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Patterns and determinants of alcohol consumption in people aged 75 years and older: results from the MRC trial of assessment and management of older people in the community

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Abstract

Background: very little work on alcohol consumption patterns in older people has been undertaken. As a result, knowledge about the prevalence and characteristics of regular drinkers and heavy drinkers in this age group remains limited.
Objective: to determine the socio-economic and health characteristics associated with different levels of alcohol intake in older people.
Design: detailed screening of patients in one arm of a cluster randomised trial.
Setting: 53 UK general practices drawn from the Medical Research Council General Practice Research Framework.
Subjects: all patients aged 75 and over on the GP lists (excluding those in nursing homes or other long stay care) were invited to participate in the study. Of the 15,358 people who received a detailed assessment in the 'universal' arm, 14,962 (97%) of these answered questions on alcohol consumption. Of these, 62% were female and the median age was 80.3 years.
Methods: associations between reported alcohol intake and various socio-economic and health variables were investigated, first in univariate analyses and then controlling for other variables in logistic regression models.

Results: 5% of men and 2.5% of women exceeded the Royal College of Physicians, Psychiatrists and General Practitioners' recommended drinking limits of 21 and 14 units a week respectively; 17% of subjects had never had a drink. Women and the very elderly were less likely to be drinkers. Those that drank were more likely to be people who still had a fairly active and sociable lifestyle, and with a better self-perceived health status compared with non-drinkers. Moderate drinkers were also less likely to be severely cognitively impaired compared with non-drinkers: adjusted odds ratio 0.69 (95% CI 0.57, 0.85); but more likely to report symptoms of anxiety: 1.31 (1.07, 1.61).
Conclusions: our results suggest that moderate alcohol consumption is associated with relative financial security and good health with the exception of higher levels of anxiety amongst drinkers.

Keywords: *alcohol, older people*

Introduction

Despite the strong body of research on alcohol consumption patterns in young and middle-aged people, very little work on older people (especially those aged 75 years or more) has been undertaken. As a result, knowledge about the characteristics of drinkers and heavy drinkers in this age group remains limited.

Generally the prevalence of alcohol consumption and alcohol abuse decreases with age, and the proportion of non-drinkers increases. The reasons for this decline in consumption are connected to changes in life circumstances and attitudes, and because of increasing ill health [1].

The Royal Colleges of Physicians, Psychiatrists and General Practitioners advise men and women to drink less than 21 and 14 units a week respectively [2]. However, it is questionable whether these 'safe' drinking limits are appropriate for older people, as they are based on evidence relating to younger age groups. Tolerance to alcohol is significantly lowered in older people so it is possible that the same amount of alcohol can have a more detrimental effect than it would on a younger person. Despite this, a recent meta-analysis demonstrated that the level of alcohol intake at which risk of death is lowest increases with age, reaching 3 units a week in women aged over 65 and 8 units a week in men over 65 [3]. This is because the beneficial effects in preventing ischaemic heart disease appear to outweigh any adverse problems.

Older heavy drinkers have a history of either excessive consumption over a period of 40 or 50 years, or moderate consumption which increases at times of strain [4, 5]. These patterns of drinking in older people are often related to loneliness, loss of spouse, disabling illness and isolation [6, 7]. Many older patients take prescribed medications, including those for anxiety, depression and insomnia [7, 8]. Alcohol can interact with these medications with adverse consequences. The effects of heavy drinking can also be obscured by presentations with health complications such as gastrointestinal problems and insomnia, or misdiagnosed as dementia or depression. Alcohol can also affect attention, balance and sphincter control in older people more so than in younger people [7].

Health problems due to alcohol in older people are often difficult to diagnose, especially since they may be attributed to old age, and screening questions such as those on the CAGE questionnaire are less reliable in older people [9]. Furthermore, due to the large demographic expansion of this age-group of the population expected in the near future, heavy drinking in older people could become a significant public health problem.

This paper reports on the socio-economic and health characteristics associated with high alcohol intake in a large representative sample of UK adults aged 75 and over.

Methods

The MRC Trial of the Assessment and Management of Older People in the community is a cluster randomised trial investigating different approaches to multidimensional screening for people 75 years of age and over with randomisation by practice [10]. One hundred and six general practices took part, drawn from the Medical Research Council General Practice Research Framework, and stratified to provide a representative sample of the mortality experience (Standardised Mortality Ratio) and deprivation (Jarman Score) of general practices within the UK. The practices were recruited from different geographical regions of the UK covering England, Wales and Scotland. In each practice, all patients aged 75 years and over were invited to take part excluding those in long-term care or with a terminal disease. The trial consisted of two arms. In the 'universal' arm, all participants received a brief health screen followed by a more detailed screen. This more detailed screen, undertaken by a research nurse, included a wide range of physical, psychological and social measures. In the other arm of the trial, the 'targeted' arm, administration of the detailed screen was reserved for those patients scoring above a defined threshold for type or number of problems. These people are therefore a selected group and unrepresentative. Only those in the 'universal' arm are included in this descriptive analysis because they are a random sample of half of the study participants. One hundred and six practices were randomised so that 53 practices entered the 'universal' arm. The data were collected between 1995 and 1999 and all aspects of the study were approved by relevant ethics committees.

As part of the detailed screening, participants were asked the following question 'During the last year have you taken an alcoholic drink?'. Those subjects that responded no were then asked 'Have you always been a non-drinker or did you stop drinking for some reason?'. Those subjects that responded yes to the original question were asked 'During the past week how many drinks have you had of each of the following?:

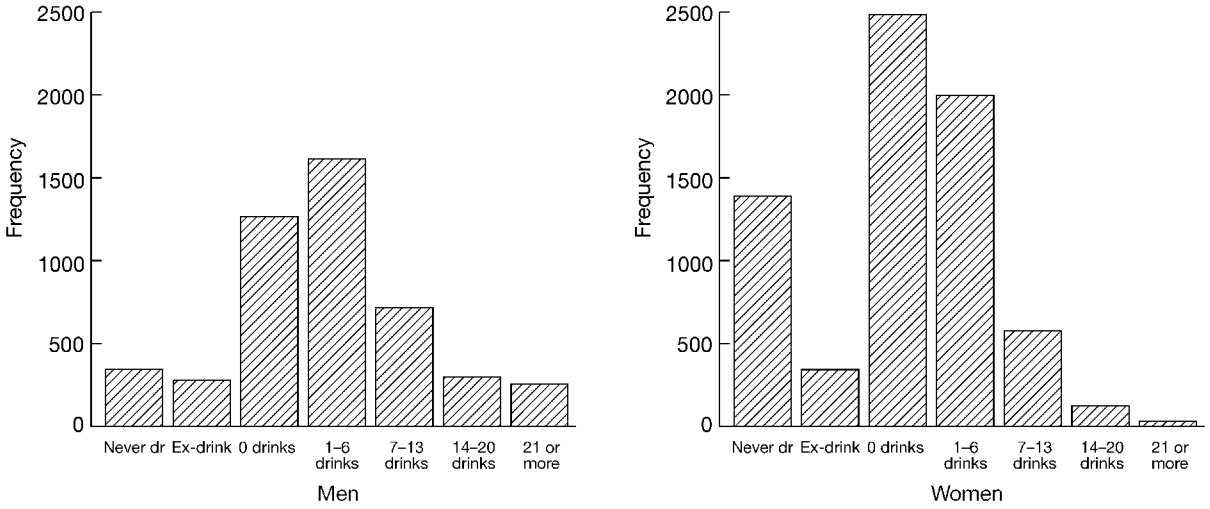

Figure 1. Frequency distribution of alcohol intake in past week by sex.

(1) Spirits – number of singles; (2) Wine, Sherry or Port – number of glasses; (3) Beer – number of half pints'. In the first instance, responders were classified as never drinkers, ex-drinkers, or for usual drinkers: 0 drinks in past week, 1–6 drinks, 7–13 drinks, 14–20 drinks, or 21 or more drinks in the past week. The groupings take into account the 'safe limits' recommended by the Royal Colleges of Physicians, Psychiatrists and General Practitioners, namely 21 units for men and 14 units for women per week [2]. Here, one drink represents one unit and is equivalent to 10 grams of alcohol.

Data concerning various socio-demographic, economic and health measures were available from the 'universal' screen. These included self-reported smoking status, presence of confiding relationships, anxiety [11], and depression as measured by the GDS-15 score [12]. Postcodes were used to assign to each individual a Carstairs score of social deprivation for the enumeration district in which he or she lived. An enumeration district on average contains 140 households and is the smallest area for which census data are available [13]. The Carstairs score is an index of deprivation based on four variables available from the 1991 census: overcrowding, social class of head of household, car ownership and unemployment [14]. The distribution of the scores was banded into quartiles, with the first quartile denoting the least deprived and the fourth quartile the most deprived.

Associations between alcohol intake and various independent variables were then investigated, first in univariate analyses, and then controlling for other variables in logistic regression models. The stratified cluster sampling within the trial required consideration in the analysis. Individuals within practices are likely to be more similar to each other than individuals from different practices. If the sampling method is ignored, the standard errors are underestimated. All confidence intervals were therefore weighted for the cluster design. All analyses were conducted using Stata 7 [15].

Results

Of the 15,358 people who received a detailed assessment in the 'universal' arm, 14,962 (97%) responded to the questions about drinking habits. Of these, 62% were female and the median age was 80.3 years.

Figure 1 shows the frequency distribution of drinking among the 14,962 responders to drinking habits by sex. As would be expected, a higher proportion of women than men were never drinkers, whereas the heavy drinkers tended to be male. Overall, about 10% of the cohort drank between 7 and 13 drinks in the week, and very few people drank more than this. Only 5% of males and 2.5% of women exceeded the Royal Colleges of Physicians, Psychiatrists and General Practitioners recommended weekly drinking limits. All subsequent analyses were conducted on the following alcohol intake groupings: never drinker ($n = 2{,}532$, 16.9%); ex-drinker ($n = 908$, 6.1%); moderate, i.e. under weekly drinking limit ($n = 11{,}008$, 73.6%); and heavy, i.e. over weekly drinking limit ($n = 514$, 3.4%).

Over half of the drinkers drank mostly wine, with 30% drinking mostly beer and just over 12% drinking mostly spirits (Table 1). In relative terms, women tended to drink more wine and spirits, and men favoured beer.

Table 1. Percentage distribution of type of alcohol consumed by sex

	Mostly spirits	Mostly wine	Mostly beer	Spirits & wine	Spirits & beer	Wine & beer	All types in equal measures	Total
Men ($n = 2764$)	10.6	34.0	47.4	1.3	1.5	5.0	0.2	100
Women ($n = 2602$)	13.6	69.3	11.4	1.7	0.5	3.3	0.2	100
Total	12.1	51.1	30.0	1.5	1.0	4.2	0.2	100

Socio-economic variables

Appendix 1 (available as Supplementary data at http://www.ageing.oupjournals.org) shows intake distribution by age-group and sex. In both men and women the never drinkers were older, whereas the heavier drinkers tended to be younger.

Table 2 shows the distribution of alcohol intake by sex and by various socio-economic variables. In both sexes the proportion of never drinkers was appreciably higher in Scotland compared with the South, Midlands or North regions of England. In relative terms, wine drinking was highest in the South and Midlands region of England for men and beer drinking in Scotland (results not shown). In women, wine drinking was highest in Scotland, and spirits and beer were both favoured in the North of England.

Table 2 shows that, not surprisingly, never drinkers were also less likely to be current smokers, and heavy drinkers were more likely to still be smoking. Never drinkers were more likely to be in the lowest quartile of BMI value, and ex-drinkers were more likely to be in both the first and last quartiles. Alcohol consumption itself seemed relatively unrelated to BMI in this cohort. Never and ex-drinkers were less likely to live with a spouse and more likely to live alone or with other people compared with drinkers. Drinkers were also more likely to have contact with other people.

Table 2 also shows the distribution of alcohol intake by whether the subject was a home-owner, renting (private or council) or in housing association, or other accommodation (i.e. sheltered accommodation or residential or nursing homes). Never and ex-drinkers were less likely to be home-owners, whereas those that drank were more likely to be home-owners.

Finally, the table shows the distribution of alcohol intake by quartiles of the Carstairs score. The first quartile denotes the least deprived and the fourth quartile the most deprived. This shows that in both sexes never drinkers are likely to be the most deprived and those that drink in moderation are likely to be the most affluent.

When subjects were asked whether they have financial difficulties, those that did tended to be ex- and moderate drinkers (results not shown). Heavier drinkers tended to have no financial hardship.

Health variables

Table 3 shows the distribution of alcohol intake by sex and by various health-related variables.

Participants completed the Mini Mental State Examination (MMSE). The MMSE is a widely used test of cognitive function and has been shown to be both valid and reliable [16–18]. Those people who scored below 17 were designated severely cognitively impaired. Those who scored between 17 and 23 were considered mildly impaired, and those above 23 were judged to have no impairment. A clear

Table 2. Percentage distribution of alcohol intake by sex and various socio-economic variables

	Men				Women			
	Never drinker	Ex-	Moderate	Heavy	Never drinker	Ex-	Moderate	Heavy
Region								
South	7.2	5.3	82.1	5.5	16.6	6.0	74.2	3.3
Midlands	7.0	6.2	80.6	6.2	20.6	5.9	70.2	3.3
North	8.5	8.7	78.4	4.4	23.2	6.4	69.1	1.3
Scotland	17.0	6.2	75.8	0.9	45.2	3.7	50.9	0.2
Current smoker								
No	8.7	6.2	80.2	4.9	22.8	5.7	69.2	2.3
Yes	6.2	8.0	80.3	5.5	16.8	7.1	71.9	4.2
BMI quartile								
1st	10.1	7.0	79.1	3.8	23.3	6.5	67.4	2.8
2nd	7.9	5.0	82.2	5.0	20.6	4.7	71.6	3.1
3rd	7.2	6.1	81.1	5.7	19.1	5.1	73.1	2.7
4th	7.8	7.1	79.9	5.3	21.2	6.0	71.2	1.6
Living arrangement								
Alone	9.4	7.3	78.0	5.3	22.7	6.2	69.1	2.1
Spouse	7.6	5.8	81.6	5.1	17.0	4.5	74.8	3.6
Other	9.6	7.4	78.9	4.1	27.7	6.5	63.5	2.4
Contact with people								
Daily	8.1	6.6	80.2	5.1	22.5	6.2	68.8	2.5
2–3/week	8.3	5.2	81.6	4.9	20.9	5.0	71.3	2.9
<2/week	7.7	7.9	80.2	4.2	20.7	6.2	71.1	2.0
Rarely	10.2	10.2	73.7	5.8	30.0	7.5	62.0	0.5
Housing status								
Home owner	7.9	5.2	81.3	5.6	19.7	4.8	72.1	3.5
Rental or HA	9.0	9.3	77.9	3.9	25.8	7.4	65.6	1.1
Other	11.6	8.6	77.1	2.8	26.1	7.5	65.4	0.9
Carstairs score quartile (least to most deprived)								
1st	6.8	4.5	83.5	5.3	15.9	4.6	75.9	3.6
2nd	7.9	7.0	79.2	5.8	20.4	6.0	69.8	3.8
3rd	7.3	6.8	81.4	4.5	21.7	5.4	70.8	2.1
4th	10.1	8.7	77.2	4.0	29.1	7.9	62.1	0.9

Table 3. Percentage distribution of alcohol intake by sex and various health-related variables

	Men				Women			
	Never drinker	Ex-	Moderate	Heavy	Never drinker	Ex-	Moderate	Heavy
MMSE								
Severe	20.5	10.5	67.3	1.8	38.5	9.1	51.1	1.2
Mild	12.4	9.7	75.0	2.9	28.0	7.5	62.5	2.0
No impairment	7.3	5.8	81.5	5.4	19.8	5.2	72.3	2.7
Difficulties with activities								
No	6.9	4.8	82.4	5.9	16.2	3.7	77.0	3.1
Yes	10.1	8.6	77.4	4.0	25.6	7.0	65.4	2.1
Health perception								
Excellent	7.9	4.7	80.7	6.6	16.8	3.7	75.3	4.2
Very good	6.7	4.6	83.5	5.3	19.4	4.9	73.3	2.4
Good	9.4	7.7	78.4	4.4	24.5	5.8	67.8	1.9
Fair	10.1	9.7	76.6	3.6	26.6	9.2	62.1	2.1
Poor	5.8	13.5	78.9	1.9	28.8	9.9	58.5	2.8
Physically active								
Very	8.1	4.7	81.3	6.0	17.2	3.4	76.2	3.3
Fairly	7.6	6.4	80.9	5.1	21.6	5.7	70.3	2.3
Not very	11.2	9.7	75.2	4.0	27.3	7.6	63.0	2.1
Not at all	6.9	8.2	83.7	1.3	31.1	11.6	55.3	2.1
Diabetes								
No	8.2	6.1	80.5	5.2	21.9	5.5	70.0	2.6
Yes	10.2	10.2	77.0	2.6	28.4	10.5	60.5	0.6
Heart attack								
No	8.6	6.2	79.9	5.3	22.2	5.6	69.6	2.6
Yes	7.0	7.7	82.3	3.0	22.7	8.2	68.0	1.1
GDS score								
<5	8.3	6.3	80.6	4.9	21.8	5.3	70.4	2.5
6+ (depressed)	6.9	8.5	78.9	5.8	25.8	9.7	62.0	2.6
Anxiety								
No	8.6	6.2	80.3	5.0	22.9	5.6	69.2	2.3
Yes	5.7	7.6	81.5	5.2	18.6	6.3	71.8	3.3

gradient was observed with current drinking being more common amongst those who were not cognitively impaired.

When subjects were asked about whether they had difficulties undertaking everyday activities such as cooking, washing and walking, again the two drinking groups were less likely to answer yes. Drinkers were also less likely to have had falls (not shown), more likely to have a good perception of their general health, and more likely to consider themselves physically active. Diabetes was more common in the non-drinking groups, but not previous heart attack. Little association was observed between alcohol intake and number of different medications used (results not shown).

Participants completed the 15-item version of the Geriatric Depression Scale (GDS). A cut-off point of 6 or more is commonly used to indicate depression. Depression tended to be slightly higher in the non-drinking groups for women, but otherwise very little association was observed. By contrast, reported anxiety was lower in the never drinkers and higher in the ex- and current drinking groups. A clear dose-response relationship was found for number of positive responses to anxiety questions and increasing alcohol consumption (results not shown).

Little association was observed between alcohol intake and death or separation from a loved one in the last year (results not shown). However, reporting a serious illness in a loved one or moving residence was more common in the drinking groups.

Logistic regression analysis

Table 4 shows the results of a logistic regression model to examine the independent effects of selected variables on the likelihood of being a moderate drinker as opposed to never having drunk. In order to dichotomise the outcome variable, the ex- and heavy drinker groups have been dropped since these were relatively small groups. All variables that were statistically significant at the 5% level in the univariate analysis were tested, and those remaining in the final model are those that remained statistically significant. The table shows that, after adjustment for other variables, the odds of being a moderate drinker in females is 0.37 (95% CI 0.32, 0.42) compared with males. In addition, those people above 80 years of age, those with a higher Carstairs score, those that had a poor general health perception, and those that had difficulty with everyday activities were also statistically significantly less likely to be moderate drinkers. Drinkers also had significantly less cognitive impairment, were more likely to be smokers, were more likely to have experienced a serious illness in a loved one, were more likely to have suffered a heart attack, and had higher BMI. Anxiety was associated with drinking with an increased odds of 1.33 (95% 1.08, 1.63). Depression (GDS score) was not found to be an independent predictor in this model. Models run separately for men and women did not affect results to any large extent.

Table 4. Logistic regression model with binary response for being a moderate drinker compared with a never drinker

	Percentage distribution	Odds Ratio (95% confidence interval)[a]	*P*-value for overall difference
Sex			
Men	38.2	Reference	<0.0001
Women	61.8	0.37 (0.32, 0.42)	
Age-group			
75–79	48.9	Reference	<0.0001
80–84	31.5	0.87 (0.78, 0.97)	
85–89	14.9	0.62 (0.54, 0.72)	
90+	4.7	0.64 (0.49, 0.83)	
Serious illness in loved one			
No	86.3	Reference	0.02
Yes	13.7	1.33 (1.05, 1.68)	
Carstairs score quartile			
1st	26.0	Reference	0.0006
2nd	23.9	0.73 (0.57, 0.94)	
3rd	24.9	0.70 (0.51, 0.96)	
4th	25.3	0.46 (0.29, 0.75)	
Anxiety			
No symptoms	82.1	Reference	0.01
One or more symptoms	17.9	1.31 (1.07, 1.61)	
MMSE score			
No impairment	82.8	Reference	<0.0001
Mild	14.9	0.54 (0.41, 0.73)	
Severe	2.3	0.69 (0.57, 0.85)	
Smoker at present?			
No	90.3	Reference	<0.0001
Yes	9.8	1.46 (1.24, 1.71)	
Health perception			
Excellent	19.0	Reference	0.008
Very good	30.4	0.93 (0.76, 1.13)	
Good	36.6	0.78 (0.62, 0.97)	
Fair	12.4	0.74 (0.57, 0.96)	
Poor	1.6	0.63 (0.44, 0.89)	
Difficulty with everyday activities?			
No	54.4	Reference	0.001
Yes	45.6	0.79 (0.68, 0.91)	
BMI quartile			
1st	24.7	Reference	0.007
2nd	25.4	1.06 (0.91, 1.25)	
3rd	25.1	1.22 (1.08, 1.39)	
4th	24.9	1.10 (0.97, 1.25)	
Ever had a heart attack?			
No	89.2	Reference	0.005
Yes	10.8	1.25 (1.07, 1.45)	

[a]Confidence intervals adjusted for clustering on practice.

Appendix 2 (available as Supplementary data) shows the results of another logistic regression model, but this time comparing heavy drinkers with moderate drinkers. As before, more drinking was associated with being male, having more anxiety, being a smoker, and having a good self-perception of health. By contrast, heavy drinkers were *less* likely to have suffered a heart attack compared with moderate drinkers, and also less likely to have sugar diabetes. Heavy drinkers were also less likely to be a non home-owner.

Discussion

As with other studies, this paper observed that alcohol consumption is consistently negatively associated with increasing age and female gender [19–21]. The proportion of never drinkers increased with each age-band, suggesting that drinking may have become more socially acceptable over time. In general it seemed that in this cohort of older people those that drank were likely to be people who still have a fairly active and sociable lifestyle. In contrast non-drinkers were less likely to see other people and more likely to suffer from cognitive impairment, although it is possible that alcohol consumption in the past week may not have been reliably recorded in those people with severe or mild impairment. Reanalysis of just those subjects with no impairment made little difference to the results of the logistic regression models. The only exception to this was that the higher odds of reporting illness in a loved one in the moderate drinking group compared with never drinkers was no longer statistically significant at the 5% level.

Very few people admitted to drinking very high amounts of alcohol. Only 5% of male responders were above the

Royal College of Physicians, Psychiatrists and General Practitioners' 'safe' drinking limit of 21 units per week, and only 2.5% of women drank more than 14 units per week. Only 28 out of 14,962 people stated that they drank more than 42 drinks in one week, and so it is possible that the characteristics for very heavy drinkers would be different from those with moderate intake. White *et al.* advised that men aged 85 and over should limit their drinking to 5 units a day [3]. Drinking surveys suggest that since 1984, in both older men and women, the proportions of those exceeding the 'sensible limits' have been rising steadily. This, allied to the fact that life expectancy is increasing, means that the number of older problem drinkers will likely rise [22]. Drinkers in our study reported having a better general health than never or ex-drinkers, but this does not exclude the likelihood that there is a sub-group of heavy drinkers (who may be possibly under-represented in this study) who suffer adverse health consequences as a result of drinking. Other studies looking at drinking patterns among older people have observed that those with current hazardous patterns of alcohol use were twice as likely to be admitted to hospital but significantly less likely to visit their GPs in the previous 12 months [23]. The relationship of alcohol consumption to health outcomes such as mortality and hospital admissions in the present study will be the subject of future work.

Reporting of alcohol consumption is likely to be underestimated to some extent in drinking surveys, especially in heavy drinkers. This may be accentuated in elderly people if they perceive drinking to be stigmatised in any way. However, this problem is likely to be minimised in a study such as this where questions about consumption were administered as just one part of an overall lifestyle screen. Assessment of a previous week's drinking is generally accepted as being a good indicator of alcohol intake [24]; unfortunately it was not possible to corroborate this by other means, e.g. laboratory testing. It is also possible that the particular proportion of heavy drinkers amongst the elderly may be underestimated in our study due to non-response; however the response rate was high.

Alcohol intake was not found to be strongly associated with depression. A previous study of a general practice survey of alcohol consumption by older people also found no association with depression [25]. Our study, however, did observe a relationship with anxiety, with drinkers reporting more anxiety symptoms than never drinkers. Elderly people suffering from anxiety may use alcohol to reduce symptoms; however, it seems unlikely that at the low levels of consumption reported in this study alcohol would directly cause anxiety symptoms.

Disruption of lifestyle such as retirement and decreased social activity are thought to be some of the main contributory factors among people who develop alcohol problems later in life. Isolation and loneliness in old age can lead to increased drinking, but our study suggested that those that have a regular drink are, in fact, those that are also more likely to be living with a spouse. Other studies have also observed that the stresses of ageing, such as widowhood and retirement, are not associated with increased problem drinking [26].

In conclusion, our study suggests that heavy drinking, and the problems associated with such behaviour, is rare among people aged 75 years or more. A number of social and medical factors are associated with alcohol consumption patterns in old age. Our results suggest that consumption at moderate levels is associated with relative financial security and good health with the exception of higher rates of anxiety amongst drinkers.

Key points

- Only 5% of men and 2.5% of women exceeded the Royal Colleges of Physicians, Psychiatrists and General Practitioners' recommended weekly drinking limits of 21 and 14 units a week respectively.
- Moderate alcohol consumption was associated with relative financial security and good health.
- Regular drinkers reported more social contact, and were less likely to be cognitively impaired.
- Higher levels of anxiety were experienced amongst regular drinkers.

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