discussion Group
  - Consultation with app designers, developers and researchers

- Stage 3: Improving the usability of the app
  - User testing

Garnett et al. F1000Research (2021)
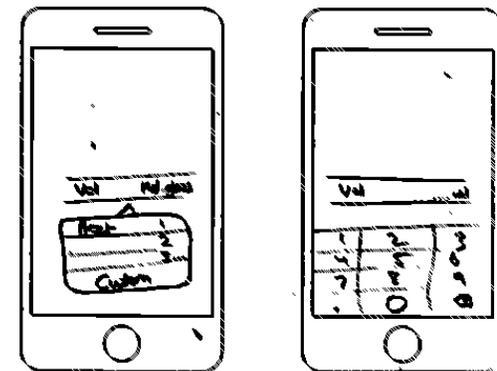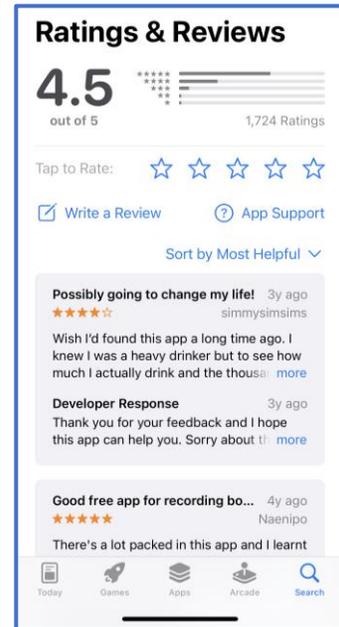
The Drink Less app (v2.0)

- Goal setting

- Self-monitoring & Feedback

- Normative Feedback

- Action Planning

- Cognitive Bias Re-training

- Insights

- Information about Antecedents

- Behavioural Substitution

Drink Less – Evaluation

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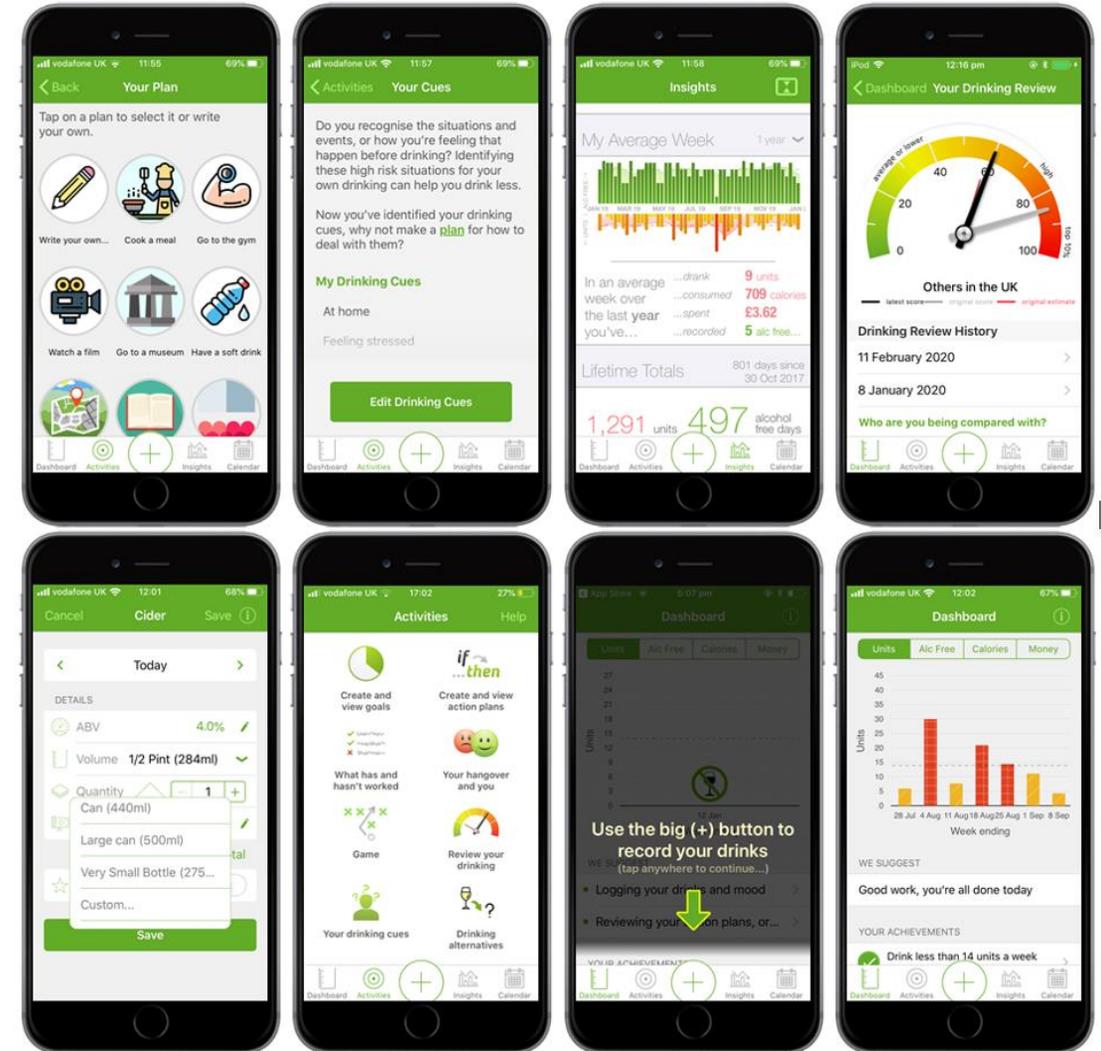
- Aim
  - Evaluate the effectiveness and cost-effectiveness of recommending Drink Less at reducing alcohol consumption compared with usual digital care

- Design
 - Two-arm individually randomised controlled trial

The intervention group

We recommend that you download and use the Drink Less App. Drink Less is an app based on the best evidence, developed by an expert team of scientists at UCL. It is really easy to use and has lots of tools that can help you drink less alcohol.
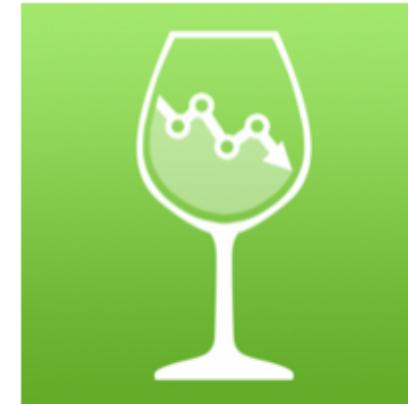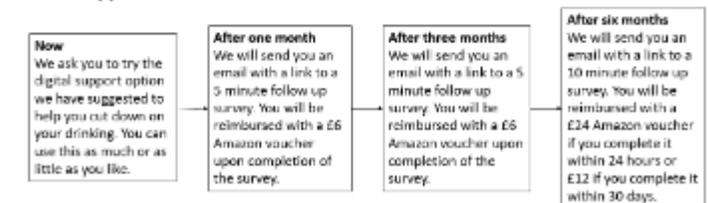
The comparator group

We recommend that you visit and use the NHS website for support on reducing your alcohol consumption. Here you can access advice and support, as well as helpful tips on how to cut down on your drinking.

Drink Less – Evaluation

- Setting
  - Remote trial in the UK

- Participants
  - Drinkers who score 8+ on the AUDIT, n=5,602
  - Recruited from July 2020 to March 2022 to time and target

- Process
  - Baseline survey
  - Follow-up surveys at 1-, 3- and 6-months

Recruitment
- NHS advert (35%)
- Social media (44%)
- Radio (13%)
- GP/CRNs

Baseline Survey

Randomisation
- Drink Less app (intervention)
- NHS alcohol advice webpage (comparator)

1- and 3-month follow-up
- Secondary outcomes
- £6 voucher
- Emails & texts

6-month follow-up
- Primary & secondary outcomes
- £24/£12 voucher
- Emails, texts, phone calls, postal survey & postcard
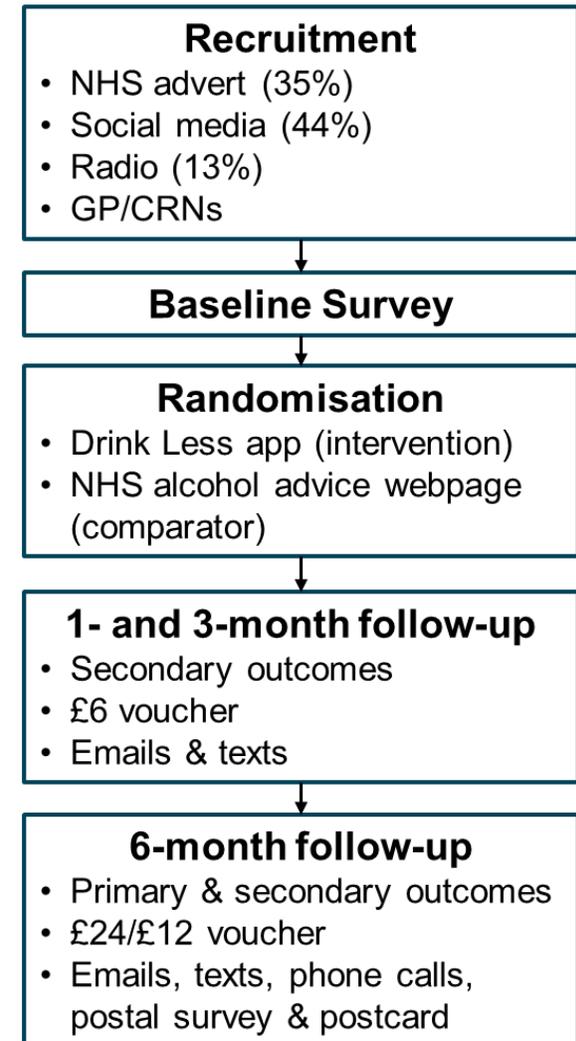
Drink Less – Evaluation

- Primary outcome
  - Weekly alcohol consumption (in UK units), at 6-month follow-up adjusted for baseline consumption

- Secondary outcomes
  - Weekly alcohol consumption at 1- and 3-month follow-ups
  - Heavy episodic alcohol use (AUDIT question 3)
  - Full adapted AUDIT score
  - Alcohol-related problems or consequences and alcohol-related injury (Alcohol Short Index of Problems)
  - Use of healthcare services
  - Health-related quality of life (EQ5D)

Drink Less – Evaluation

- Mixed-methods process evaluation
  - Psychological measures
    - Urges to drink
    - Motivation to drink less
    - Self-regulatory capacity
    - Self-monitoring capacity
  - Engagement
  - Acceptability

- Health economic evaluation
  - Short-term modelling
  - Long-term modelling of cost-effectiveness of intervention if rolled out on a national level over a 20-year period
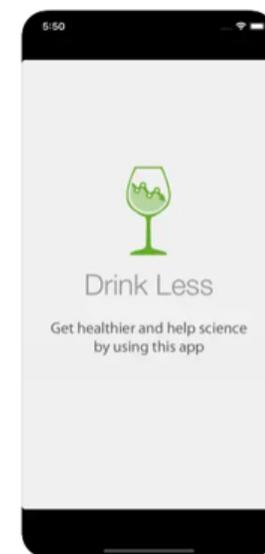
Participants

- 5602 participants
- 57% Female
- 95% White, 2% Asian, 2% Mixed Race, 1% Black, <1% Other
- 25% reported earning less than £26,000
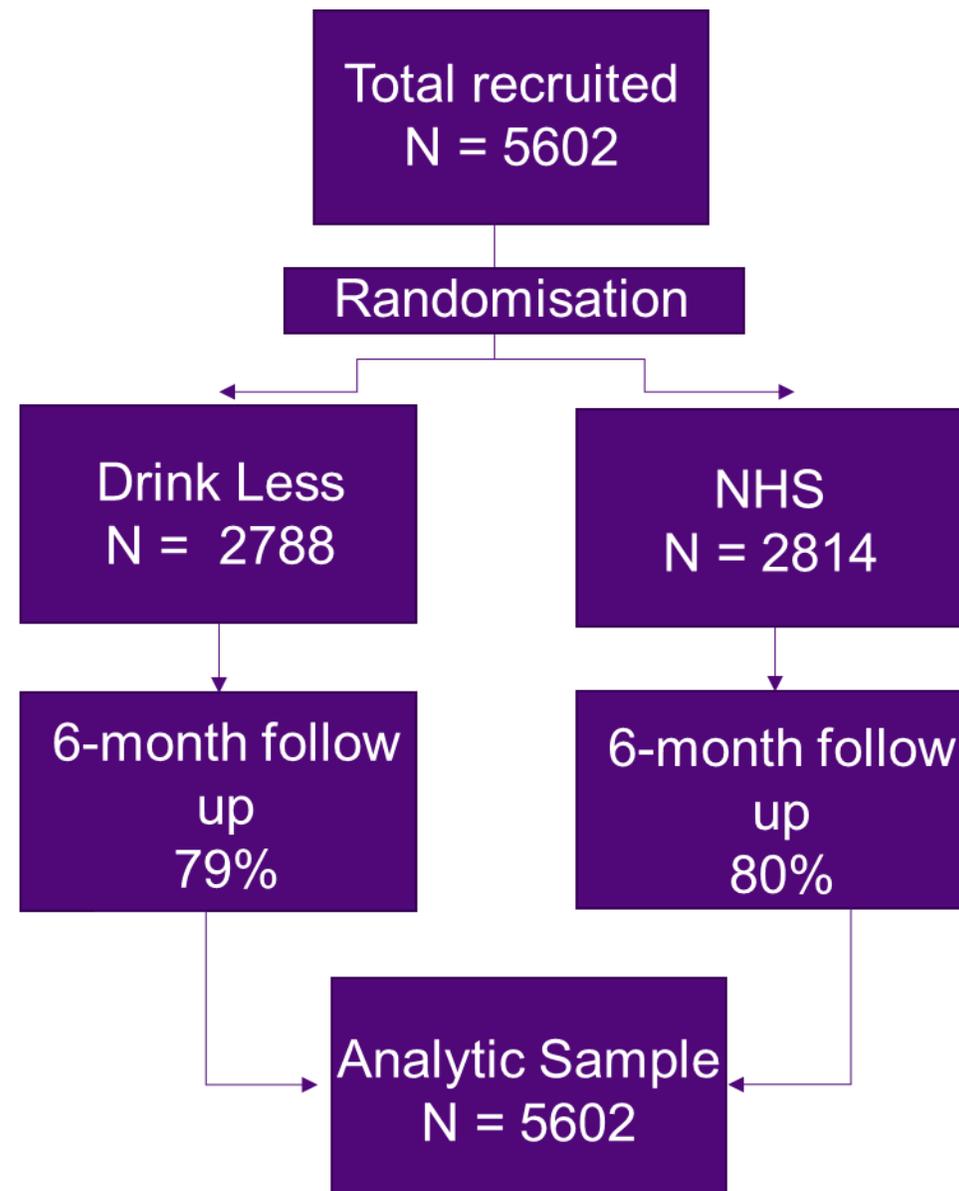
Pre-registered Primary Analysis

- Missing data = no change from baseline
- The primary outcome is weekly alcohol consumption at the 6-month follow-up adjusted for baseline
- ANCOVA
- No statistically significant difference was found between groups:
  - F=1.30, P=0.255
  - Mean difference = -0.98 (95%CI -2.67 to 0.70)
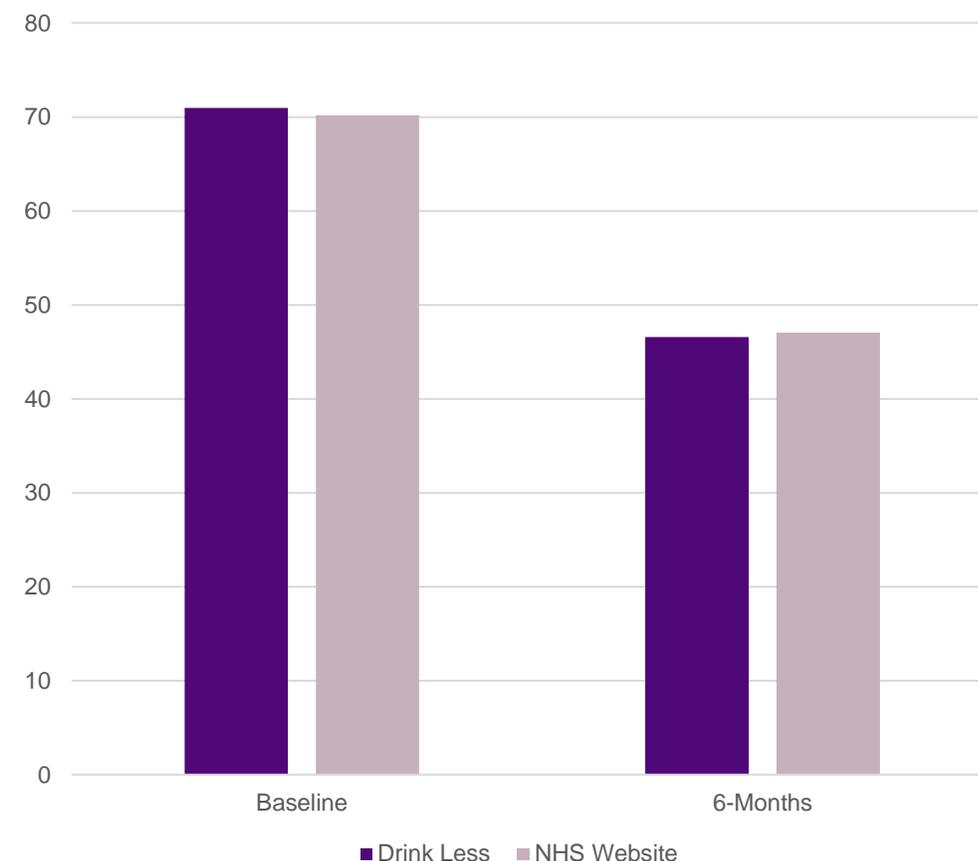
Pre-registered Bayes Factor

- Standard error of 0.858 and hypothesised mean difference of -2 units
- Bayes Factor = 1.17
- This indicates data insensitivity
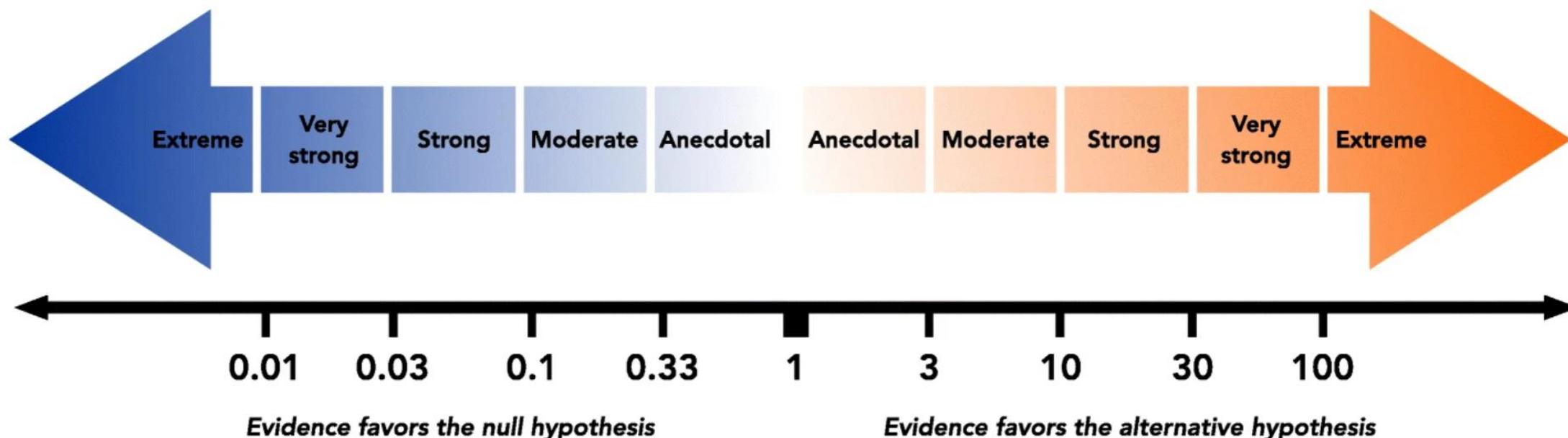
Missing Data

Data can be;

- Missing completely at random

- Missing at Random

- Missing Not at Random

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Association between whether someone responded at 6-month follow-up and their qualifications, occupation and income.

Pre-registered Sensitivity Analyses using Multiple Imputation

- Advised by DMC that most appropriate analysis was missing data = Multiple Imputation

- A statistically significant difference was found between groups:

  - F=4.94, P=0.026

  - Mean difference: -2.00 (95%CI -3.76 to -0.24)
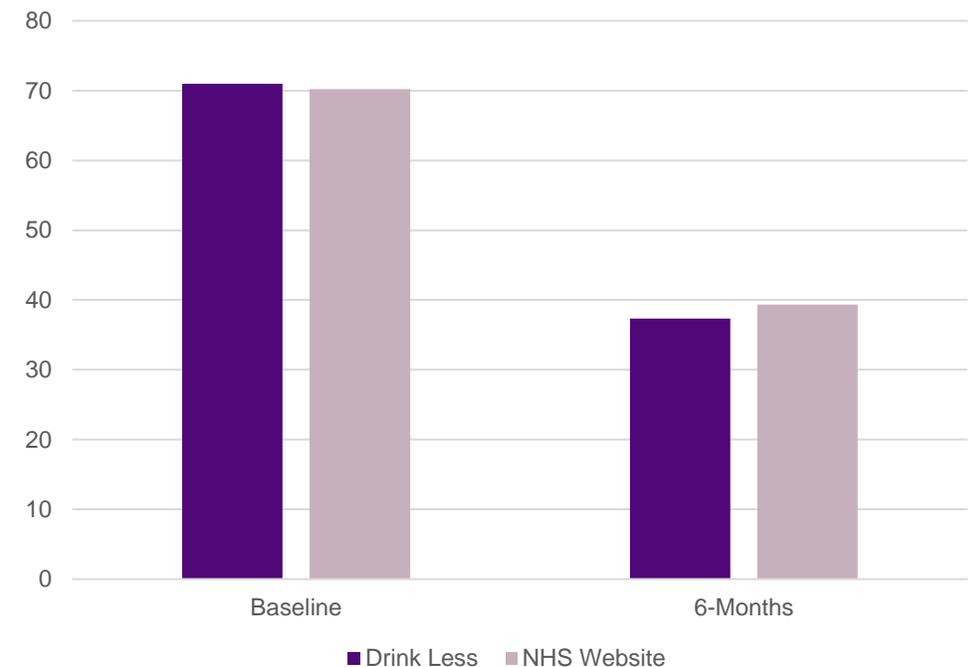
Interaction between level of drinking and effectiveness

- Beta= -7.43 (95%CI -19.94 to 5.08) P=0.244
- Beta= -4.69 (95%CI -12.57 to 3.09) P=0.238

Secondary outcomes

- Weekly alcohol consumption at 1-month
  2-unit reduction

- Weekly alcohol consumption at 3-months
  2-unit reduction

Significant reduction amongst intervention group relative to comparator

Secondary outcomes

- Heavy episodic alcohol use

- Full AUDIT

- Alcohol related consequences and injury

- Use of healthcare services

- Health related quality of life

No significant difference detected amongst intervention group relative to comparator

Adverse Events

- 0.1% of participants reported adverse events related to their participation in the trial
  - e.g. withdrawal, shakes, feeling depressed when not meeting goals

- No difference detected between control and experimental groups

Conclusions

Planned primary analysis showed that there was a non-significant 1-unit reduction in weekly alcohol consumption at 6-month follow-up

Pre-registered Bayes factor demonstrated that primary analysis was insensitive to detect the hypothesised 2-unit effect

Patterns of missing data at 6-months suggest multiple imputation is better approach to analysis

When multiple imputation is used there is a significant 2-unit reduction amongst app users at 6 months relative to control
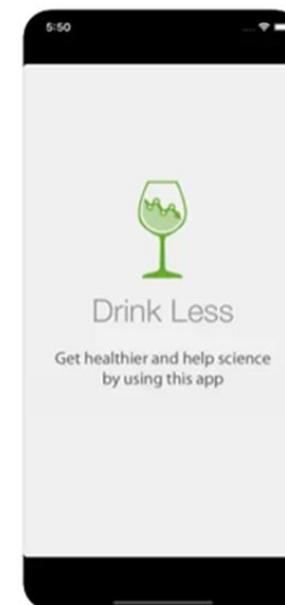
Plain language summary

Evidence that recommending the use of Drink Less may be effective in helping increasing and higher risk drinkers reduce their alcohol consumption.

Acceptability of the *Drink Less* app

Gemma Loebenberg

iDEAS Trial Manager
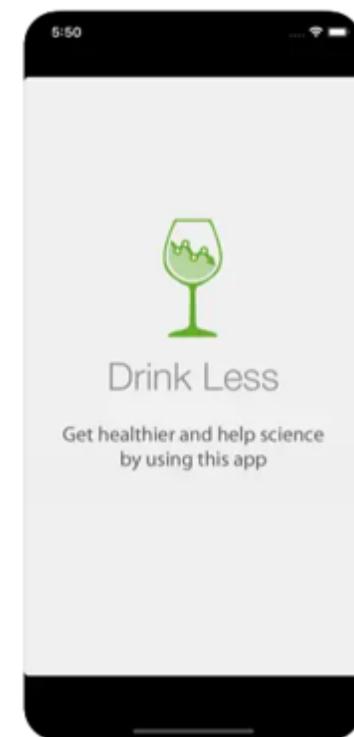
Interviewees
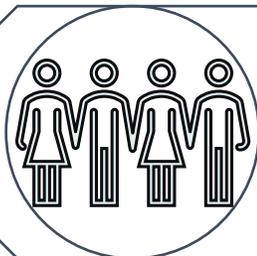
26 participants who took part in the iDEAS trial

Intervention Group (*Drink Less*) n=14

Comparator Group (NHS webpage) n=12

For *Drink Less* used engagement data

Low = 1-2 sessions

Medium = 3-27 sessions

High = 28+ sessions

Interviewee characteristics

Demographics (%)	N (%)
Female	58% (15)
Age [m(sd)]	42.50 (14.98)
Ethnicity	
Asian	4% (1)
Black	8% (2)
Mixed Race	12% (3)
White	69% (18)
Other	8% (2)
Higher Income	69% (18)
Engagement with Drink Less app (n=14)	
Low	14% (2)
Medium	36% (5)
High	50% (7)

Theoretical Framework of Acceptability

Affective Attitude

Burden

Ethicality

Intervention Coherence

Opportunity Costs

Perceived Effectiveness

Perceived Self-Efficacy

Perceived Personal Relevance

Affective Attitude

The Drink Less app was liked

Positive and proud of reaching goals
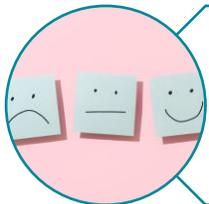
Some emotional burden in using the Drink Less app

"it's kind of fun when you are doing something and it starts working out" [MALE, 30B]

"when you do start going backwards and drinking more and more than you know you're all you're doing is sort of putting effectively negative data into the app. And you just feel like you've let yourself down, you've let the app down and you've let your progress down" [MALE, 22]

Burden
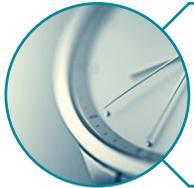
Not time consuming

User friendly

Repetitive

"it is easy to use, it's quick it's not onerous"
[FEMALE, 47]

"I was using it a lot at first. But then I sort of kind of lost interest in the app."
[MALE, 22]

Ethicality

Accessible for those with smartphone

"anyone who's got a smartphone and uses Apps can use it, but that isn't you know, obviously th.. that isn't everyone." [FEMALE, 47]
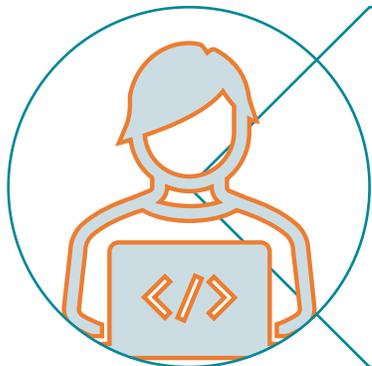
Being comfortable with technology

"I'm sure anybody can use it, but it needs to be a bit simplified if you want people who are less tech-savvy to use it" [MALE, 41]

Intervention Coherence

Intuitive, easy to use
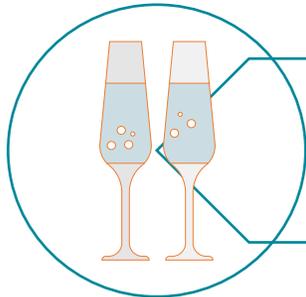
Importance of tracking in focusing on how much alcohol they drank
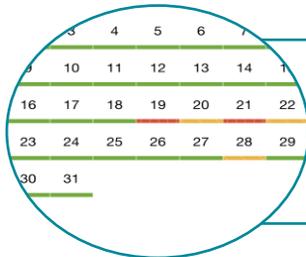
Praise and traffic light function encouraged alcohol-free days

"it was easy to download and easy to just get up set up and start using" [FEMALE, 55]

"I was encouraged by the calendar where you have the days when you don't drink, and having it consistently green week after week" [MALE, 41]

Opportunity Costs

Using Drink Less didn't interfere with other obligations

Impact on social life

Reduce mindless drinking

"I'm really busy. I've got young children and a full time job and all the rest of it, and it was it was something that I have no problem incorporating into my routine I just did it, it was fine" [FEMALE, 38A]

"if I'm going out with or with friends I will still drink what is knocked on the head is the oh having a glass of wine while I'm cooking dinner for no particular reason drinking." [FEMALE, 47]

Perceived Effectiveness

Drink Less helped some drink less using a range of strategies:

- Drinking guidelines
- Downsizing
- Reducing habitual drinking
- Alcohol-free days
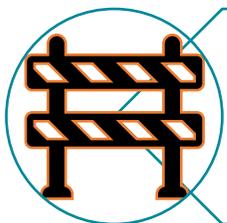
Others described barriers or disengagement from the Drink Less app

Suggested updating Drink Less app features more regularly

"I've not cut the days I drink back, but I instead of buying a whole bottle of wine, I buy a small bottle of wine."
[FEMALE, 72]

"perhaps, if I hadn't started at Christmas maybe or if the situation would have been different, then maybe I would have taken more notice of it."
[FEMALE, 60]

Perceived Self-Efficacy
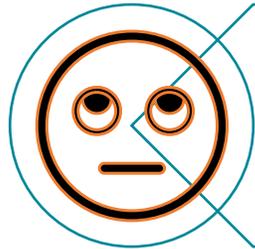
Mixed levels of confidence in whether the Drink Less app would work for them

Trust Drink Less because of UCL association

Motivation and readiness to change determined confidence in the Drink Less app

"And and confident.. Confident another way, I suppose I trusted it. I believe what it was telling me… I suppose the part where it was comparing it to other people, I suppose I assumed by that that there'd been accurate research by the people that had developed the app" [FEMALE, 55]

"Now, can it help me now? I don't think so because I don't have the same motivation as in February when I started" [MALE, 41]

Perceived Personal Relevance

Generally Drink Less app was a good fit

Drink Less app used as a toolbox or supermarket

Participants found components of the Drink Less app that worked best for them

"the good thing about it is that it has various tools and games and I am sure that not every one of these functions will appeal to every single user, so from my perspective, having a supermarket function was very useful." [MALE, 41]

"I wasn't in a position to go to the doctor and didn't feel like seeing someone in person, so the app was a personal way of getting support anonymously" [MALE, 41]

Conclusions

Balance in digital intervention research between tailored individualised interventions and participant burden

In the short-term Drink Less perceived as effective in reducing alcohol consumption

Repetition, boredom and negative affect in the longer term can lead to disengagement

New ideas or features might boost engagement in the longer term

Drink Less app performed well on different features of acceptability Participants felt the Drink Less app is an acceptable intervention

Engagement with the *Drink Less app*

Larisa Dinu

iDEAS Research Assistant

What do we mean by engagement?

Engagement with digital behaviour change interventions (DBCIs) can be defined as "the extent of DBCI use" (e.g. amount, depth, frequency, duration).

Perski, Blandford, West & Michie (2016)

Engagement parameters

Amount

Duration

Frequency

Depth

Downloads

Adherence

Self-reported use at 6-month follow-up

- 53% reported using the Drink Less app (of those randomised to the intervention)

- 44% reported using the NHS webpage (of those randomised to the comparator)
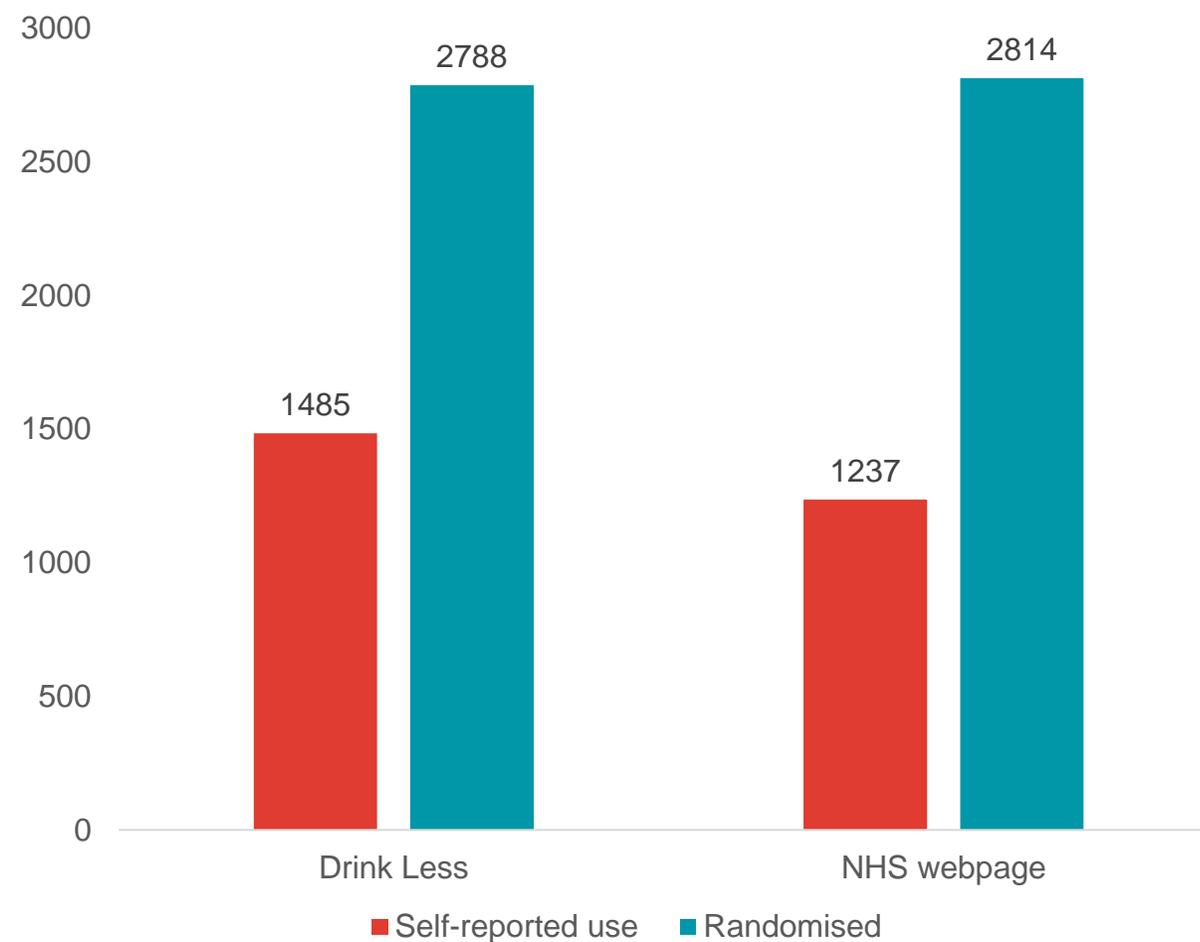
Self-reported use at 1-month follow-up

- 52% reported using the Drink Less app (of those randomised to the intervention)

- 48% reported using the NHS webpage (of those randomised to the comparator)
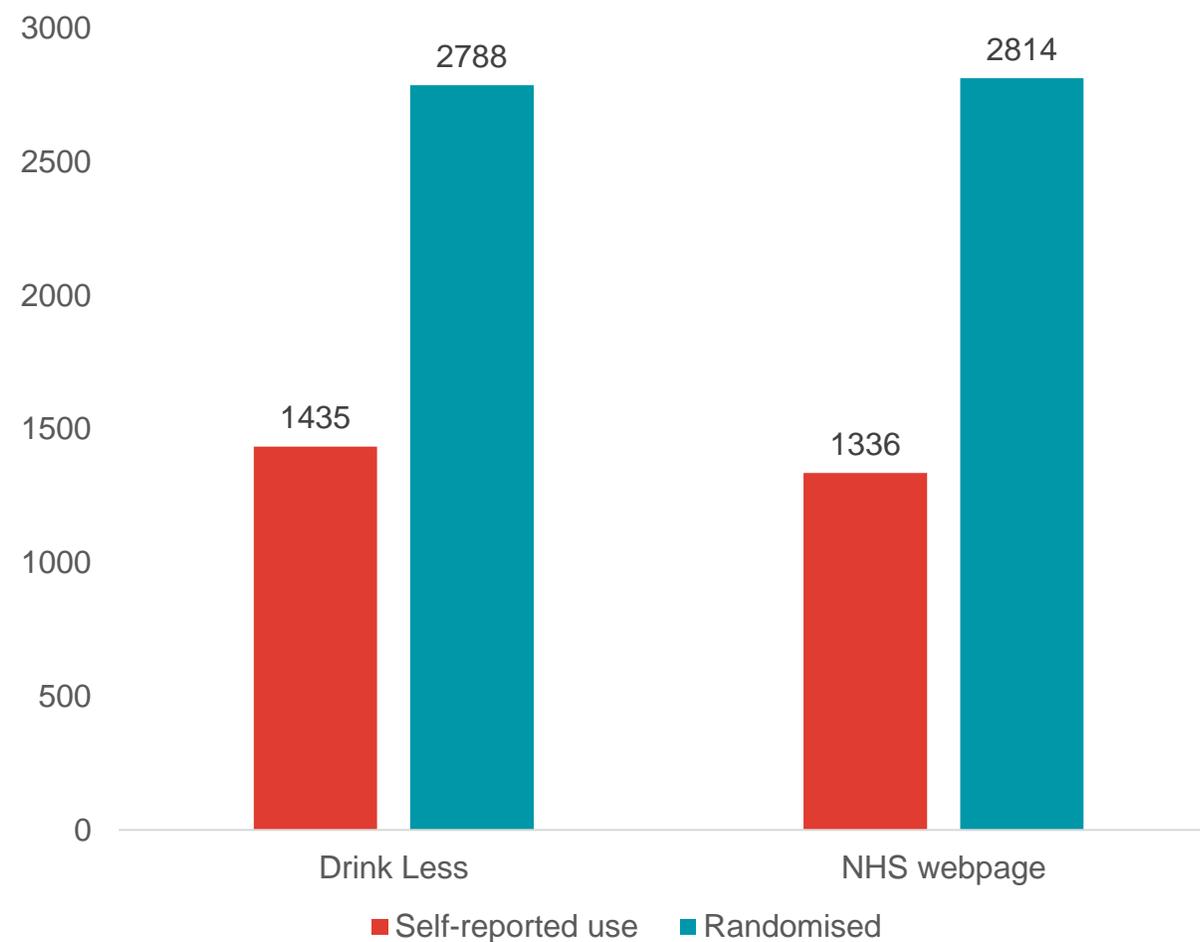
Drink Less app downloads among trial participants

- 67% of those randomised to the Drink Less (intervention group) downloaded the app

- 6% of those randomised to the NHS webpage (comparator group) downloaded the app
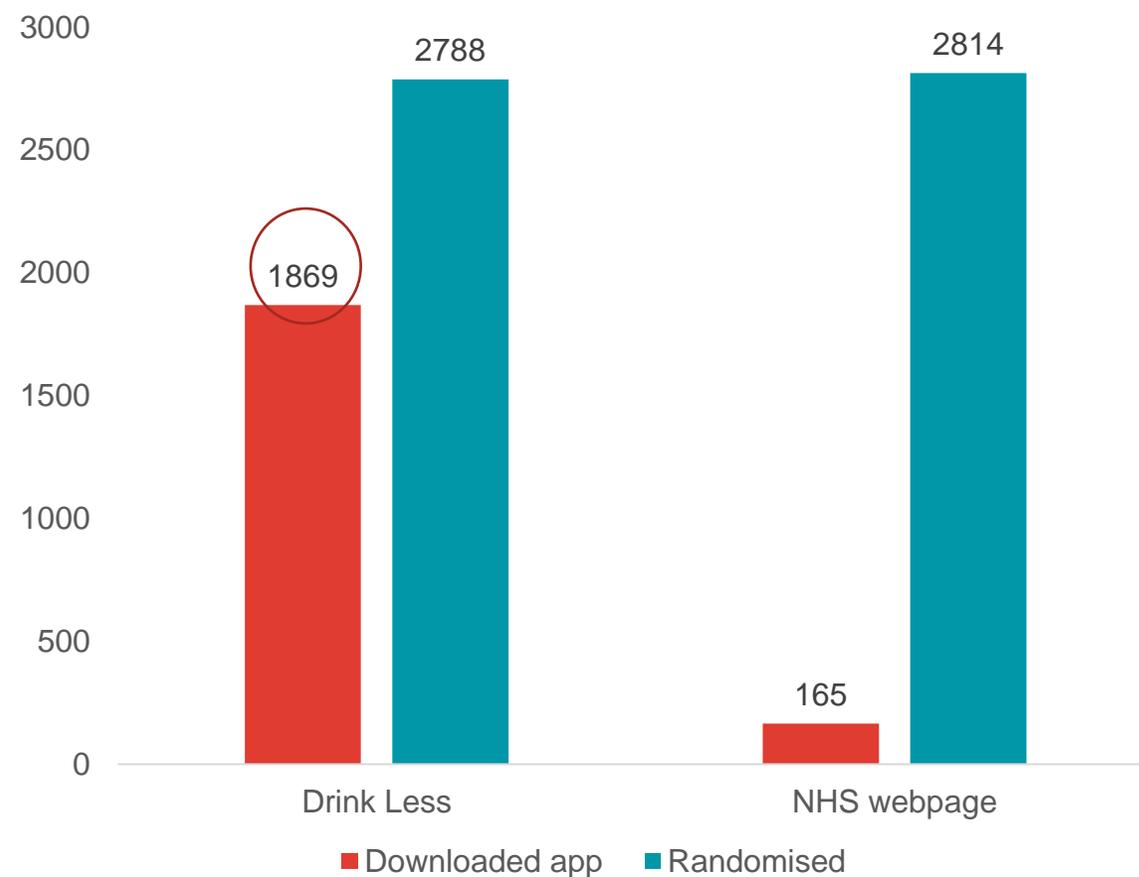
Trial participants engagement with Drink Less

Frequency
- Mean number of sessions = 42 (SD = 66.51)
  - Max sessions = 535 (min = 1)
  - Median = 12
  - IQR = 43 (Q1 = 4, Q3 = 47)

Amount
- Mean time on app = 1 hour, 9 minutes (SD = 2 hours, 3 minutes)
  - Max time = 25 hours, 11 minutes (min = 0)
  - Median = 25 minutes
  - IQR = 1 hour, 10 minutes (Q1 = 8 minutes, Q3 = 1 hour, 18 minutes)

Trial participants engagement with Drink Less

Depth
- Mean number of unique screens viewed = 23.6 (SD = 10.41)
    - 34% of available screens
    - Max unique screens viewed = 59 (min = 1)
    - Median = 23
    - IQR = 15

Duration
- Mean number of days used = 30 (SD = 43.94)
    - Max days = 185 (min = 1)
    - Median = 10
    - IQR = 32 (Q1 = 3, Q3 = 35)

Why did participants engage with Drink Less?

Participants liked the Drink Less app

Tracking and feedback components made the app more personally relevant

Pride and positivity at reaching goals

Why did participants disengage with Drink Less?
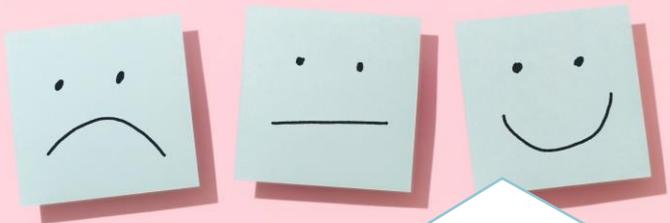
Negative affect experienced – when recording heavier drinking days or failing to achieve goals

Use of the app felt like a chore

Desire for new features or would have liked to use it in group settings

Planned work

- Paper on the mechanisms of action:
  - Psychological constructs

  "Through what psychological measures does engagement with Drink Less change drinking behaviour?"

  - Engagement with the intervention

  "What is the extent of user engagement with Drink Less and does user engagement moderate these outcomes?"

Future research plans

- Investigate through more detailed modelling of engagement with the Drink Less app, what components participants are using (i.e. what) as well as the extent of engagement (i.e. how)

- Develop contextually specific intervention components in Drink Less

- Provide tailored alcohol reduction strategies depending on their desired goal and drinking patterns

Next steps for Drink Less

- Develop an Android version

- Working with Evidence to Impact to develop a business plan for the sustainability of the app
  - Three main recommendations:
    1. Download fees (£1.99 per use)
    2. Core funding from charities/organisations on a 'collective' basis
    3. Ongoing research funding
  - 'Task and Finish' group
    - Set up by lead researchers
    - Implementing the recommendations in the report
    - Consider licencing the app and IP to a third party
      - Identify the best partners to manage Drink Less on an ongoing basis

Thank you

Panel discussion

- Adrian Chiles – TV and radio presenter, and author of 'The Good Drinker'

- Aideen Dunne – Acting Consultant in Public Health, Prevention Team, NHS

- Clive Henn – Senior Alcohol Advisor at OHID (Office for Health Improvement and Disparities)

- Felix Greaves – Director of Science, Evidence and Analytics at NICE (National Institute for Health and Care Excellence)

- Margaret Ogden – member of the independent trial steering committee and expert by experience