

TITLE: Predictors of Hazardous Drinking among home drinkers.

short running title: Hazardous drinking at home:

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ABSTRACT

Introduction and Aims: The United Kingdom has witnessed a shift from drinking in bars to drinking at home- to date this phenomenon has received little international attention. The aim of this study was to examine the predictors of Hazardous drinking (HD) levels when drinking at home. Design: An internet survey of university staff (n=488). **Methods:** Following an elimination process ($p \leq 0.05$) a regression analysis was conducting using AUDIT scores as cut-offs of ≥ 6 females, and ≥ 8 males, these are consistent with most international research. Results: There were 286 hazardous drinkers (HD) (181, females 63.3%) and (105 males 36.7%). The variables that predicted HD were female (OR=5.42 95% CI 1.87-15.66), younger age, greater frequency of consuming alcohol at home, preloading (drinking before going out), purchasing alcohol in an off licence and drinking alcohol at home because it is cheaper than drinking out. **Discussion and Conclusions:** These findings point to an interaction of gender, age purchasing patterns and motivations contributing to hazardous drinking at home and indicate further profitable areas of national and international research.

Key words: hazardous drinking, home drinking, reasons for drinking at home, predict factors

INTRODUCTION:

Despite the frequent portrayal of binge Britain (Plant and Plant 2006) in the media per capita alcohol consumption has been on a consistent downward trend since 2004 (Alcohol Policy UK 2009). However the alcohol-related culture in the UK has undergone some seismic shifts in the past 30-40 years. One of these has been the shift towards greater drinking away from licensed premises (Foster 2008).

One of the classic symbols of British drinking culture is the public house (Jennings 2011). However in reality the past thirty years have seen a shift away in the UK away from drinking in public houses, bars and restaurants to increasing drinking at home. Despite this there has been comparatively little literature in this area, the national and international and grey literature at the time was summarised by Foster and Ferguson (2012). Figure 1 shows data provided by the British Beer and Pub Association (BPPA) (Tettenborn M personal communication) showing the shifts in trends in different types of alcohol consumed and purchased as off-sales- i.e. alcohol purchased in supermarkets and off-licences rather than in public houses, bars, hotels and restaurants from 2000-2013. Wine consumption was the only beverage that remained constant over the period (from 88% to 89%.) On-sale consumption of all the other beverages decreased during that period: beer by 15%, cider by 11%, spirits by 7%, and beverages which were ready to drink (RTD) (mainly spirits mixed with a soft drink) by 23%. The BPPA data covers the United Kingdom however recent data from Scotland shows that there is now an increasing per capita consumption trend and that 74% of all alcohol consumed in Scotland was sold in supermarkets and off-licences (NHS Scotland 2016). Recent research from the

University of Sheffield has suggested different typologies of British drinking of the eight typologies; six are explicitly related to home drinking occasions; “heavy drinking at home with a partner”, “Light drinking at home with a family”, “Get-together at someone’s house”, “drinking at home alone”, “Mixed location heavy drinking” and “Light Drinking at home with a Partner” (Ally et al 2016).

Add figure 1 about here:

A recently published study has pointed to a narrowing internationally between alcohol consumption in men and women (Slade et al 2016). Press coverage in the UK when the paper was published pointed to different context in which men and women drink, in particular that drinking at home has become increasingly popular for women. (Spencer 2016) There are a number of factors implicated in this. There are difference between genders in their purchasing habits, there is a greater probability of men purchasing alcohol in bar, public house or restaurant but minimal between-gender difference in the probability of buying alcohol in a supermarket (Lader and Steel 2009). The most adverse impacts of alcohol are experienced by those with low incomes (Institute of Alcohol Studies 2013) but paradoxically greater disposable income is also a driver behind alcohol consumption. Those individuals who are employed are more likely to exceed the cut off points for sensible drinking (Department of Health 1995) than those defined as “economically inactive.” Home drinking is also associated with greater disposable income and there have been a number of newspaper articles focused on the “middle class drinking epidemic” and this is marked by an excessive level of alcohol consumed at home (Spencer (2015).

Most alcohol consumed at home is bought through large supermarkets and the purchase of wine as part of the routine shopping experience has been shown in

market research. Wine is a more popular beverage for women but it was described as a “compromise item” in Mintel (2010). This means that when shopping together men and women will tend to purchase wine but the beverage of choice for men is usually beers. Research currently suggests that the main motivations for the rise in home drinking are cost, convenience and relaxation (Foster et al 2010).

Foster et al (2015) have used some of the data reported in this paper to design and test a nine item web-delivered measure to assess the motivations that drive home drinking in adult populations; the Home Drinking in Adults Survey (HDAS). They discovered a two factor model: a) affective reasons for drinking at home, b) practical reasons for drinking at home.

This study reports data from a web based survey to examine home drinking (including items in the HDAS) delivered to a group of individuals working in a University in Southern England. It reports data concerning levels of alcohol consumption, motives for drinking, activities connected with home drinking and alcohol purchasing behaviour and thereafter how these are associated with the absence or presence of drinking hazardously. For the purposes of this study the cut off points for hazardous drinking (HD) based on AUDIT scores (Saunders et al 1993) is the internationally recognised cut-off which is AUDIT scores of 8 and above for men and 6 and above for women (Reinert and Allen 2007).

Methods:

This study presents data from a cross-sectional internet survey of employees (18+) from a University in the south of England who were recruited through the University address book. The web link was sent in batches of 100 and follow up emails were sent at one week and one month. In total 488 responded to the survey this equates

to a response rate of 26%. The relevant areas of investigation in the survey were a) demographic variables b) motivations for drinking at home, c) activities associated with drinking at home, and d) alcohol purchasing behaviour. In addition alcohol consumption was assessed using the AUDIT (Saunders et al 1993). The Alcohol Use Disorders Identification Test (AUDIT) is the “gold standard” of alcohol abuse screening tools. It assess drinking patterns during the past 12 months and takes about 10 minutes to complete. The AUDIT has 10 items; items 1-3 assess hazardous alcohol use, items 4-6 assess alcohol dependence symptoms and items 7–10 assesses harmful alcohol use. Scores range from 0-40. A cut-off score of 8 yielded sensitivities in the mid 0.90’s and specificities averaged in the 0.80’s. The cut-off point adopted for this study was AUDIT scores of 6 and above for female participants and scores of 8 and above for male participants.

Participant’s data on gender, age, living status, frequency of home drinking, alcohol purchasing habits and the “Drink at home” variable were collected. For the “With Entertainment variable” drinking alcohol whilst a) watching TV, b) DVD c) playing computer games and d) reading books or newspapers was collapsed to form one variable. Two measures were collapsed to form the “with food variable”, these were having alcohol with meals or accompanying a gathering such as a barbeque. The “affective reasons for drinking at home” (3 items) and “practical reasons for drinking at home” (5 items) were all derived from the HDAS (Foster et al 2015) and each item was scored on a 1-5 likert scale (strongly agree- strongly disagree). The variable “Prefer to drink at home” is included in the HDAS as a stand-alone item and is scored in the same way.

Data Analysis

Descriptive statistics were calculated using frequencies and percentages for categorical data and means and standard deviations for continuous data. Differences were assessed using t-tests for continuous data and chi-square tests for categorical data. Demographic characteristics of the sample are presented in Table 1. Table 2 describes the variables associated with non-hazardous drinking and hazardous drinking using the following cut-off scores; AUDIT scores of ≥ 8 for male and ≥ 6 for female. Odds ratios (OR) and 95% confidence intervals (95%CI) were calculated using a logistic regression analysis. Variables which were $p \leq 0.05$ in the univariate analyses were entered into backward stepwise binary logistic regression analyses to ascertain variables associated with HD.

RESULTS

Four hundred and fifty eight participants (93.8%) of the 488 participants that took part in the study were current drinkers and thus met the criteria for inclusion in this analysis. Demographic information of the sample is presented in Table 1. The majority were female (58.5%) and over half of the sample were aged 30 years or older (50.4%). Over a quarter of the sample reported living in a house with another adult and child (26.6%) and 36% reported living with a partner only.

Add table 1 about here

Male participants had the highest mean AUDIT scores (9.53, SD 4.56) and this was associated with age. Those participants in the age group of 18 to 20 years old had the highest mean AUDIT score (11.25, SD 6.27) whereas those participants in the

age group of 50 years or older had the lowest mean AUDIT score (5.50, SD 2.35). Participants living with friends had the highest mean AUDIT score (13.57, SD 6.83) followed by those living with parents (9.13, SD 3.70). Those participants living in households with children reported the lowest mean AUDIT score (7.15, SD 3.64) compared with other living status categories.

The association between gender, age and alcohol purchasing patterns

Gender was significantly related to purchasing alcohol in an off licence and buying alcohol for parties. Whilst purchasing alcohol from an off license was associated with male participants (55.8% and 44.2% male and female, respectively), purchasing alcohol for parties was associated with female participants (61.4% and 39.6% female and male, respectively) ($p < 0.05$). There was not a significant association between gender and purchasing alcohol in a supermarket. A greater proportion of participants aged 30 years old or below bought alcohol from an off-license than any other age group ($n = 62$, 80.5%, $n = 15$, 19.5%: $< 20-29$; $30 \rightarrow 50$) (Chi-Square= 48.2, $df = 4$, $p < 0.001$). All the other variables relating to age and alcohol purchasing patterns were $p > 0.4$.

Variables associated with non-HD and HD among home drinkers

Over half of participants (286/458, 62.4%) met criteria for hazardous drinking. The relationship between the study variables and HD is shown in table 2. Female participants were more likely than male participants to drink hazardously (63.3% female; 36.7% male). The likelihood of reporting HD decreased as an individual became older. Those participants living with friends were more likely to report HD than those living alone, while those participants living with a partner/other adult and children were less likely to report HD than those living alone. A significant proportion

of those living with parents or with friends met criteria for HD. The majority of those who met criteria for HD reported consuming alcohol at home at least 4 days to every day of the week (63.6%). HD at home was associated with watching television, playing DVDs or computer games or reading books, before going out (preloading), purchasing alcohol in an off-license, for home parties and as part of the weekly shopping. There were two affective reasons associated with HD at home, relaxation and convenience and three practical reasons, childcare, cost and not feeling comfortable when drinking out. This last item was scored very highly in both groups meaning that neither group was uncomfortable when drinking in pubs and bars as well as at home.

Add table 2 about here

Risk factors for hazardous drinking amongst home drinkers:

Variables that significant predicted HD in the multiple logistic regression models are presented in Table 3 entering those variables that were $p \leq 0.05$ in table 2. HD was predicted by gender (female participants were more than five times more likely than to drink hazardously, OR 5.42, 95%CI 1.87, 15.66), age (individuals in the 18-20 age group were more likely to drink at a hazardous level than all the other age groups), drinking 4 days or more at home, preloading and purchasing alcohol in an off license. Drinking alcohol at home because is cheaper also predicted HD.

Add table 3 about here

DISCUSSION

Despite the shift towards greater drinking at home this phenomenon has received little research attention. The largest study that has examined home drinking to date

(Holloway et al 2008) found that most participants felt that drinking at home was safe, whilst interviewees in Foster and Heyman (2013) were aware that it involved some form of calculated risk. To our knowledge this is the first study that has attempted to look at the predictors of hazardous drinking (HD) by mapping this to AUDIT scores. When the internationally recognised AUDIT cut-offs for HD of AUDIT (≥ 6 females, ≥ 8 males) were used females were 5.42 times as likely to be HD. Furthermore HD at home was associated with being younger, drinking more than 4-5 days per week, preloading, purchasing alcohol in an off-licence and because it is cheap. The United Kingdom has recently introduced identical sensible drinking cut-offs for males and females (Department of Health 2016) however no psychometric work has been undertaken concerning whether to change the AUDIT cut-offs in response to this has taken place and thus we have only tested HD with reference to the internationally accepted AUDIT cut-off points for adults 18-65.

Although males continue to drink more than females there is evidence from both the EU (Ahstrom et al 2009) and US (Keyes et al 2008) that this gap is narrowing.

Nayak and Kaskutas (2004) point to increasing HD patterns in US females 18-39 years which corresponds to 70% of the current sample. Foster and Ferguson (2014) reviewed the international literature on preloading (drinking before going out) and found that socialising and drinking as a reason for preloading was cited by middle-aged females (Holloway et al 2008) and graduates who were in the early stages of their working careers (Richie et al 2009). It is likely that home as a socialising space may be a driver of home drinking in general and for HD in females in particular and this is an area for further investigation. The finding that HD and alcohol consumption in general declines with age is consistent with much international literature (Moore et al 2005). Meier et al (2009) analysed data from the annual Expenditure and Food

Survey (EFS) (Office for National Statistics and Department for Environment Food and Rural Affairs 2008) and the General Household Survey (GHS) (Office of National Statistics: Social and Vital Statistics Division 2008) using 2007 data from the EFS the 2006 data from the GHS respectively; and this provides some explanation for the significant relationship between HD, gender and purchasing patterns. GHS data shows that females consume 79% of their alcohol as off sales compared to 52% males. Females over 25 prefer to consume wine (57%) and spirits (18%) whereas females under 25 prefer spirits and RTDs (50% in combination) in preference to wine (29%). As a result females tend to spend more per unit of alcohol than males especially when making on-trade purchases. Furthermore when the combined data was analysed females who drank moderately were particularly price sensitive and more likely to buy alcohol when it was cheaper. Younger men (18+- 29) were more likely to purchase alcohol from an off-licence and this suggests purchasing alcohol in this way may be a marker for HD and that interventions should be targeted at this group.

The capture rate of 26% is a little disappointing however research suggests that the average response for web based surveys is 30% (University of Texas 2016). Furthermore this is even lower when attempting to collect data concerning sensitive topics as is the case here. The findings relating to University staff may not be applicable to other groups, however the main reasons endorsed were cost, convenience and relaxation and these are consistent with other focus group findings from less affluent groups (Foster et al 2010). Childcare is likely to play an important role in the promotion or otherwise of home drinking. In our sample the majority did not have children thus future research should attempt to collect survey data from younger families with children. Similarly many of our sample were non-smokers so

we can make very few conclusions concerning how these findings relate to the extension of smoking ban to public houses and bars.

In conclusion, this is the first study that has attempted to look at the predictors of hazardous levels of home drinking using AUDIT scores. Previous research (e.g. (Foster and Heyman 2013) has indicated that individuals consider risk in terms of immediate impacts of intoxication such as being sick or falling over and discounted long term health risks. Our findings indicate HD at home is associated with gender, age, purchasing patterns and the price of alcohol and that future research needs to consider different aspects of alcohol culture rather than considering it as a homogenous entity (Ally et al 2016). Home drinking in adults in the UK is becoming increasingly prevalent and it is likely that this is not restricted to the UK. We suggest that this work should form the foundation for a larger study that also considers some of the possible harms that arise from home drinking that are not already assessed in the AUDIT. Furthermore it is possible that how home drinking and risk or otherwise is perceived is culturally determined and therefore we recommend national and international investigations to provide policy makers with information of to minimise the impact of hazardous drinking at home.

Acknowledgements

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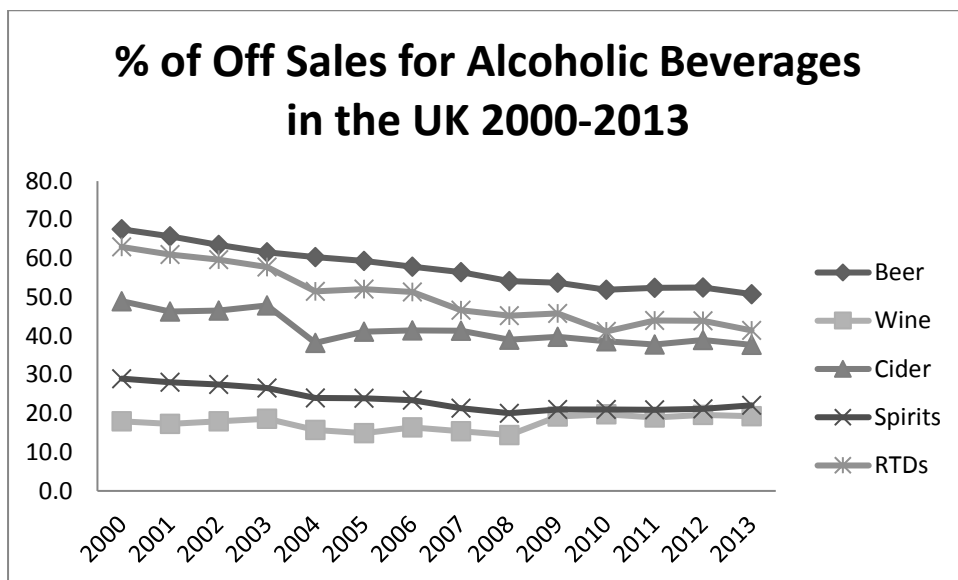
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Figure 1: Changes in UK Off Sales for Alcoholic Beverages 2000-2013



Data provided by the British Beer and Pub Association (Mark Tenttenborn, Personal Communication)

Table 1: Demographic characteristics of the sample and means and standards deviation of AUDIT total Scores:

Variable	Number (458)	Percentage	AUDIT Total Score Mean (SD)	p
Gender				0.107
Female	268	58.5	7.88 (5.37)	
Male	190	41.5	9.53 (4.56)	
Age				<0.001
<20	101	22.1	11.25 (6.27)	
20 – 29	126	27.5	9.13 (4.98)	
30 - 39	102	22.3	7.60 (3.85)	
40 – 49	95	20.7	7.12 (3.63)	
50 and over	34	7.4	5.50 (2.35)	
Living situation				<0.001
Alone	88	19.2	8.16(5.73)	
Partner only	165	36.0	8.52 (4.23)	
Partner/Other adult and children	122	26.6	7.15 (3.64)	
Parents	23	5.0	9.13 (3.70)	
Friends	42	9.2	13.57 (6.83)	

Table 2: Variables associated with hazardous drinking (AUDIT Scores Males > 8, Females > 6) amongst home drinkers.

Variables	Non-Hazardous (n=172)		Hazardous (n=286)		p	OR	95% CI
	No	%	No	%			
Demographic							
Gender							
Female	87	50.6	181	63.3	0.008	1.68	1.15-2.47
Male	85	49.4	105	36.7	0.008	0.59	0.40-0.87
Age							
< 20	18	10.5	83	29.0	<0.001	3.50	2.02-6.07
20-29	43	25.0	83	29.0	0.351	1.23	0.80-1.88
30-39	41	23.8	61	21.3	0.532	0.87	0.55-1.36
40-49	46	26.7	49	17.1	0.014	0.57	0.36-0.89
> 50	24	14.0	10	3.5	<0.001	0.22	0.10-4.07
Living Situation*							
Alone	39	22.7	46	16.1	0.082	0.66	0.41-1.06
Partner Only	104	60.5	162	56.6	0.493	0.86	0.58-1.27
Partner/Other adult and children	58	33.7	64	22.4	0.008	0.55	0.36-0.84
Parents	6	3.4	17	5.9	0.279	1.73	0.67-4.48
Friends	14	8.1	46	16.1	0.015	2.16	1.51-4.07
<i>Trends in home drinking</i>							
Drink at Home *							
Alone	46	26.7	143	50.0	<0.001	2.88	1.86-4.47
With Household	39	22.6	83	29.0	0.209	1.33	0.85-2.10
With Friends	126	73.3	227	79.4	0.211	1.47	0.80-2.68
With Meals	22	13.0	51	17.8	0.176	1.46	0.84-2.53
With Entertainment ¹	78	45.3	184	64.3	0.017	1.83	1.11-3.01
Preloading ²	2	< 1%	15	< 1%	0.038	4.30	0.97-19.14
Number of Days Alcohol Consumed at Home							
1 day or less	109	63.4	70	24.5	<0.001	0.19	0.12-0.28
2-3 days	26	15.1	35	12.2	0.372	0.78	0.45-1.35

4-5 days	36	20.9	159	55.6	<0.001	4.69	3.04-7.25
Almost/every day	1	< 1 %	23	8.4	0.001	14.9	1.99-111.34
Purchasing Patterns							
Off-Licence	9	5.2	68	23.8	<0.001	6.50	3.12-13.51
Part of weekly shopping	53	30.8	170	59.4	<0.001	4.26	1.47-12.33
For home Parties	141	82.0	252	88.1	0.004	3.99	2.57-6.19
<i>Reasons for Drinking at home</i>							
	Mean	SD	Mean	SD	p	OR	95% CI
Affective Reasons							
Helps to Relax	3.21	1.09	2.58	1.02	<0.001	0.58	0.48-0.69
It is convenient	2.86	0.98	2.58	1.02	0.004	0.76	0.63-0.92
It is Safer than going out	3.51	1.10	3.57	1.07	0.475	1.07	0.89-1.27
Practical Reasons							
Childcare Issues	1.32	1.84	0.83	1.50	0.002	0.84	0.75-0.94
Not comfortable drinking out	4.07	0.91	4.34	0.81	0.001	1.46	1.17-1.83
Difficult to Smoke in Licensed Premises	0.88	1.66	1.14	1.84	0.132	1.08	0.97-1.21
Cheaper than drinking out	3.02	1.11	2.67	1.15	0.001	0.76	0.65-0.90
Do not have to drink and drive.	2.02	1.81	1.60	1.58	0.170	0.91	0.81-1.03
Prefer Drinking at Home	3.03	0.97	3.05	0.96	0.803	1.02	0.84-1.24

Note: ¹with entertainment = drinking alcohol whilst watching TV, DVD, playing games, reading books;
²preloading = drinking at home before going out. * More than one response possible

Table 3: Factors associated with hazardous drinkers amongst home drinkers (n=458)

Variable	HD Cut- Off: AUDIT Females ≥ 6 , Males > 8	
	OR	95% CI
Gender (Reference Category Male = 0)	5.42**	1.87-15.66
Age (Reference Category 18-20 = 0)		
21-29	0.11**	0.02-0.60
30-39	0.09**	0.02-0.55
40-49	0.04***	0.01-0.25
50 +	0.03**	0.01-0.31
Frequency of alcohol consumed at home (Reference Category 1 day or less=0)		
4-5 days	22.01***	5.42-89.40
Almost/Everyday of the week	70.66 ***	5.14-971.36
Preloading	19.76 *	1.49-262.28
Purchasing Alcohol in an Off-Licence	6.88 *	1.21-39.02
Drink alcohol at home because it is Cheaper than drinking out.	1.59 *	1.01-2.51
R ²		0.58
Model Fit		0.663

$p \leq 0.05$ *, $p \leq 0.01$ **, $p \leq 0.001$ ***

Note: Nagelkerke R Square was used to test R² and Hosmer and Lemeshow Test to check the goodness of the model fit.

* There was no case of no-hazardous drinking amongst those who drinking at home almost/every days of the week.

¹ Variables entered were gender; age; living status; drink at home: alone, with entertainment; preloading; frequency of alcohol consume at home per week; alcohol purchase: off-licence, for home parties, as part of weekly shopping; drink at home to relax, drink at home because it is convenient; drink at home because of childcare issues; drink at home because is not comfortable drinking out; drink at home because is cheaper than drinking out.

