Differential impact of the economic recession on alcohol use among white British adults, 2004–2010

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Background: Unlike other west European countries, there is a long-term trend of rising alcohol consumption and mortality in England. Whether drinking will rise or fall during the current recession is widely debated. We examined how the recession affected alcohol use in adults in England using individual-level data. Methods: We analysed a nationally representative sample of non-institutionalized white persons aged 20–60 years from seven waves of the Health Survey for England, 2004–2010 (n = 36 525), to assess trends in alcohol use and frequency before, during and after the recession and in association with unemployment, correcting for possible changes in sample composition and socio-demographic confounders. The primary analysis compared 2006/7 with 2008/9, following the official onset of the UK recession in early 2008. Results: During England’s recession, there was a significant decrease in frequent drinking defined as drinking four or more days in the past week (27.1% in 2006 to 23.9% in 2009, P < 0.001), the number of units of alcohol imbibed on the heaviest drinking day (P < 0.01) and the number of days that individuals reported drinking over the past seven days (P < 0.01). However, among current drinkers who were unemployed there was a significantly elevated risk of binge drinking in 2009 and 2010 (odds ratio = 1.64, 95% confidence interval: 1.22–2.19, P = 0.001) that was not previously observed in 2004–2008 (1.03, 0.76–1.41; test for effect heterogeneity: P = 0.036). Conclusions: England’s recession was associated with less hazardous drinking among the population overall, but with rises in binge drinking among a smaller high-risk group of unemployed drinkers.

Introduction

There is a commonly held belief that alcohol consumption will rise during hard economic times. As Time Magazine reports 'When the going gets tough, the tough go drinking'.1 Gallup Polls indicate a rise in drinking in the USA during the recent economic recession, reaching the highest levels of alcohol consumption since 1985. The most recent evidence from the USA has found that a declining economy and job losses are associated with excessive drinking behaviours, drink-driving and alcohol dependence.2 Similarly, a study of adults in Spain attending primary care centres in 2006 and 2010, before and after the current economic crisis, found a 10-fold rise in diagnoses of alcohol abuse.3 These findings are consistent with the view that people may seek to ‘ease the pain’ of recession by self-medicating with alcohol (a so-called ‘provocation hypothesis’).2,4,5

Yet, in England, historical evidence suggests that alcohol consumption will fall in times of recession.6–8 As people lose jobs in recessions, they have less disposable income to spend on alcohol. One study of the UK recession between 1979 and 1982 found that per capita alcohol consumption dropped by 11%, following by a 4% fall in cirrhosis mortality, a 7% fall in drink-driving convictions and a 19% reduction in hospital admissions for alcohol dependence.9 There are few data to indicate what is happening in England in the current economic crisis. Recent data from the Office of National Statistics suggest an overall reduction in alcohol consumption, reporting a 6% decline in 2009,10 leading Appleby to suggest that recession had a ‘sobering effect’ in the UK.11 Similar patterns were observed in recently released US National Institute of Alcohol Abuse and Alcoholism data.12 However, such aggregate statistics have several weaknesses. First, they fail to capture smuggled and illegally produced alcohol, despite evidence that the latter is a growing problem.13 Second, the overall reduction may mask increases in some groups that are counterbalanced by declines among others. Third, there may be changes in the pattern of drinking: specifically, people might drink on fewer days but drink more on a single occasion, with corresponding risks to health. One high-risk group is the unemployed, both those who have lost jobs and those longer-term unemployed, who face exceptional difficulties in times of recession.

The implications of recession for drinking behaviour have particular policy relevance in the UK, given the current debate on minimum alcohol pricing.14 Annual per capita alcohol consumption and alcohol-related mortality in the UK had been rising before the recession at a time when it had been falling in many of its neighbours15 (figure 1); although these have fallen overall in the past couple of years, hospital admissions for alcohol-related causes continue to rise.16 As the former Chief Medical Officer has put it, ‘Quite simply, England is drinking far too much. England has an alcohol problem’ and, ‘cheap alcohol is killing us as never before’. A 2010 analysis by the National Statistics Office estimates that UK households spent about £15 billion on alcoholic drinks (about 3% of the UK’s entire economy).17,18 In light of ongoing reforms to alcohol abuse prevention and treatment policies in England,
government agencies have called for specific research to determine on whom to concentrate alcohol abuse prevention programmes, particularly considering falling budgets that threaten existing prevention programmes.\(^1^9\)

In this study, we investigated trends in alcohol consumption, levels and frequency using recently available data from the Health Survey of England (HSE), a representative sample of households in England, covering pre- and post-crisis years.

**Data and Methods**

**Health Survey for England**

We collected data from seven repeated, annual cross-sectional surveys (2004, 2005, 2006, 2007, 2008, 2009 and 2010) of adults participating in the HSE (http://discover.ukdataservice.ac.uk/series/?sn=2000021). Details are described elsewhere,\(^2^0^\text{–}^2^2\); briefly, once selected, primary sampling units were randomly allocated to the 12 months of each year so that each quarter provides a nationally representative sample. Adults in the selected households were asked questions about general health, alcohol consumption, smoking and other health and lifestyle-related behaviours. Supplementary table S1 reports the household and adult response rates for each survey wave.

In total, there were 102,773 respondents in the HSE 2004–2010 waves (figure 2). To isolate the effect of the recession beyond common statistical risk adjustment, we restricted our sample population to people of working ages 20–60 years (\(n=40,990\)). Due to substantial differences in drinking behaviour among ethnic minorities in England for cultural or religious reasons, we further limited the analysis to people reporting white ethnicity, who were principally of UK origin, although our results were qualitatively similar using the full sample (\(n=36,659\)). We further excluded 134 respondents due to missing alcohol data, leaving a final analytic sample of 36,525 respondents across the seven waves of the HSE. The flow chart in figure 2 summarizes the sample inclusion criteria.

![Flow diagram to analytic dataset](https://academic.oup.com/eurpub/article-abstract/24/3/410/475353/19March2019)

**Figure 1** Annualized litres of pure alcohol consumed per capita, 1997–2009. Source: WHO Global Health Observatory Data Repository (http://apps.who.int/ghodatadep/). Data represent the recorded adult (15+ years) per capita consumption of pure alcohol. See website for further details.
Alcohol measures

Information on drinking alcohol was obtained by computer-aided personal interviewing for those aged ≥25 years, and by computer-aided personal interviewing or self-completion questionnaire, at the interviewer’s discretion, for those aged 18–24 years. Measures of the level and frequency of alcohol intake were derived from self-report following published methodological guidelines: frequency (whether an individual drank in past 12 months or week and number of drinking days in the past week), level (number of alcohol units drunk on the heaviest drinking day in the past 7 days, among those who had drunk alcohol at least once in that week) and binge drinking (whether men or women had drunk more than eight or six units, respectively, on the heaviest drinking day during the past 7 days) following the definitions in the National Health Service alcohol harm-reduction strategy.

Statistical models

We chose 2006 and 2007 as our pre-recession years and 2008, 2009 and 2010 as the short- (2008/9) and long-term (2010) post-recession years. Data from the 2004 and 2005 waves were used to depict the long-term trends in alcohol consumption before the pre-recession years. In the first step of the analysis, unadjusted annual and quarterly trends in alcoholic consumption were modelled. Next, we examined adjusted trends among the population and limited to only those who reported drinking in the past 7 days using indicators for each survey year. Thereafter, overall trends in alcohol use during the recession were modelled using an indicator (dummy) variable to estimate changes before the recession (2006/7) and after (2008/9 or 2008/9/10), following the UK Office of National Statistics dating of the start of the recession to 2008.

The adjusted regression models included known confounders including age, gender, equivalized household income, educational attainment (using both an overall dummy variable and categorical variables), urban/rural residence (as well as regional indicators), an indicator for marital status/cohabitation, tobacco use, and pregnancy status among women. In a second step of analysis, we sought to identify who was affected by the recession-related labour market changes and evaluate the associations of drinking with being unemployed (defined as out of a job but looking for work) using statistical models among labour market participants.

Previous research has shown that region of residence as compared with urban/rural residence might have a poor association with alcohol consumption in England. The substitution of regional indicators (East Midlands, West Midlands, East of England, London, North East, North West, South East, South West and Yorkshire and the Humber) for urban/rural residence did not impact the effect size, direction or significance of our results. An indicator for urban/rural residence (serving as fixed effects) is used for the final models shown in the article to achieve model parsimony and to retain degrees of freedom.

We did not transform variables from their original units, although at times, this would have resulted in an improved model fit. However, we did not find these interpretations informative, as we were specifically interested in the actual changes of each outcome at specific levels of the vector of confounders, such as unemployed vs. employed status. Binge drinking is examined using logistic regression and linear probability models. Patterns of total alcoholic units (0–127.4) consumed in the past seven days is estimated using an ordinary least squares (OLS; linear regression) and a quantile regression at the 25th, 50th and 75th percentiles. The number of days an individual drank in the past seven days can be considered a rate and was examined for similar estimates using Poisson and OLS regression models.

As this is an observational study, the post-recession and control, or pre-recession, groups may have differences on their observed covariates, and these differences can lead to biased estimates of the impact of the recession on alcohol consumption, levels and frequency. Thus, we estimated a propensity score, or the conditional probability of being exposed to the post-recession period given the covariates listed earlier to complement our primary covariate adjusted analyses. As we were specifically interested in the trends among specific covariates, propensity scores were not our primary models and were estimated to explore population-adjusted trends only.

All statistical analyses were performed with STATA Mac 12.1, clustering standard errors by sample weights to account for sampling design and survey year.

Results

Trends in alcohol use rates, levels and frequency in the UK recession

Figure 3 reports the unadjusted trends in any drinking and binge drinking of the white working-age survey participants by quarter from 2004 to 2010. The unadjusted quarterly trends for all of the outcomes are included in Supplementary table S2. Table 1 reports the unadjusted year trends among our sample. Unadjusted rates of drinking start to decline, but do not differ statistically until 2010 (P = 0.018). Compared with 2006/7, there was a significant decrease in frequent drinking from 28.5 to 26.5% (P < 0.001) in 2008/9. The rate of binge drinking began to drop in 2008/9 (P = 0.099) and then accelerated in 2010 (P = 0.003).

Supplementary figure S1 shows differing patterns before and after the recession: drinking 6–7 days per week tended to decline, whereas drinking 1–2 days per week increased. These results were consistent, and at times stronger, once we stratified by gender (table 1) or adjusted for potential socio-demographic confounders and survey changes (Supplementary tables S3 and S4).

When constraining the sample to those who reported drinking in the past week, we observe robust declines in the number of days during the past 7 days that an individual drank, drinking on 4 or more days of the past 7 days, binge drinking, and the total units of alcohol consumed on the heaviest drinking day in the past 7 days. These trends continue into 2010 (Supplementary tables S3 and S4).

Association of unemployment with alcohol use

These overall population results may mask significant trends within high-risk groups of unemployed persons affected by the recession.
Table 1 Unadjusted trends in alcohol use, 2004–2010

<table>
<thead>
<tr>
<th>Year</th>
<th>n</th>
<th>% of total sample</th>
<th>% drank during the past 12 months</th>
<th>% drank during the past 7 days</th>
<th>Number of days during the past 7 days that an individual drank (0–7)</th>
<th>% individuals that drank on 4 or more of the past 7 days</th>
<th>% bingeing in past 7 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>3953</td>
<td>11</td>
<td>93.9 (93.1, 94.7)</td>
<td>74.9 (73.5, 76.3)</td>
<td>2.47 (2.40, 2.55)</td>
<td>28.1 (26.7, 29.6)</td>
<td>36.4 (34.8, 38.0)</td>
</tr>
<tr>
<td>2005</td>
<td>4592</td>
<td>13</td>
<td>94.2 (93.5, 94.9)</td>
<td>75.1 (73.8, 76.4)</td>
<td>2.51 (2.44, 2.58)</td>
<td>30.0 (28.6, 31.4)</td>
<td>36.6 (35.2, 38.1)</td>
</tr>
<tr>
<td>2006</td>
<td>8216</td>
<td>23</td>
<td>93.8 (93.3, 94.3)</td>
<td>74.0 (73.0, 74.9)</td>
<td>2.38 (2.33, 2.43)</td>
<td>27.1 (26.1, 28.1)</td>
<td>34.5 (33.5, 35.6)</td>
</tr>
<tr>
<td>2007</td>
<td>3897</td>
<td>11</td>
<td>93.1 (92.3, 93.9)</td>
<td>73.4 (71.9, 74.8)</td>
<td>2.32 (2.25, 2.40)</td>
<td>25.9 (24.5, 27.3)</td>
<td>34.3 (32.8, 35.9)</td>
</tr>
<tr>
<td>2008</td>
<td>8617</td>
<td>24</td>
<td>93.5 (93.0, 94.0)</td>
<td>73.6 (72.6, 74.5)</td>
<td>2.27 (2.22, 2.31)</td>
<td>25.0 (24.1, 25.9)</td>
<td>33.2 (32.2, 34.3)</td>
</tr>
<tr>
<td>2009</td>
<td>2559</td>
<td>7</td>
<td>93.2 (92.2, 94.2)</td>
<td>73.0 (71.2, 74.8)</td>
<td>2.23 (2.15, 2.32)</td>
<td>23.9 (22.2, 25.6)</td>
<td>33.6 (31.6, 35.5)</td>
</tr>
<tr>
<td>2010</td>
<td>4688</td>
<td>13</td>
<td>92.4 (91.6, 93.2)</td>
<td>70.1 (68.7, 71.5)</td>
<td>2.08 (2.02, 2.14)</td>
<td>21.5 (20.2, 22.7)</td>
<td>31.3 (29.8, 32.7)</td>
</tr>
</tbody>
</table>

Table 2 Adjusted associations with binge drinking among labour market participants, 2004–2010

<table>
<thead>
<tr>
<th>Pre-recession years</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unemployed (0.65, 1.56)</td>
<td>1.00</td>
<td>1.51</td>
<td>1.17</td>
<td>1.16</td>
</tr>
<tr>
<td>Income decile</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
<td>1.04**</td>
</tr>
<tr>
<td>Urban residence</td>
<td>1.26*</td>
<td>1.39***</td>
<td>1.13</td>
<td>1.02</td>
</tr>
<tr>
<td>History of smoking</td>
<td>1.88***</td>
<td>1.82***</td>
<td>1.72***</td>
<td>1.49***</td>
</tr>
<tr>
<td>Number of individuals</td>
<td>2462</td>
<td>2846</td>
<td>5004</td>
<td>2388</td>
</tr>
</tbody>
</table>

Models additionally adjust for age, season, sex, educational attainment, currently married/cohabitating or divorced/single/widowed/ or separated. The OR for the period of 2009 and 2010 (OR = 1.64, 95% CI: 1.22–2.19, P = 0.001) differed from 2004–2008 (1.03, 0.76–1.41; test for effect heterogeneity: P = 0.036).

Exponentiated coefficients; 95% CIs in parentheses. *P < 0.05, **P < 0.01, ***P < 0.001.

Table 2 presents results of statistical models investigating associations with binge drinking among labour market participants for each of the seven survey waves. Lower income was associated with a lower risk of binge drinking. Among current drinkers, urban smokers and persons who were unemployed during the crisis had a significantly greater risk of binge drinking in 2009 [odds ratio (OR) = 1.64, 95% confidence interval (CI): 1.02–2.65, P = 0.042] and 2010 (OR = 1.61, 95% CI: 1.11–2.33, P = 0.011). The OR for the period of 2009/10 (OR = 1.64, 95% CI: 1.22–2.19, P = 0.001) differed from 2004–2008 (1.03, 0.76–1.41; test for effect heterogeneity: P = 0.036). These results remained when we further adjusted for seasonality.

Sensitivity analyses

We conducted a series of sensitivity analyses. First, we estimated regressions with year dummies rather than stratifying by period and/or post-recession, showing the same negative trends. Further, we included year dummies along with pre/post-recession indicators to further adjust for time trends. Additionally, we estimated our primary regressions shown in table 1 and Supplementary table S3 using propensity score adjustment in contrast to covariate adjustment (Supplementary table S4). The propensity scores (covariate distribution) were almost identical before and during the recession (Supplementary figure S2) and the results (Supplementary table S4) align with our results discussed earlier. To examine the impact of model specification, the number of units of alcohol on the heaviest drinking day in the previous week among those who drank in the previous 7 days was estimated with a quantile regression that showed the same negative effect during the recession at the 25th, 50th and 75th percentiles (not shown). Additionally, the decline in the number of days that individuals reported drinking over the past 7 days was robust to negative binomial, Poisson and OLS model specifications.
Discussion

Our analysis identified a differential impact of the 2008–2009 recession on alcohol consumption in England that extended into 2010. There were significant reductions in the frequency of drinking in the general population, but significantly greater risks of binge drinking among a smaller high-risk group of unemployed drinkers. No significant change was observed in the level of alcohol consumption among the overall population.

Our study has several limitations that need to be considered. First, as our data are cross-sectional, causative statements between recession and drinking behaviours must be tempered until longitudinal data analyses can be examined. Second, the data are based on self-report, which may be subject to recall and social desirability biases that would understate alcohol consumption, particularly among higher-risk groups. However, this would tend to bias our findings in a conservative direction. Third, the smaller sample size may have limited statistical power to identify effects on vulnerable groups. Given limited numbers of unemployed persons in the most recent survey wave, it was not possible to stratify further to identify differential responses and isolate effects of the duration of unemployment. Future research is needed to better understand the heterogeneous drinking patterns that appear to result from a common economic shock (i.e. resilience), with a focus on youth drinkers. Additionally, it is possible that those who were solicited but did not participate in the HSE differ from those who did participate and were analysed. Finally, we focused on the large recessionary years of 2007–2009, which precede the implementation of budget cuts and other austerity policies in 2010 in the UK. However, the positive impact of the recession on drinking appears to continue into 2010.

By evaluating differing groups, we found patterns that corroborate previous analyses suggesting drinking falls in recessions as well as those suggesting drinking rises in recessions: this depended on the subgroup studied and the outcome variable examined. Here, we report that heavy drinking tends to be ‘counter-cyclical’ among persons who were unemployed in the UK. Our findings are also consistent with research using data from the National Epidemiological Survey on Alcohol and Related Conditions, which suggests that stress leads individuals to substitute frequency of drinking with larger quantities of alcohol on the reduced number of days when they can/do drink.

How to tailor approaches to hazardous drinking to those who have lost jobs is not well-understood. For policy, our findings of differential responses to changing affordability of alcohol emphasize the need to assess the distribution of benefits of the proposed policies for minimum pricing of alcohol in Scotland and England, given that some high-risk groups (such as the unemployed) may be less sensitive to price while being more susceptible to stressors. Future research is needed to understand whether and how other evidence-based measures such as brief interventions by primary care physicians during recessions and/or expanding active labour market programmes to support job-searches and reintegration may help mitigate alcohol-related risks of economic downturns.

Supplementary data

Supplementary data are available at EURPUB online.

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Conflicts of interest: None declared.

Key points

- During England’s 2008–2010 economic recession, the majority of persons drank less, and drank less frequently, but a smaller, high-risk group of unemployed drinkers was more likely to binge drink.
- At the aggregate level, these two trends cancelled each other out so no significant change was observed.
- There is a need to better understand the differential impacts of alcohol policies and socio-economic changes on both the general population and high-risk groups.

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The evolution of mental health in Spain during the economic crisis

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We analyse how mental health and socioeconomic inequalities in the Spanish population aged 16–64 years have changed between 2006–2007 and 2011–2012. We observed an increase in the prevalence of poor mental health among men (prevalence ratio = 1.15, 95% CI 1.04–1.26), especially among those aged 35–54 years, those with primary and secondary education, those from semi-qualified social classes and among breadwinners. None of these associations remained after adjusting for working status. The relative index of inequality by social class increased for men from 1.02 to 1.08 (P = 0.001). We observed a slight decrease in the prevalence of poor mental health among women (prevalence ratio = 0.92, 95% CI 0.87–0.98), without any significant change in health inequality.

Introduction

Most European countries have been in recession since 2008, with Spain standing out as one of the most seriously hit in economic terms, especially with regard to unemployment, which is a well-known risk factor for psychological morbidity. A small number of studies, several of which were based in other Mediterranean countries, have investigated the health effects of the recession. For example, Greece appears to have suffered an increase in suicide rates and a deterioration in self-perceived health status. In Spain, the evidence on this issue to date is limited to one study that highlighted an increase in suicide rates in working-age men and a second study that indicated a substantial increase in the prevalence of most types of mental health disorders among primary care attendees between 2006–2007 and 2010–2011, with unemployment, mortgage payment difficulties and evictions emerging as major risk factors, especially for depression. In the present study, we add to evidence of the recession’s effects on mental health outcomes in Spain. Importantly, we present evidence not only on average health effects in the population but also on changes in socioeconomic inequalities in health, an aspect of research on economic fluctuations and health that has largely been neglected to date.

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Short Report

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Methods

We undertook a before-and-after study with control variables, using data from the 2006–2007 and 2011–2012 rounds of the Spanish National Health Survey, a representative cross-sectional survey of the non-institutionalized Spanish population. Data were collected