There's an app for that! Are digital interventions to reduce alcohol consumption worth raising a glass to?

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Are you thinking about changing your drinking habits? Research from the Global Drug Survey (GDS) suggests that over a third of drinkers in the United Kingdom (UK) would like to reduce their drinking in the next 12 months (Davies, Conroy, Winstock, & Ferris, 2017). Furthermore, Public Health England suggest that around one in five people in the UK are drinking above the low risk guidelines of 14 units per week, and should probably be thinking about cutting down (PHE, 2016). If you are thinking of cutting down or reducing your drinking then you might have explored the idea of using an app or a website to help you.

The pleasures and sorrows of drinking are well known: alcohol can enhance social interactions by promoting bonding and provide space to unwind from the pressures of work. However, excessive alcohol consumption is associated with increased health risks, such as cancer and liver disease, and with elevated levels of depression and anxiety. Therefore, the World Health Organization (WHO) has set a target of a 10% relative reduction in harmful alcohol use by 2025 (WHO, 2014). To meet this target in a time of reduced spending on public health around the world, it is clear that we need both effective and cost-effective interventions that are widely accessible. There is a body of evidence that suggests brief face-to-face interventions, delivered by health care professionals, can be effective in reducing alcohol consumption in some groups within the population (though less than 10% of excessive drinkers receive these (Brown, Jamie et al., 2016)). But yet there has recently been a shift in focus onto digital interventions for alcohol reduction because of their potential to reach larger numbers of people at low cost per additional user. There are many examples of digital interventions for alcohol reduction freely available on the Internet, and this article will be illustrated with reference to some digital interventions, including those that the authors have experience of working with.

The purpose of digital interventions

Firstly, it's important to clarify that digital alcohol interventions were not envisaged as a 'silver bullet' to replace traditional interventions delivered by health care professionals; rather, they are viewed as an adjunct to care, with their origins in bibliotherapy. There are fundamental features of face-to-face interventions that cannot easily be transferred to a website or app, namely: genuineness, unconditional positive regard, and empathy (Rogers, 1965). However, some of the "active ingredients" (also known as "behaviour change techniques") that form the content of the intervention are well suited to digital format, such as screening for excessive alcohol consumption, personalised feedback, goal-setting and self-monitoring of one's drinking behaviours. There have been attempts to convey the therapeutic alliance online, for example, via an extensive behaviour change website called Down Your Drink (www.downyourdrink.org.uk) with the tone of the text and interactive exercises that encourage reflection and individual choice (Linke, McCambridge, Khadjesari, Wallace, & Murray, 2008). The latest research evidence suggests that digital interventions where a health care professional facilitates access are more effective at reducing alcohol consumption than stand-alone digital interventions (Riper et al., 2018).

There are, however, huge advantages to delivering digital interventions over the Internet or via an app, in their entirety. The stigma and embarrassment associated with seeking help for an alcohol problem face-to-face is an important factor that delays or prevents help seeking. Drinking alcohol excessively is sometimes perceived as synonymous with dependent drinking, and this stigma is exacerbated by the perceived gap in service provision for people wanting to moderate rather than abstain from drinking, as the first obvious treatment option may be Alcoholics Anonymous (AA). The Internet mitigates this barrier to help-seeking, enabling 'e-help seekers' to seek support at a much earlier stage. Qualitative interviews with 'e-help seekers' who accessed the Down Your Drink website, reported a variety of reasons why an online intervention was of help to them. For example, it helped them think about their drinking

and provided reassurance that they were not alone. It also helped them recognize that their drinking was as a problem, and it provided support and techniques to cut down and monitor their drinking. Further, these 'e-help seekers' wanted support that was suited to their level of need, that did not interfere with their everyday lives, and that was personal to them (Khadjesari, Stevenson, Godfrey, & Murray, 2015) – all of which digital interventions can provide.

User engagement

Given that this support is delivered outside of a face-to-face setting, some form of "engagement" with a digital intervention is logically necessary for it to help people change. However, engagement with digital interventions tends to be low, with many users dropping out during the first week of the treatment period (Eysenbach, 2005). Psychologists have typically thought of engagement in this context as website or app usage, as this may be indicative of a user's exposure to critical intervention content. However, research from the digital gaming and human-computer interaction fields show that users' subjective experience (such as whether they pay attention to the digital intervention's content and are interested in it) are also important aspects of engagement. For example, a user might have opened a webpage but not necessarily read through the content. Engagement can therefore be thought of both as a behaviour (i.e. usage) and a subjective experience that co-occurs with that behaviour. Hence, engagement is thought to occur at different levels of intensity each time a user interacts with a digital intervention and can be assessed repeatedly over the course of the treatment period (Perski, O., Blandford, West, & Michie, 2017).

Research shows that many different factors promote or detract from engagement with digital interventions for alcohol reduction. At the point of uptake, users tend to select apps that are immediately appealing and easy to use, have been rated highly by other users and have realistic and relevant titles (Perski, O., Blandford, Ubhi, West, & Michie, 2017). With regards to longer-term engagement, once an app or website has been selected, being female, older age, higher education (i.e. post-16 qualifications), higher baseline levels of motivation to change and lower

baseline levels of alcohol consumption tend to be positively related to engagement (Radtke, Ostergaard, Cooke, & Scholz, 2017). Qualitative studies have highlighted that potential users are more willing to engage with digital interventions that support their motivation to reduce alcohol (e.g. through encouragement or providing a choice of what components to use). They are also more drawn to apps that make them feel that the digital intervention (i.e. content and design) is relevant to them and what they are hoping to achieve, also referred to as "perceived benefit and usefulness" (Perski, Olga, Baretta, Blandford, West, & Michie, 2018; Postel et al., 2011). For example, a study testing the usability of the Drink Less app (https://drinklessalcohol.com/), both initially and after two weeks of use, found that users were unlikely to engage with app components that they did not see an obvious benefit of, and that users liked being rewarded for their achievements (Crane et al., 2017). This has implications for the design of digital interventions, as those that use elements of tailoring and positive reinforcement may stand a better chance at engaging their users. This may, for example, involve the tailoring of information or entire intervention components according to users' underlying psychological needs, much like a therapist would tailor its interactions with different clients to suit their individual reasoning styles.

Intervention developers have also explored the use of humour as a means of engaging young people with digital interventions. Rather than receiving advice about their specific drinking habits, users of the OneTooMany app (www.onetoomany.co) answer 20 questions relating to incidents that might occur as a result of alcohol consumption. Many of these involved potentially embarrassing situations that young drinkers might regret. For example, questions included whether users have "had embarrassing pictures or videos of you taken and posted on Twitter or Facebook etc when you've been drinking", as well as asking whether users have "had to have your friends take care of you when you have been drinking". Responses to these questions generated an Alcohol Related Social Embarrassment (ARSE) score, out of a total of 40. These scores were broken down into four groups, each category being given a label (e.g. Culus Major) and offering feedback on the type of drinker that score might relate to and the risks and

consequences associated with it framed as motivators to reduce consumption. Research with students and young people suggests that this humorous approach had the potential to be very engaging (Davies, Law, Hennelly, & Winstock, 2017). However, there was also evidence that some of the embarrassing scenarios discussed in the app might actually confer status on young people; clearly this is an area for further exploration.

Who are interested in using digital interventions?

Alongside understanding features that enhance engagement across the board, it is also important to identify the groups who are most likely to benefit from receiving support online, as this approach may not be universally appealing. For example, a study of student drinkers identified that they preferred informal sources of support, such as talking to friends, over online tools (Buscemi et al., 2010). Other research suggests that the anonymity offered by online tools may be more appealing for some groups of harmful drinkers, who may be concerned about the stigma associated with help seeking for alcohol problems, as mentioned previously (Khadjesari et al., 2015). Although digital interventions may not be as easily accessible to some populations such as the homeless, those in prison, or the elderly, digital interventions particularly targeting these populations are beginning to emerge. For example, the computer-assisted 'Breaking Free Online' programme was developed to provide continuity of substance misuse care for prisoners regardless of their location (e.g. transferral to a different prison or release into the community) and has demonstrated initial feasibility and acceptability (Elison et al., 2016). However, more work is needed to identify those who may benefit from digital interventions, and those who may be excluded. In addition, research shows that there are other sociodemographic and regional factors that may influence user preferences for online tools.

Research from the Global Drug Survey (GDS) in 2017 explored people's preferences for different sources of support to help them reduce their drinking (Davies, Maier, Winstock, & Ferris, 2019). Those who expressed an interest in getting help to reduce their drinking were asked to select their preferred source of support from the following options: self-help tool

(online or via app); counselling via email; counselling via phone; counselling via Skype/live video; counselling at a GP/ family doctor; counselling or therapy at a specialist doctor; alternative therapy. About a third of the total sample of 82,190 people said they wanted to drink less in the next 12 months, but only a small proportion of these individuals (7.6%) wanted help to cut down. Although a high proportion of these people (38.1%) said they would prefer an online tool, there were some important differences in the characteristics of people who selected this option when compared to those who said they preferred to receive face-to-face support from a specialist doctor. People with higher scores on the Alcohol Use Disorders Identification Test (AUDIT), (i.e. heavier and dependent drinkers), those who were not educated to degree level, and those who were on medication for a mental health condition said they would prefer the support of a specialist to reduce their drinking. On the other hand, people with lower AUDIT scores (i.e. those who were lower risk drinkers), those educated to degree level, and people who were not on medication for a mental health condition preferred online tools for support.

Dependent drinkers with an existing mental health condition may be vulnerable to further harms, and this may be better helped by face-to-face counselling. Access to good quality support which is available at the point of need is essential to help this group of drinkers. It is therefore important that digital interventions that offer screening and brief advice also support referral of high risk drinkers into specialist treatment services, because at present, only a very small proportion of those with alcohol use disorders access any treatment whatsoever. Hence, a growth in high quality digital tools could be a way of widening access to help.

Health inequalities are a particular concern with regards to alcohol consumption, as the most deprived groups drink the least but suffer the most alcohol-related harm (Bellis et al., 2016). If digital interventions are going to play a major role in providing alcohol reduction support, then they need to be equally acceptable and effective across the social spectrum. However, a 'digital divide' does exists with people of a higher socioeconomic status being more likely to own a smartphone (Statista, 2014). Smartphones have become increasingly affordable and prevalent

amongst the population, though a recent study found that users of the smartphone app 'Drinks Meter' were from a higher social grade than the general population of drinkers in the UK (Garnett, C. et al., 2017) suggesting there may be a digital divide in who currently uses digital alcohol interventions.

Are digital interventions effective?

In terms of the effectiveness across the social spectrum, digital interventions have the potential to help disadvantaged groups when designed with appropriate user input, and therefore reduce health inequalities. For example, the Drink Less app was developed with input from users with low socio-economic status to maximise the appeal and usability of the app across the social spectrum (Garnett, Claire, Crane, West, Brown, & Michie, 2018) . When this approach to development and usability testing was taken for a smoking cessation web-app, it was subsequently found to be effective across the social spectrum (Brown, J. et al., 2012).

Digital interventions seem to hold some promise though until recently there was little evidence as to whether they were actually effective at reducing alcohol consumption. A systematic review, published in 2017, aimed to find out whether digital interventions were more effective at reducing alcohol consumption compared with some form of control group (these included assessment only, waiting list control groups and standard health-related information). The review included 41 randomised controlled trials that evaluated the effectiveness of a digital intervention for reducing hazardous or harmful alcohol consumption. The majority of digital interventions that were eligible for inclusion in this review were web-based, though some involved computer programs and one app-based intervention was included. The most frequently used 'active ingredients' (i.e. "behaviour change techniques") were: i) feedback on their drinking behaviour; ii) social comparison; iii) information about the social and environmental consequences; iv) feedback on the outcomes of their behaviour, and v) social support. The primary outcome measure was the quantity of alcohol consumed in grams of alcohol per week (where one UK unit = 8g alcohol). Participants using a digital intervention

drank 22.8g of alcohol a week less than those receiving a control. This systematic review showed evidence for the effectiveness of digital interventions at reducing alcohol consumption with an equivalent weekly reduction of up to three UK units of alcohol compared with control participants. This emerging evidence can be viewed as tentative support for the role that digital alcohol interventions can play in helping people to reduce hazardous or harmful alcohol consumption.

Alongside the digital tools discussed so far, most of which have been developed by academics, there are a number of online communities that have grown outside of academic research. Two examples are 'Soberistas' and 'Club Soda', both of which provide support for people who want to stop drinking alcohol. Club Soda also offers support to those who wish to moderate their drinking. Another important goal of Club Soda is to normalise non-drinking in social settings, and to this end, they champion innovation in the production of non-alcoholic beverages, and run 'Mindful Drinking' Festivals around the UK (Club Soda, 2018). Members of both communities can access an array of online resources such as blogs, chatrooms and webinars and share their experiences. Testimonials on the Soberistas website attest to the many positive experiences of people who engage in their online community, and academic research suggests that this platform provides a supportive environment, which enables people to stop drinking (Chambers, Canvin, Baldwin, & Sinclair, 2017; Sinclair, Chambers, & Manson, 2017).

There is no one-size-fits-all intervention approach to reducing alcohol consumption; a suite of digital interventions, bibliotherapy, a stepped care approach to face-to-face intervention, and policy changes are likely to be needed to achieve WHO's target of a 10% relative reduction in excessive alcohol consumption by 2025. Although it is clear from the evidence outlined here that digital interventions for alcohol reduction can confer a range of benefits to users and the healthcare system at large, this article also highlights the complexity of conducting research in this field. While digital interventions can deliver tailored support to users as and when needed and reduce stigma associated with help-seeking in person, they require active engagement on

the part of the user (which may lead to early drop-outs) and may be particularly burdensome for heavy drinkers or users with mental health conditions.

To further our understanding of the potential benefits of digital interventions it is therefore important to develop or refine existing tools so that they engage their intended target audience and signpost higher risk drinkers to appropriate sources of support. We must be cautious of transitioning to a norm of 'technological utopianism', which risks alienating certain groups, or trivialising issues that require deeper investment and human interaction.

At present, the field of digital interventions continues to expand with many options now freely available through various types of technology. It is vitally important that digital interventions are evaluated robustly and pragmatically to continue to inform the evidence on the effectiveness of digital interventions to reduce alcohol consumption. If you are thinking of reducing your drinking, you may find that some kind of digital tool is useful, particularly in tracking your alcohol intake. However, you don't have to rely on digital tools, despite their near ubiquity, and should speak to your GP if you feel you need further support.

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