

Short- and Longer-Term Benefits of Temporary Alcohol Abstinence During 'Dry January' Are Not Also Observed Among Adult Drinkers in the General Population: Prospective Cohort Study

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ABSTRACT

Aims: The alcohol abstinence challenge “Dry January” continues to grow, but there is a lack of knowledge of how Dry January participants compare to the general population. There is also a need to determine whether benefits experienced by Dry January participants are unique to that group, or are also observed among other people.

Methods: We conducted a prospective cohort study using online questionnaires in early January, February, and August 2019. We compared 1192 Dry January participants and 1549 adult drinkers who did not attempt to abstain from alcohol. Key outcomes were self-rated physical health, psychological well-being (WEMWBS: Warwick-Edinburgh Mental Well-Being Scale), control over drinking (DRSE: Drink-Refusal Self-Efficacy Scale), and alcohol intake (AUDIT-C: Alcohol Use Disorders Identification Test consumption subscale). Baseline differences in demographic and alcohol consumption variables were included as covariates in between-group analyses.

Results: Dry January participants had higher SES, poorer well-being, higher AUDIT-C scores, and less control over their drinking than the general population. Beneficial changes in health, WEMWBS, DRSE, and AUDIT-C observed among people completing Dry January were not observed among other adult drinkers.

Conclusions: Dry January appears to attract people who are heavier drinkers than the general population, and who are more concerned about their alcohol intake. Completion of Dry January is associated with short- and longer-term benefits to well-being that are not observed in the general population.

Keywords: alcohol; public health; psychology

Short summary

This study explored whether participation in temporary alcohol abstinence challenges conveys health benefits not observed in the general population. This was done via a 7-month prospective study comparing 1192 “Dry January” participants to 1549 non-participants. Completion of Dry January is associated with health benefits not observed in the general population.

INTRODUCTION

Alcohol use is an important contributor to the global burden of morbidity and mortality (Gore et al., 2011; Hoskins & Benger, 2013; Jones et al., 2008; Rehm et al., 2014, 2017). It is therefore important to find ways to encourage people to try to drink less. Governments in many countries have therefore developed guidelines to help people to monitor and manage their alcohol intake (Furtwangler & de Visser, 2013).

Non-government bodies have also introduced campaigns designed to help people to manage their alcohol use. In numerous countries across the world campaigns have been established in which people are challenged to temporarily abstain from alcohol. Examples include “Dry July” in Australia (au.dryjuly.com) and New Zealand (www.dryjuly.co.nz), La Tournee Minerale in Belgium (www.tourneeminerale.be), “Defi 28 Jours Sans Alcool” in Canada (www.defi28jours.com), “Dry November” in Hungary (kekpont.hu/szaraz-november), and “Buddhist Dry Lent” in Thailand. In the UK, the temporary alcohol abstinence challenge “Dry January” has been run by the charity Alcohol Change UK (formerly Alcohol Concern) since 2013. The purpose of the campaign is to support any drinker who wants to reduce their alcohol intake over the longer-term (Alcohol Change UK, 2019). Its stated mechanism is a short abstinence challenge combined with structured support available via a campaign website, a mobile telephone application, and various social media platforms. The organisers consider the support to be essential to the intervention, and research indicates that greater use of such support is associated with a greater likelihood of completing the challenge (de Visser & Nicholls, in press).

Dry January has grown in popularity, with 82,000 adults registering via the website or mobile phone app in 2019 - compared to 5000 in 2013 - and several million participating “unofficially” - i.e., without registering (de Visser et al., 2017). However, in the academic literature and in popular media, some have expressed concern that it is not clear who is the target of Dry January, and some have suggested that the event could attract the people at lowest risk from health problems related to alcohol (Hamilton & Gilmore, 2016). It is true that people who drink less find one-month abstinence challenges easier to complete (de Visser et al., 2016). However, it does not appear that the campaign only attracts low-risk drinkers. Instead, it has been found that many people who register for the challenge report harmful patterns of alcohol consumption. Participants’ mean score on the World Health Organization’s Alcohol Use Disorders Identification Test (AUDIT) is 12 (with scores of 8 and above indicating hazardous or harmful alcohol use), and 29% of participants have AUDIT scores of and 16 above, which are indicative of “a high level of alcohol problems” drinking

(de Visser et al., 2016). However, previous research into Dry January has not allowed comparisons of campaign registrants to people not undertaking that challenge. The first aim of the study reported here was to determine whether and how Dry January participants differ from the rest of the population in terms of their alcohol intake and/or their demographic profile.

Previous research has found that participation in one-month temporary alcohol abstinence challenges is associated with physiological benefits including reductions in liver fat, blood glucose, and blood cholesterol (Coghlan, 2014; Mehta et al., 2018; Munsterman et al., 2018). Studies have also found that participation in temporary alcohol abstinence challenges is associated with improvements in self-reported sleep quality, energy levels, concentration, and general well-being (de Visser et al., 2016; de Visser & Nicholls, in press). It is also associated with enhanced feelings of control over drinking, and subsequent reductions in alcohol intake (de Visser et al., 2016; de Visser & Nicholls, in press). Previous studies indicate that although these changes are more likely among people who complete the challenge, they are also found to a lesser degree among those who participate without staying completely dry (de Visser et al., 2016; de Visser & Nicholls, in press). It has been argued that there would be no reason to expect spontaneous changes in control over drinking in the absence of an intervention like Dry January (de Visser et al., 2016). However, previous research has not included comparisons with non-participants in Dry January to test this argument. Therefore, the second aim of the study reported here was to determine whether beneficial changes observed among Dry January participants are unique to that group, or are also observed among people who make an unsuccessful attempt at temporary abstinence, and members of the general population not attempting a period of temporary abstinence.

METHODS

Sample

This prospective cohort study involved two samples of adult drinkers. A sample of Dry January registrants was recruited by inviting people to complete an online questionnaire at the time of registering for Dry January via the website or mobile telephone application. An independent social research company recruited a sample of adults from the general population who had consumed alcohol in the previous month. This general population sample was an online panel recruited using quotas to ensure representation of the population according to: geographic region; male/female balance; and age strata. It was broadly representative of adult drinkers in the general population: the proportions reporting “white” ethnicity, higher

incomes, and greater education would be expected given that drinkers are more likely to be white and of higher socioeconomic status (Office for National Statistics, 2018)

Both samples completed online baseline questionnaires over a 10-day period ending on 5 January 2019. Respondents were then emailed links to follow-up online questionnaires in the first week of February 2019 (1-month follow-up) and in the first week of August 2019 (6-month follow-up). The sample sizes for the Dry January registrants were 3171 at baseline, 1342 at 1-month follow-up, and 1158 at 6-month follow-up. The sample sizes for the general population sample were 2977 at baseline, 2222 at 1-month follow-up, and 1583 at 6-month follow-up. Thirty-four participants in the general population sample who indicated at baseline that they had registered for Dry January were re-coded as Dry January participants.

Materials

Measures and methods used in previous studies of Dry January participants were replicated wherever possible (de Visser et al., 2016; de Visser & Nicholls, in press). Members of the public were not involved in the design or conduct of the study, but their opinions and reports of their experiences were its key focus.

Background demographic data collected were gender, age, pre-tax household income (reported in £10,000 brackets), highest completed level of education (re-coded as less than university education or university education), and ethnicity (multiple options recoded as white or other). Respondents also used novel 10-point scales (anchors: “not at all” and “extremely”) to indicate how concerned they were about: the effect of their drinking on their health; and the control they had over their drinking.

Analyses focused on four outcome variables. First, physical well-being was self-reported as poor, fair, good, very good, or excellent (Hays et al., 2009).

Second, psychological well-being was measured by the 7-item Warwick-Edinburgh Mental Well-Being Scale (WEMWBS: Stewart-Brown et al., 2011) Participants used a 5-point scale (“none of the time - “all of the time”) to respond to 14 items (e.g., “I’ve been feeling optimistic about the future”). The mean scale score was calculated for each respondent, with higher scores denoting better well-being (Cronbach $\alpha = .95$).

Third, Drink-Refusal Self-Efficacy (DRSE) was assessed with a 9-item measure of ability to refuse temptation, expectation, or pressure to drink alcohol in different contexts (Young et al., 1991): The scale explores three domains: social pressure (e.g., “When my friends are drinking”); emotional relief (e.g., “When I am worried”); and opportunistic drinking (e.g., “When I am watching TV”). Young et al. (1991) reported item-total correlations for these items ranging from .61 to .94, and Young et al. (2007) reported item-total correlations for

these items ranging from .77 to .94. Factor analysis of data from the study reported here revealed that all items loaded on a single factor with loadings of .66 or above. Mean scale scores were used (Cronbach $\alpha = .89$), with higher scores indicating greater DRSE.

Fourth, alcohol consumption was assessed using the World Health Organization Alcohol Use Disorders Identification Test consumption subscale (AUDIT-C: Babor et al., 2001), with higher scores denoting greater alcohol intake. These variables were assessed at baseline and 6-month follow-up, and all but the AUDIT-C were also assessed at 1-month follow-up.

In addition to assessing whether participants were trying not to drink alcohol during January, the questionnaire assessed whether they were engaging in specific behaviours that may have enhanced their physical and/or psychological well-being. Analyses controlled for whether people were trying to engage in more physical activity; trying to eat more healthily; and trying not to smoke or to smoke less by including these as covariates in multivariate analyses of covariance (MANCOVA).

Analysis

Given the large number of comparisons across four outcome variables, a more conservative significance level of $p < .01$ was used instead of the conventional $p < .05$ level. Data were weighted for likelihood of completing the follow-up, because completion of the 6-month follow-up was non-random, and was significantly related to age, gender, ethnicity, education, WEMWBS, concern about the health effects of drinking, concern about control over drinking, AUDIT-C, and DRSE (all $p < .01$). Propensity scores (Austin, 2011; Rosenbaum & Rubin, 1983) were calculated to indicate the probability of completing the 6-month follow-up conditional on the variables just mentioned. All analyses were conducted using survey weights calculated as the inverse of the propensity scores. In comparisons between people who attempted a Dry January and those who did not, baseline differences in sex, age, education, income, ethnicity, baseline measures of all outcome variables, and other attempted behaviour changes in January were included as covariates in (MANCOVA). The analyses reported here included only those people retained in the sample at 6-month follow-up. Missing data were rare and were not replaced.

RESULTS

In Table 1, the “tried to have a Dry January” group includes all respondents from the sample of Dry January registrants as well as members of the general population sample who reported that they tried to abstain from alcohol during January: 85.1% of those in the combined samples who tried to have a dry month registered for Dry January; the remaining 14.9% consisted of members of the general population who tried to abstain during January,

but did not register for Dry January. The group of people who reported that they tried to abstain from alcohol during January was compared to members of the general population sample who did not report trying to abstain during January. Compared to those who did not try to have a Dry January, those who did: were more likely to be women; were younger; had a significantly higher mean income; were significantly more likely to have completed university education; had significantly better self-rated physical health; had significantly lower WEMWBS scores; were significantly more concerned about the effects of their drinking on their health; were significantly more concerned about the control they had over their drinking; had significantly higher AUDIT-C scores; and had significantly lower DRSE. It is notable that although Dry January participants had higher AUDIT-C scores, the mean for the general population sample was above the threshold of 5 that is considered to indicate risky drinking (HM Government, 2017; Kuitunen-Paul & Roerecke, 2018).

> TABLE 1 <

Further analyses revealed that compared to other respondents, people who tried to abstain from alcohol during January were also significantly more likely to have tried to engage in more physical activity (48.7% vs 23.8%, $\chi^2 = 151.98$, $p < .01$) or to improve their diet (52.3% vs 28.2%, $\chi^2 = 132.60$, $p < .01$). It is also important to note that among respondents who did not try to abstain during January, 10% reported that they did try to reduce their alcohol intake in other ways. It was therefore important to control for these differences in subsequent analyses reported below.

Among respondents who tried not to drink alcohol during January, 62.4% reported staying Dry. Those who officially registered for “Dry January” - and who therefore received the accompanying support intervention - were significantly more likely to complete the challenge: 69.8% of Dry January registrants completed the challenge, but only 30.2% of those who did not register completed it ($\chi^2 = 220.96$, $p < .01$)

The data in Table 2 indicate that there were significant interaction effects between groups across the three time points. The significant differences and confidence intervals around mean scores indicate that there was very little change across time points for any measure for the respondents who made no attempt to abstain from alcohol in January. In contrast, among respondents who successfully completed a Dry January, there were marked increases in physical health, WEMWBS, and DRSE, and marked decreases in AUDIT-C scores. For each of these variables, the increase observed between baseline and 1-month follow-up was maintained at 6-month follow-up. Among respondents who did not complete the abstinence

challenge, there were more modest changes in health, WEMWBS, DRSE, and AUDIT-C scores between baseline and 1-month follow-up, and less maintenance of these gains at 6-month follow-up. When these analyses were re-run without including other attempted behaviour changes as covariates, the same patterns of results were found for physical health ($F_{(4, 5476)} = 9.19, p = .02$), WEMWBS ($F_{(4, 5476)} = 22.53, p < .01$), DRSE ($F_{(4, 5476)} = 75.72, p < .01$), and AUDIT-C ($F_{(2, 5478)} = 81.51, p < .01$).

> TABLE 2 <

DISCUSSION

In relation to the first study aim, it was found that, compared to adult drinkers in the general population, Dry January participants were of higher socioeconomic status (SES) as indicated by education and income levels. Dry January participants had better physical well-being, but poorer psychological well-being. They drank more, had lower self-efficacy for refusing alcohol, and were more concerned about the effects on their drinking on their health. These data counter the suggestion that Dry January attracts people at lowest risk of alcohol-related harm (Hamilton & Gilmore, 2016), and confirm data from within the campaign that Dry January registrants tend to be higher risk drinkers. Such data also highlight a need to ensure that the campaign aims for broader coverage of the population in relation to SES.

In relation to the second aim, in line with previous research, it was found that completion of Dry January was associated with beneficial changes in physical and psychological well-being, DRSE, and alcohol intake (Coghlan, 2014; de Visser et al., 2016; de Visser & Nicholls, in press; Mehta et al., 2018; Munsterman et al., 2018). These beneficial changes were not also observed among people who did not complete the abstinence challenge or among adult drinkers in the general population when baseline differences in demographics and alcohol-related beliefs and behaviours were included as covariates. The inclusion of a control group of members of the general population allowed us to minimise the possibility that the changes observed among Dry January participants were simply the result of seasonal variation in beliefs and behaviour. Our findings suggest that completion of Dry January may be a cause of such changes. Indeed, structural equation modelling in a previous study provided evidence to support this assertion: completion of Dry January was followed by increases in DRSE that explained subsequent reductions in alcohol consumption (de Visser et al., 2016).

The evidence presented here, and in other analyses (de Visser et al., 2016; de Visser & Nicholls, in press), indicates that Dry January conveys many benefits, with a low risk of negative outcomes such as “rebound effects” - i.e., drinking more after a period of abstinence (de Visser et al., 2016). The evidence presented here and elsewhere (de Visser & Nicholls, in

press) also indicates that people who register for the official Dry January campaign and make more use of the support provided are more likely to complete the challenge by remaining abstinent during January. Such findings suggest that there is value in encouraging people who are considering a month of abstinence in January to register on the Dry January website, so that they may receive the benefits of the integrated support that is offered, rather than hoping that they will undertake it (and complete it) “unofficially”. There is also a need to ensure that the support that is offered to participants is relevant to them and is also helpful.

A key strength of this study was that it was the first to compare a sample of Dry January registrants to drinkers in the general population. Nevertheless, it did have some limitations. For example, it was not possible to determine how the Dry January sample recruited for this study compared to Dry January registrants generally, because there are no relevant data from people who registered for Dry January but did not complete questionnaires. Furthermore, participant retention at 6-month follow-up was only 37% in the Dry January sample and 53% in the general population sample. Large loss to follow-up is not unusual in this field of research, but it could reduce the degree of confidence in inferences that can be made about the long-term benefits of registering for Dry January. Importantly, the data were weighted to account for the observation that loss to follow-up was not random. Furthermore, there were significant differences between the Dry January sample and the general population sample, and although we used ANCOVA to acknowledge these differences, some have expressed concerns about this approach to controlling for confounding variables (Christenfeld et al., 2004; Miller & Chapman, 2001).

Although quota sampling was used to provide a population-representative sample of adult drinkers in the general population, the absence of existing relevant data means that we cannot determine how well this sample represented all adult drinkers. It is not possible to make a direct comparison with the general population because our sample only contained adult drinkers, and 21% of the general population report that they do not consume alcohol (ONS, 2018). The sample included the proportion of women seen in the adult population, and although there was a greater proportion of people reporting “white” ethnicity and higher Socioeconomic Status (SES) - as indicated by income and education - this would be expected given that recent/current drinkers are more likely to be white and of higher SES (ONS, 2018). We do not know whether the members of the general population sample who attempted to reduce their alcohol intake in other ways other than abstaining were successful, so we were unable to compare this group to: the people known to have abstained for one month; the people failed in their attempt to abstain; and the people who did not attempt to change their

alcohol intake. A final point to note is that all research is susceptible to participation bias (Bergstrand et al., 1983; Drivsholm et al., 2006; Ferrie et al., 2009). However, there is no way to determine whether there were differential self-selection biases between the two samples.

The results presented here should provide encouragement for the organisers of Dry January and other temporary abstinence challenges, and also for people who are actively seeking to change their alcohol intake and/or their feelings of control over their drinking. However, it is important to note that such campaigns are not - and are not intended to be - the answer to all alcohol-related problems. Nevertheless, for people who are concerned about their alcohol intake and are ready to take action - i.e., those who would be designated as being in the “contemplation” or “preparation” stages of the Trans-Theoretical Model of behaviour change (Prochaska & DiClemente, 1984), challenges like Dry January may be an effective way to develop skills and confidence for managing alcohol consumption, and to improve health and well-being. Because Dry January is designed as a behaviour change campaign with an integrated package of support, more research is needed into whether other temporary alcohol abstinence challenges run in the UK and other countries are as effective as Dry January.

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Table 1 Correlates of trying to abstain from alcohol during “Dry January”

	Tried to have a Dry January?		Difference
	no (n = 1074) % (95% CI)	yes (n = 1667) % (95% CI)	
Female	50.9% (47.9 - 53.9)	75.3% (72.5 - 77.8)	$\chi^2_{(1)} = 204.41, p < .01$
Age	49.82 (48.84 - 50.80)	45.41 (44.60 - 46.22)	$F_{(1,2738)} = 87.28, p < .01$
Income ^a	4.36 (4.17 - 4.55)	5.64 (5.43 - 5.84)	$F_{(1, 2738)} = 147.91, p < .01$
University education	37.7% (34.8 - 40.6)	48.1% (45.0 - 51.2)	$\chi^2_{(1)} = 21.49, p < .01$
“White” ethnicity	93.4% (91.5 - 94.9)	94.5% (92.7 - 96.0)	$\chi^2_{(1)} = 2.00, p = .16$
Self-rated physical health ^b	2.93 (2.86 - 3.00)	3.23 (3.16 - 3.29)	$F_{(1, 2738)} = 69.80, p < .01$
Psychological well-being: WEMWBS ^b	3.46 (3.41 - 3.52)	3.37 (3.32 - 3.41)	$F_{(1, 2738)} = 13.70, p < .01$
Concern - health effects of drinking ^a	4.47 (4.26 - 4.68)	6.60 (6.42 - 6.78)	$F_{(1, 2738)} = 434.76, p < .01$
- control over drinking ^a	3.72 (3.48 - 3.96)	5.53 (5.32 - 5.75)	$F_{(1, 2738)} = 226.58, p < .01$
Alcohol consumption: AUDIT-C ^d	5.74 (5.49 - 6.00)	8.47 (8.27 - 8.66)	$F_{(1, 2738)} = 522.26, p < .01$
Drink-refusal Self-efficacy: DRSE ^c	5.28 (5.17 - 5.39)	4.30 (4.21 - 4.40)	$F_{(1, 2738)} = 330.29, p < .01$

notes: a - 10-point scale; b - 5-point scale; c - 7-point scale; d - 12-point scale

Table 2 Change over time in key health and behavioural outcomes according to participation in “Dry January”

	Dry January attempt?	Survey wave			Difference
		baseline ^d	1-month follow-up ^d	6-month follow-up ^d	
Self-rated physical health ^a	no attempt (n= 1074)	2.92 (2.85 - 3.00)	2.91 (2.84 - 2.99)	2.94 (2.86 - 3.02)	F _(4, 5476) = 16.00, p < .01
	failed (n = 503)	3.12 (3.01 - 3.24)	3.20 (3.07 - 3.32)	3.16 (3.04 - 3.28)	
	succeeded (n = 1164)	3.26 (3.17 - 3.35)	3.47 (3.39 - 3.56)	3.47 (3.39 - 3.56)	
Psychological well-being: WEMWBS ^a	no attempt (n= 1074)	3.46 (3.41 - 3.52)	3.48 (3.43 - 3.55)	3.50 (3.44 - 3.56)	F _(4, 5476) = 51.28, p < .01
	failed (n = 503)	3.37 (3.28 - 3.47)	3.56 (3.48 - 3.66)	3.49 (3.39 - 3.58)	
	succeeded (n = 1164)	3.40 (3.34 - 3.47)	3.77 (3.71 - 3.83)	3.68 (3.62 - 3.74)	
Drink-refusal Self-efficacy: DRSE ^b	no attempt (n= 1074)	5.32 (5.21 - 5.42)	5.19 (5.09 - 5.30)	5.21 (5.09 - 5.33)	F _(4, 5476) = 44.59, p < .01
	failed (n = 503)	4.63 (4.45 - 4.82)	5.04 (4.88 - 5.21)	4.94 (4.76 - 5.12)	
	succeeded (n = 1164)	4.27 (4.14 - 4.40)	4.86 (4.73 - 4.98)	4.83 (4.69 - 4.96)	
Alcohol consumption: AUDIT-C ^c	no attempt (n= 1074)	5.63 (5.37 - 5.90)	-	5.45 (5.22 - 5.68)	F _(2, 5478) = 132.83, p < .01
	failed (n = 503)	6.82 (6.37 - 7.27)	-	6.18 (5.76 - 6.59)	
	succeeded (n = 1164)	8.89 (8.65 - 9.12)	-	6.72 (6.37 - 7.07)	

Covariates: sex, age, education, income, ethnicity, baseline measures of all outcome variables, and other behaviour change in January

notes: a - 5-point scale; b - 7-point scale; c - 12-point scale; d - mean (95% Confidence Interval)