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Does bottle size and glass size influence how much wine people drink at home?

Submission date
12/10/2020

Recruitment status
No longer recruiting

Registration date
20/10/2020

Overall study status
Completed

Last Edited
02/09/2022

Condition category
Other

[X] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
Drinking too much alcohol can lead to the development of many health conditions, including some cancers and heart disease. One possible way of helping people reduce their alcohol consumption is to reduce the sizes of the containers – bottles and glasses – in which alcohol is sold and served. It is known that smaller bottles can help people drink less wine at home and smaller glasses help people drink less wine in restaurants, but there is uncertainty about how combining smaller bottles with smaller glasses affects how much wine people drink. The aim of this study is to find out whether drinking a fixed volume of wine in smaller versus standard bottle sizes using smaller versus larger glasses reduces consumption at home.

Who can participate?
Households in the UK that drink at least two standard bottles (75 cl) of wine a week

What does the study involve?
During each of two 14-day intervention periods, 238 households in the UK are requested to purchase a pre-set volume of wine – based on their baseline self-reported weekly consumption – in either 75 cl or 37.5 cl bottles, in a random order. Households order their wine online and intervention periods are separated by a 'usual behaviour' period lasting up to 3 weeks, to allow households to finish any remaining wine from their first order. Households also receive either small (290 ml) or large (350 ml) glasses, chosen at random, from which to drink the wine during both intervention periods. On days 7 and 14 of each of the two intervention periods, households are requested to send information regarding the date each bottle was opened and finished, and who drank from it, as well as photographs of all their study wine bottles and wine glasses, with each bottle weighed and photographed separately on study scales.

What are the possible benefits and risks of participating?
The findings of this study will provide the best estimate to date of the impact of bottle size and glass size, singly and in combination, on wine consumed at home. This study is considered to be low risk and no adverse consequences are expected.

Where is the study run from?
The Behaviour and Health Research Unit at the University of Cambridge (UK)

When is the study starting and how long is it expected to run for?
June 2020 to August 2021

Who is funding the study?
The Wellcome Trust (UK)

Who is the main contact?
Prof. Theresa Marteau
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Contact information

Type(s)
Scientific

Contact name
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Additional identifiers

Clinical Trials Information System (CTIS)
Nil known

ClinicalTrials.gov (NCT)
Nil known

Protocol serial number
Nil known

Study information

Scientific Title
Impact of bottle size and glass size on wine consumption at home

Study objectives
The aims of the proposed study are to assess the impact of wine bottle size and wine glass size, singly and in combination, on (a) volume of wine consumed at home and (b) rate of consumption.

The specific hypotheses are:
1. Less wine is consumed at home from smaller bottles than from larger bottles
2. Less wine is consumed at home from smaller glasses than from larger glasses
3. Less wine is consumed at home from smaller wine bottles using smaller wine glasses than from larger wine bottles using larger wine glasses

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 07/10/2020, University of Cambridge Psychology Research Ethics Committee (School of the Biological Sciences, 17 Mill Lane, Cambridge, CB2 1RX, UK; + 44 (0) 1223 766894; Cheryl.Torbett@admin.cam.ac.uk), ref: PRE.2020.098

Study design
Mixed between and within-subjects study, with glass size treated as a between-subjects factor and bottle size as a within-subjects factor

Primary study design
Interventional

Study type(s)
Prevention

Health condition(s) or problem(s) studied
Alcohol consumption

Interventions
General population households will be exposed to two interventions comprising i) two different bottles sizes (within-subjects factor), randomized in their order of presentation and separated by a 'usual behaviour' period, and ii) one of two different glass sizes (between-subjects factor).

Bottle size
The two conditions comprise purchasing a given quantity of wine, sub-divided into bottles of one of two different sizes:
1. 75 cl
2. 37.5 cl

Each of the two intervention periods will last two weeks (14 days), with an intervening 'usual behaviour' period of a maximum of three weeks, with exact duration determined by how long it takes each household to finish the wine ordered during the first intervention period.
During each of two 14-day intervention periods, participants will be requested to purchase online three weeks' worth of wine (based on their self-reported baseline consumption) in their allocated bottle size. The total volume of wine purchased will be the same across both intervention periods. In order to confirm they have ordered the appropriate wines (amount and size), participants will be requested to send a copy of the order to the research team.

Glass size
Households will also be randomised to receive either:
1. Small glasses (290 ml) or
2. Large glasses (350 ml) glasses

Wine purchased for the study will be drunk in one of two possible glass sizes. Both sizes of glass will be of the same design (Royal Leerdam Bouquet). Households will receive a set of glasses through the post – with the exact number depending on the number of wine drinkers within a household – to use when drinking any study wine.

Participants will be sent labels to stick on their study wine bottles to record the date each bottle was opened and finished, the number of people, including non-household members, who drank from each bottle, and the amount of non-study wine consumed at home. Participants will also be asked to rate their experience of drinking wine from each bottle size. They will be prompted to send close-up photographs (via email or WhatsApp) of all their labelled study wine bottles twice during each intervention period: at 7 days and 14 days after receipt of the study wine bottles. All bottles – whether unopened, partially full, or empty – will be photographed separately on provided study scales, so that both the label on the bottle and the number on the scales (i.e., the weight of the bottle) are clearly visible. Households will also be asked to send photographs of the wine glasses they used on days 7 and 14 of each intervention period.

Randomization to the order in which each wine in each bottle size is purchased (within-subject factor), as well as the glass size to use for the duration of the study (between-subjects factor), will occur in Qualtrics, an online survey platform, during the completion of a baseline online questionnaire.

Intervention Type
Behavioural

Primary outcome(s)
Current primary outcome measure as of 08/02/2021:

Volume of study wine consumed (in millilitres) during each intervention period for each bottle-glass size combination, estimated through returned photographs of all study wine bottles purchased.

Volumes consumed from opened bottles will be estimated from photographs of the bottles placed on study scales with their weights in grams visible (See the Procedure section for more details). Estimates will be based on the following procedures :
1. Estimating the weight of unopened bottles. This will be done by taking the median value of all estimates deriving from:
1.1. The weight of three of each bottle – unopened - on the study wine list (i.e. 66 bottles: 33 x 75cl and 33 x 37.5cl bottles) as measured unopened by an employee of the supplying wine merchant
1.2. The weight of unopened bottles as shown in submitted photographs by all participants
2. The average weight of 1ml of wine (0.994 grams) will be used to calculate the weight of empty bottles, i.e. by subtracting the weight of the liquid from the weight of the unopened bottle
3. The estimated weight of the empty bottle (measured without a top) will be subtracted from the weight of the partially full bottle (measured without a top) as observed in submitted photographs, to give an estimate of the weight of the consumed wine
4. The validity of the assumptions informing steps 1-3 above will be checked using four selected wines (two with highest and two with the lowest % ABV) in each of 75cl and 37.5cl bottle sizes, weighing both unopened (measured with a top) and empty bottles (measured without a top)

Primary analysis
Regression analysis will be used to predict wine consumption (in ml) at 14 days from each bottle

size with each glass size. Analyses will control for the following covariates:
1. In-home consumption of nonstudy wine (in millilitres) by the household during each of the two 14day intervention periods, assessed by selfreports on bottle labels
2. Use of non-study wine glasses assessed by photographs and self-report
3. Guest consumption of study wine (in millilitres) during each of the two 14day intervention periods, assessed by selfreports on bottle labels
4. Outofhome consumption (in millilitres) by household members during each intervention period, assessed by selfreport
5. Amount of other alcohol (non-wine) consumed (in millilitre) by household members in and outside the home, during each intervention period, assessed by self-report
6. Number of wine drinkers in the household
7. Duration (in days) of 'usual behaviour' period
8. Baseline consumption (in millilitres) of wine per week, selfreported
9. Price per litre of all ordered wine
10. Awareness of study aim, assessed in the endofstudy self-report questionnaire
11. Mitigating factors i.e. any noteworthy events or circumstances external to the study, self reported as having increased or decreased wine consumption during each intervention period

Measurements will be conducted on Day 7 and Day 14 of the first intervention period (i.e. 1 week and 2 weeks after the beginning of the study), as well as on Day 7 and Day 14 of the second intervention period (i.e. 3 weeks and 4 weeks after the beginning of the study; or 4 weeks and 5 weeks after the beginning of the study; or 5 weeks and 6 weeks after the beginning of the study or 6 weeks and 7 weeks after the beginning of the study, depending on the duration of the 'usual behaviour' period which will last a maximum of 3 weeks).

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Previous primary outcome measure:

Volume of study wine consumed (in millilitres) during each intervention period for each bottle-glass size combination, estimated through returned photographs of all study wine bottles purchased.

Amounts consumed from opened bottles will be estimated from photographs of the bottles being weighted on provided study scales. Estimates will be based on the following procedures:
1. Three of each of the bottles on the study wine list (i.e. 66 bottles: 33 x 75 cl and 33 x 37.5 cl bottles) will be weighed when full in advance of the study commencing. Any variations in the amount of liquid in the bottles of the same wine or the weight of the empty bottle will be reported, and the average value will be used in all study calculations.
2. The weight of 1cl of wine will be estimated and used to calculate the weight of the wine in any partially full bottle of either size.
3. The observed weight of the partially full bottle will be subtracted from the weight of the full bottle to give an estimate of the weight of the consumed wine.
4. The validity of the assumptions informing steps 1-3 above will be checked using four selected wines (those with the highest and lowest ABV) in each of 75 cl and 37.5 cl bottle sizes, weighing both full and empty bottles.

Primary analysis
Regression analysis will be used to predict wine consumption (in ml) at 14 days from each bottle size with each glass size. Analyses will control for the following covariates:
1. In-home consumption of nonstudy wine (in millilitres) by the household during each of the two 14day intervention periods, assessed by selfreports on bottle labels

2. Use of non-study wine glasses assessed by photographs and self-report
3. Guest consumption of study wine (in millilitres) during each of the two 14day intervention periods, assessed by selfreports on bottle labels
4. Outofhome consumption (in millilitres) by household members during each intervention period, assessed by selfreport
5. Amount of other alcohol (non-wine) consumed (in millilitre) by household members in and outside the home, during each intervention period, assessed by self-report
6. Number of wine drinkers in the household
7. Duration (in days) of 'usual behaviour' period
8. Baseline consumption (in millilitres) of wine per week, selfreported
9. Price per litre of all ordered wine
10. Awareness of study aim, assessed in the endofstudy self-report questionnaire
11. Mitigating factors i.e. any noteworthy events or circumstances external to the study, self reported as having increased or decreased wine consumption during each intervention period

Measurements will be conducted on Day 7 and Day 14 of the first intervention period (i.e. 1 week and 2 weeks after the beginning of the study), as well as on Day 7 and Day 14 of the second intervention period (i.e. 3 weeks and 4 weeks after the beginning of the study; or 4 weeks and 5 weeks after the beginning of the study; or 5 weeks and 6 weeks after the beginning of the study or 6 weeks and 7 weeks after the beginning of the study, depending on the duration of the 'usual behaviour' period which will last a maximum of 3 weeks).

Key secondary outcome(s))
The mean number of days taken to consume each 1.5 litres of wine during each intervention period with each bottle-glass size combination, estimated from the start and finish dates reported on submitted photographs.

Secondary analysis
Regression analysis will be used to predict the time taken (in days) to consume each unit of 1.5 litres of wine from each bottle size with each glass size. Analyses will control for all specified covariates.

Measurements will be conducted on Day 7 and Day 14 of the first intervention period (i.e. 1 week and 2 weeks after the beginning of the study), as well as on Day 7 and Day 14 of the second intervention period (i.e. 3 weeks and 4 weeks after the beginning of the study; or 4 weeks and 5 weeks after the beginning of the study; or 5 weeks and 6 weeks after the beginning of the study or 6 weeks and 7 weeks after the beginning of the study, depending on the duration of the 'usual behaviour' period which will last a maximum of 3 weeks).

Completion date
07/08/2021

Eligibility

Key inclusion criteria
Eligible households are those in which adult members meet the following criteria:
1. Self-report that they collectively drink at least 2 x 75 cl bottles of wine (1.5 litres) a week
2. Usually purchase wine online or are willing to purchase wine online
3. Are willing to consume wine(s) exclusively from the study wine list and order a total of approximately 6 weeks' worth of wine
4. Be prepared to drink all study wine (including both red and white) from the study wine glasses

5. Are in possession of a smartphone or similar device from which to send photographs of wine bottles and wine glasses
6. Do not take medications for which there is a recommendation against alcohol consumption
7. Are not pregnant or are planning on becoming pregnant during the study period
8. Do not have a history of becoming ill after alcohol consumption
9. Do not have a history of alcoholism or a serious mental illness (including paranoid and other psychotic disorders, bipolar disorders and schizoaffective disorders)

Participant type(s)
Healthy volunteer

Healthy volunteers allowed
No

Age group
Adult

Sex
All

Total final enrolment
260

Key exclusion criteria
Households with adult household members with the following characteristics will be excluded:
1. Self-report drinking less than 2 x 75cl bottles a week, at the household level
2. Take medications for which there is a recommendation against alcohol consumption
3. Have a history of becoming ill after alcohol consumption, requiring hospitalisation
4. Have a history of alcoholism or a serious mental illness (including paranoid and other psychotic disorders, bipolar disorders and schizoaffective disorders)
5. Are pregnant or plan on becoming pregnant during the study period

Date of first enrolment
30/10/2020

Date of final enrolment
10/06/2021

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
University of Cambridge
Behaviour and Health Research Unit
Institute of Public Health

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Robinson Way
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Sponsor information

Organisation
University of Cambridge

ROR
https://ror.org/013meh722

Funder(s)

Funder type
Research organisation

Funder Name
Wellcome Trust

Alternative Name(s)
Wellcome, WT

Funding Body Type
Private sector organisation

Funding Body Subtype
Trusts, charities, foundations (both public and private)

Location
United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan
Data will be made available on the Open Science Framework and will remain there with no plans to remove it. Requests for data should be made to Professor Theresa Marteau (tm388@medschl.cam.ac.uk) who will provide a link to the anonymised dataset.

IPD sharing plan summary

Stored in repository

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		18/07/2022	02/09/2022	Yes	No
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes