

Risky drinking in North West school children and its consequences: A study of fifteen and sixteen year olds

Sara Hughes Mark A. Bellis Karen Hughes Karen Tocque
Michela Morleo Matt Hennessey Linda Smallthwaite



Key Findings and Recommendations

- Over five sixths (84.0%) of pupils drank alcohol, a decrease from the level reported in 2005 (87.9%). However among drinkers, there was an increase in the percentage drinking in public places (e.g. bars, parks) and the frequency of consumption.
- Of the 189,731 15 and 16 year olds in the North West, we calculate that around 56,900 (30.0%) binge drink at least weekly (i.e. drink five or more drinks in one session).
- For the first time, estimates of total alcohol consumption by 15 and 16 year olds in the North West have been calculated. We estimate that 65.9% of 15 and 16 year olds in the region drink at least monthly and that their total annual consumption is 83,943,726 units. This is equivalent to 44.2 bottles of wine (177.0 pints of beer) per year for every 15 and 16 year old in the region, or 67.2 bottles of wine (268.7 pints of beer) per year for each 15 and 16 year old that drinks at least once a month.
- Substantial levels of binge drinking, frequent drinking and drinking in public places were seen in all demographics. However, binge drinking in particular was more frequent amongst those living in more deprived areas (31.1% of drinkers binge drank at least once a week in the most affluent areas compared to 39.1% in the least affluent [quintiles]).
- Among drinkers, 34.1% stated that they bought their own alcohol. These individuals were more likely to engage in a risky drinking behaviour (e.g. three times more likely to binge drink once or more a week).
- Consistent with findings in 2005, those who had alcohol provided to them by parents (48.5% of drinkers) were 1.64 times less likely to binge drink each week and 1.28 times less likely to drink in public places.
- Having a hobby or being involved in sports was protective against most risky drinking behaviours with, for instance, those having a hobby or sports pastime being 1.59 times less likely to binge drink.
- Among those that drank once a week or more, 39.7% of females and 42.0% of males had been involved in violence following alcohol use. Those from the two poorest deprivation quintiles of residence were around 50% more likely to have been involved in alcohol-related violence than those in the most affluent quintile.
- Engaging in binge drinking, drinking more frequently, and drinking greater amounts of alcohol each week, were also associated with alcohol-related violence. Thus, those binge drinking three or more times per week were over five times more likely to have been involved in alcohol-related violence (than those who drank each week but did not binge drink).
- Among those that drank once a week or more, 20.7% of females and 15.4% of males reported regretted sex following alcohol. Females; those aged 16; those binge drinking more frequently; and those drinking at greater volumes per week were more likely to have had regretted sex following alcohol consumption. For instance, those drinking over 40 units per week were two and a half times more likely to have had sex they later regretted following alcohol (than those who drank each week but consumed up to five units per week).
- Heavy drinking patterns were associated with higher levels of smoking. While only 2.1% of those that drink at least once a week but never binge drink smoked more than five cigarettes per day this rises to 47.7% amongst those that binge drink three or more times per week.
- With over a third of drinkers stating that they bought their own alcohol, it is essential that all retailers prevent underage sales, as results here identify that such behaviour is strongly linked to the problematic use of alcohol by youths.
- With substantial levels of alcohol being consumed by teenagers, parents require much better information on how much alcohol their children can consume, as well as the health and anti-social behaviours associated with alcohol consumption.
- Consistent messages regarding the risks associated with alcohol consumption should be delivered through educational settings to provide young people with an understanding of the dangers associated with alcohol use and to counter the promotional effects of alcohol advertising to which children are exposed on a regular basis.



Introduction

Alcohol consumption has emerged as a key public health priority both in the UK and in Europe as a whole. Among the adult population, the UK has one of the highest levels of alcohol consumption across Europe. For instance, compared with other European countries, the UK has one of the largest percentages of individuals who drank alcohol in the last 12 months (males 91%; females 85%; European Commission / Eurostat, 2005), and is ranked third highest for the number of drinks consumed in one sitting (24% drink five or more drinks on a day that they drink alcohol; European Commission, 2007). In 2004, the Government published the Alcohol Harm Reduction Strategy for England (Strategy Unit, 2004) which highlighted the problems caused by heavy or frequent drinking and the importance of reducing and preventing such harms. The Strategy was updated in 2007 and identified those drinking under the age of 18, particularly those between the ages of 11 and 15, as a priority group (Department of Health et al, 2007).

Although the law in the UK prohibits young people under the age of 18 from buying alcohol, consumption levels among adolescents remain high. For instance in 2006, 72% of 15 year old and 82% of 16 year old schoolchildren in England reported ever having had an alcoholic drink (Fuller, 2006). Furthermore, compared to their European counterparts, 15 and 16 year olds in the UK are more likely to drink alcohol and to do so more frequently (Hibell et al, 2004). While nationally the proportion of young people drinking has decreased in recent years, those that do drink appear to be drinking more, and more frequently (England; Fuller, 2006), with alcohol being the most commonly used and socially acceptable substance among teenagers today. For instance, among 11 to 15 year olds in England, around half of pupils thought it was acceptable to try alcohol, a third to drink alcohol once a week, a fifth to try getting drunk once, and a sixth to get drunk once a week (Fuller, 2006). With alcohol being a key part of today's youth culture, there is a need to understand which individuals are most likely to consume alcohol, to what extent, and the impact that alcohol consumption has on their health and behaviour.

Alcohol consumption during childhood has been linked directly to changes in brain development, and is associated with negative behavioural outcomes amongst youths including accidents, violence, early and unprotected sex, and poor school performance. Such outcomes appear more likely to result from risky drinking behaviours such as binge drinking

and frequent drinking than alcohol consumption per se. In 2004/05 a total of 5,717 people aged 16 or under were admitted to hospital in England for an alcohol-related cause, with rates increasing from 2002/03 (Hughes et al, 2007). In 2006, 8% of boys and 7% of girls in England aged 11 to 16 had been in trouble with the police after drinking alcohol in the last four weeks, and 11% of boys and 6% of girls had been involved in a fight (Fuller, 2006). Alcohol can be one of the main reasons for young people having sex, particularly for the first time, and young people report having more unprotected sex when they are under the influence of alcohol (Bellis et al, in press). Such behaviour increases the risk and spread of sexually transmitted infections, and contributes to teenage conceptions and unwanted pregnancies. Alcohol consumption can also affect educational performance, with 3% of boys and 4% of girls in the UK reporting poor performance at school as a result of alcohol (Hibell et al, 2004). Furthermore, heavy drinking during teenage years can have negative impacts on health later in life (Jones et al, 2007; Oesterle et al, 2004).

In the North West, Trading Standards North West (TSNW) carried out a major survey among 15 and 16 year olds in 2005 to investigate levels of drinking and predictors of risky drinking behaviours among schoolchildren (Bellis et al, 2007; Ci Research, 2005). The vast majority (88%) of pupils aged 15 and 16 drank alcohol. Amongst those that drank, binge drinking, frequent drinking and drinking in public places (risky drinking behaviours) were strongly related to the level of income pupils received and to how alcohol was accessed; those with higher personal incomes and those obtaining alcohol themselves, from friends, older siblings and adults outside of shops were more likely to engage in risky drinking behaviours. Importantly, those individuals whose parents provided alcohol for them were less likely to binge drink and to drink in public places than those accessing alcohol in other ways.

The Trading Standards questionnaire was updated and the survey repeated in 2007. Here, we re-examine relationships between risk behaviours, demographics, income, leisure activities and access to alcohol, and look at trends in the level of individuals consuming alcohol. Additional questions asked in the 2007 survey allowed us to investigate the relationships between negative alcohol-related outcomes (violence and regretted sex), demographics and risky drinking behaviours, as well as examine the link between patterns of alcohol consumption and smoking behaviours.



Methodology

As with the previous survey, the 2007 survey was anonymous, consisted of closed questions, and was made freely available to schools via their local Trading Standards Service within the North West. Those schools agreeing to participate were sent questionnaires, which were completed by students within normal school lessons. A total of 140 schools in 19 local authorities took part in the survey in 2007, with 11,724 returned questionnaires. Since the majority of pupils participating were aged 15 and 16, analyses were limited to these ages, giving a total sample size of 9,833. Coverage and total sample size were slightly lower than in 2005 (147 schools in 21 local authorities; 10,271 pupils aged 15 and 16). To allow for deprivation analyses, attempts were made to match the postcode of each individual to Lower

Super Output Area (LSOA¹), a level at which measures of deprivation (Index of Multiple Deprivation; IMD, 2004) are also available (see appendix for further details). Differences between the 2005 and 2007 surveys are also outlined in the appendix.

Box 1: Definitions of risky drinking behaviours

Binge drinking: drinking five or more alcoholic drinks on one occasion once a week or more;

Frequent drinking: drinking twice a week or more;

Drinking in public places: drinking at pubs / members clubs / nightclubs / discos or outside (street/park/shops).

Table 1: Comparison of sample demographics and whether youths consume alcohol

Demographics	n	Sample demographics			Consume alcohol 2005 vs 2007		
		2005 %	2007 %	P	2005 %	2007 %	P
Age	15	47.06	49.46		87.67	82.79	**
	16	52.94	50.54	**	88.94	85.25	**
	P (within category)				*	**	
Sex	Female	52.24	49.89		90.36	87.71	**
	Male	47.76	50.11	**	86.14	80.37	**
	P (within category)				**	**	
Deprivation quintile	(wealthiest) 1	24.92	15.60		93.27	86.09	**
	2	22.63	20.09		85.38	88.42	*
	3	14.33	17.78	**	89.90	85.25	**
	4	22.92	20.74		86.43	81.11	**
	(poorest) 5	15.20	25.79		86.06	79.79	**
	P (within category)				**	**	

All differences between 2005 and 2007 for proportions consuming alcohol remained significant after correcting for demographic differences in samples. After such corrections (using logistic regression) 15 and 16 year olds in 2005 were 1.37 times more likely to consume alcohol at least weekly. Statistical significances *P<0.05 ** P<0.001

Results

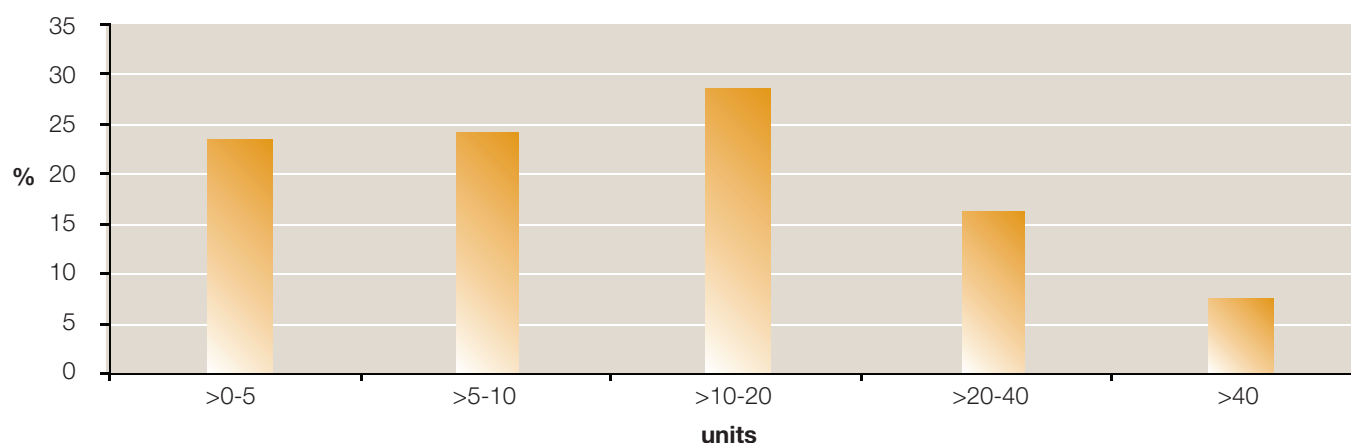
In the 2007 survey, 84.0% of pupils consumed alcohol (figures reported in Table 1) of whom 78.8% consumed at least one to three times a month. Those individuals most likely to drink were aged 16, female, and living in the areas classified as the wealthiest (Table 1). Individuals were less likely to consume alcohol in 2007 (84.0%) compared with 2005 (87.9%; Table 1), a decreasing trend that was found for both ages, both sexes, and four of the five deprivation quintiles. The only increase in proportions using alcohol was amongst the second wealthiest quintile, which rose slightly but significantly from 85.4% to 88.4%. Over half of drinkers consumed more than 10 units in a typical week (see Figure 1).

Among drinkers, the relationships between demographics, access to alcohol, other individual factors and risky drinking behaviours (binge drinking, frequent drinking, drinking in public places; Box 1) were examined (2007 only; Table 2). In general, similar patterns were found for the three risky drinking types, with a higher percentage of individuals in all drinking categories having certain characteristics: i.e. being aged 16; receiving a greater amount of income per week (highest percentage >£30 per week); and not having a hobby or being a member of a sports team or club. A higher percentage of binge drinkers and frequent drinkers were male, but a higher percentage of those drinking in public places were female.

¹Small geographical areas with a population mean of around 1,500 individuals



Figure 1: Number of units consumed in a typical week by drinkers (% in each category)



Analysis limited to those that drink.

Table 2: Relationship between demographics, alcohol access and patterns of alcohol consumption amongst children who drink

		Binge drinker			Frequent drinker			Public places		
		n (yes)	%	P	n (yes)	%	P	n (yes)	%	P
Age	15	1305	32.85		1075	26.73		2108	52.36	
	16	1655	39.49	**	1291	30.50	**	2453	57.89	**
Sex	Female	1453	34.29		1097	25.51		2455	57.05	
	Male	1507	38.39	**	1269	32.10	**	2106	53.18	**
Deprivation quintile (wealthiest 1 to poorest 5)	1	392	31.14		329	25.82		679	53.25	
	2	577	34.51		453	26.87		887	52.58	
	3	518	36.30		427	29.69		850	59.07	
	4	590	37.46		475	29.78		871	54.54	
	5	753	39.10	**	578	29.63	*	1102	56.40	*
Money available (£) per week	<=10	701	27.45		552	21.40		1260	48.76	
	11 to 20	809	39.58		632	30.62		1187	57.51	
	21 to 30	404	39.30		327	31.63		594	57.39	
	> 30	761	48.44	**	637	40.06	**	1082	67.97	**
Hobby, sports or club member	No	1181	41.47		934	32.42		1691	58.67	
	Yes	1696	33.10	**	1371	26.48	**	2761	53.26	**
Buy own alcohol	No	1627	27.84		1315	22.23		2606	44.00	
	Yes	1333	57.51	**	1051	44.93	**	1955	83.55	**
Parents provide	No	1830	44.45		1324	31.72		2695	64.44	
	Yes	1130	27.93	**	1042	25.54	**	1866	45.72	**
Steal it from parents	No	2622	35.11		2078	27.53		4066	53.81	
	Yes	338	48.56	**	288	40.85	**	495	70.01	**
Family/friends over 18 give it me	No	1377	34.01		1114	27.16		2012	48.95	
	Yes	1583	38.48	**	1252	30.15	**	2549	61.38	**
Family/friends under 18 give it me	No	2256	34.26		1821	27.32		3405	51.03	
	Yes	704	44.61	**	545	34.30	**	1156	72.70	**
Get adults outside shops to buy it	No	2271	32.57		1821	25.82		3505	49.65	
	Yes	689	57.90		545	45.38		1056	87.78	**

Statistical significances * p<0.05 ** p<0.001

Again amongst those that drink, the percentage of binge drinkers and frequent drinkers increased with greater deprivation. Here however, such relationships are not corrected for demographic and other differences between quintiles and therefore are discussed later in this section. When examining access to alcohol, all three risky drinking categories showed similar relationships, with a higher percentage of individuals in each category: buying their own alcohol; stealing alcohol from parents; obtaining alcohol from friends and family over or under 18; and asking adults outside shops to buy alcohol for them. The proportions of individuals reporting each risky drinking behaviour were lower among those whose parents provided alcohol.

When confounding factors were controlled for, predictors of all three types of risky drinking were again largely consistent, being: having a greater amount of income per week; buying their own alcohol; stealing alcohol from parents; obtaining alcohol from friends or family under or over the age of 18; and asking adults outside shops to buy alcohol for them (Table 3). Participating in out-of-school hobbies or activities was found to be protective against all three risky drinking categories while accessing alcohol via parents (with their knowledge) was found to be protective against binge drinking and drinking in public places. While being male was related to binge drinking and frequent drinking, females were more likely to drink in public places. Being aged 16 was found to be a



predictor for binge drinking. However, the relationships between age and both frequent drinking and drinking in public places were no longer significant (Table 3). Equally, deprivation was also no longer significantly related to any of

the risky drinking categories. Such results suggest these differences in risky drinking behaviours between ages and levels of deprivation are related to how they access alcohol and expendable income (Table 3).

Table 3: Logistic regression analysis of predictors of binge drinking, frequent drinking and drinking in public places

		Binge drinker Odds Ratio		Frequent drinker Odds Ratio		Public places Odds Ratio	
		(AOR)	P	(AOR)	P	(AOR)	P
Age	15	Ref	**	NS	NS	NS	NS
	16	1.20					
Sex	Female	Ref	**	1.53	**	0.86	**
	Male	1.39					
Money available (£) per week	<=10	Ref	**	1.43	**	1.17	**
	11 to 20	1.48					
	21 to 30	1.51					
	> 30	1.83					
Hobby, sports or club member	No	Ref	**	0.67	**	0.89	*
	Yes	0.63					
Buy own alcohol	No	Ref	**	2.67	**	7.51	**
	Yes	3.16					
Parents provide alcohol	No	Ref	**	NS	NS	0.78	**
	Yes	0.61					
Steal it from parents	No	Ref	**	1.42	**	1.58	**
	Yes	1.48					
Family/friends over 18 give it me	No	Ref	**	1.26	**	2.00	**
	Yes	1.30					
Family/friends under 18 give it me	No	Ref	**	1.17	*	2.53	**
	Yes	1.27					
Get adults outside shops to buy it	No	Ref	**	2.35	**	8.94	**
	Yes	2.54					

* p<0.05 ** p<0.001; Ref = Reference Category

Adjusted Odds Ratios (AORs) are a measure of the ratio of, for instance, the likelihood of a male being a binge drinker compared to a female. Here therefore, males are 1.39 times more likely to be binge drinkers than females (the reference category) after differences in age, deprivation and alcohol purchasing factors have been taken into account. Deprivation was included in the above analysis but was not significant for any risky drinking behaviour.

Amongst those drinking at least weekly, 39.7% of females and 42.0% of males had been involved in violence following alcohol use. Overall, this percentage increased with greater drinking frequency, from 28.4% of those drinking once a week to 68.2% of those drinking everyday. Logistic regression was also used to analyse the relationships between drinking behaviours and alcohol-related negative outcomes (Table 4). For those that consume alcohol, factors predicting ever being violent or in a fight whilst drunk were: living in more deprived areas; more frequent binge drinking; drinking over 10 units of alcohol per week; and drinking more frequently. Additionally, among those that drink at least weekly, 20.7% of females and

15.4% of males reported regretted sex following alcohol use. Those individuals most likely to have regretted sex after drinking were: aged 16; female; binge drinking more often; and drinking over 10 units per week. However, questions were not restricted to sexually active individuals and therefore those answering that they had never regretted having sex with someone after drinking may also have done so because they had never had sex². For both violence and regretted sex, the greatest effects were seen for binge drinking, where those pupils binge drinking three or more times a week were more than five times more likely to have experienced these negative outcomes than drinkers who did not binge drink.

² Among a sample of 15 year old school children surveyed in England in 2002, 35% of boys and 40% of girls reported being sexually active (Godeau et al, 2008).



Table 4: Percentages and logistic regression analysis of relationships between drinking behaviours and drink-related negative outcomes

		Violent/involved in a fight whilst drunk			Regretted sex after drink		
		%	Odds Ratio		%	Odds Ratio	
			AOR	P		AOR	P
Age	15	39.13	NS		16.18	Ref	*
	16	42.37			19.43		
Sex	Female	39.65	NS		20.72	Ref	**
	Male	42.01			15.40		
Deprivation Quintile	(wealthiest) 1	33.28	Ref	*	15.14	NS	
	2	37.92	1.19		15.01		
	3	39.79	1.23		19.53		
	4	44.59	1.51		19.42		
	(poorest) 5	45.29	1.45		19.60		
Binge frequency	Never	14.35	Ref	**	5.53	Ref	**
	<1 month	14.89	1.20		9.54	2.63	
	1-3 times a month	26.95	2.44		7.67	1.76	
	Once a week	39.94	3.71		15.35	3.53	
	Twice a week	59.82	5.33		28.42	5.74	
	3+ times a week	72.43	5.70		39.08	5.91	
Units/week	Up to 5	20.67	Ref	**	9.86	Ref	**
	>5 - 10	25.55	0.94		10.54	0.86	
	>10 -20	40.85	1.33		16.40	1.08	
	>20 - 40	58.37	2.31		24.55	1.52	
	>40	70.00	3.10		37.32	2.57	
Drinking frequency	Once a week	28.36	Ref	*	11.03	NS	
	Twice a week	48.44	1.32		21.72		
	3-6 times a week	59.26	1.62		26.49		
	Every day	68.24	1.78		17.93		

Analysis limited to those who drink at least once a week as units per week was one of the independent variables. Figures refer to the percentage of those who reported being violent or in a fight when drunk or regretting sex following alcohol consumption. Please see Table 3 for a fuller description of Adjusted Odds Ratios (AORs). *P<0.05 ** P<0.001; NS = Not significant. Ref = Reference category. Where results are not significant AORs are not calculated.

Table 5: Relationship between drinking behaviours and levels of cigarette consumption

	Never tried smoking	Tried smoking - did not like it	Used to smoke - given up %	Smoke only when drink	Smoke <=5/day	Smoke >5/day	Total 100%	
Drinking frequency	<1/month	57.61	26.72	6.77	1.27	2.54	5.09	100
	1-3/month	42.88	33.25	8.81	6.88	3.22	4.96	100
	1/week	31.51	32.36	9.29	10.04	4.52	12.28	100
	2/week	18.17	25.40	10.84	13.94	7.79	23.87	100
	3-6/week	19.23	21.39	11.54	9.38	7.45	31.01	100
	Everyday	19.05	13.61	6.12	6.12	6.12	48.98	100
	P				**			
Units per week	>2-5	50.93	29.31	7.41	4.81	2.94	4.61	100
	>5-10	35.89	32.80	9.79	7.35	5.09	9.09	100
	>10-20	22.23	31.24	11.09	13.00	5.73	16.71	100
	>20-40	16.91	25.46	9.99	13.16	7.88	26.61	100
	>40	14.01	18.68	11.46	9.13	6.37	40.34	100
P				**				
Binge frequency	Never	69.43	21.18	4.40	1.40	1.50	2.10	100
	<1/month	49.08	30.68	8.01	3.21	3.30	5.72	100
	1-3/month	33.97	35.36	9.72	10.52	3.90	6.52	100
	1/week	19.96	32.19	11.04	11.76	6.54	18.51	100
	2/week	10.38	21.27	11.58	15.01	8.66	33.10	100
	3+ / week	16.87	14.81	7.82	7.41	5.35	47.74	100
P				**				

Analysis limited to those that drink at least once a week as units per week was one of the independent variables. ** P<0.001



Finally, frequency of drinking alcohol, level of units drunk per week and the frequency of binge drinking all showed a significant association with smoking behaviours (Table 5). Among those drinking at least once a week, those drinking more frequently, in greater quantities and binge drinking more often were more likely to be regular smokers. Thus, around 5% of individuals who drank less than once a week smoked more than five cigarettes a day compared with nearly half of those who drank every day (Table 5).

Discussion

Eighty four percent of pupils participating in the 2007 survey drank alcohol, with higher proportions of drinkers being identified in females (87.7%) than males (80.4%). Although questions were asked differently³, comparisons with national data suggest levels of drinkers in our survey were slightly higher than those reported nationally for 2006 (Fuller, 2006: 72% of 15 year olds and 82% of 16 year olds nationally cf. 83% and 85% North West), but showed the same patterns with females being more likely to be alcohol consumers at both age 15 and 16. Also consistent with national findings, the percentage of pupils ever drinking alcohol decreased between 2005 and 2007. However, at least part of the fall in proportions consuming alcohol nationally and within the North West may be explained by trends in other factors such as ethnicity. Thus, increasing proportions of individuals from cultures where alcohol consumption is not typical will contribute to reduced proportions of drinkers (Bradby and Williams, 2006). The reduction in proportions having consumed alcohol was apparent for both ages, both sexes and most deprivation quintiles, except for the second wealthiest quintile, which showed an increase between years. The reason for this discrepancy is unknown. However, increases in home drinking (especially of wine) among adults in this demographic may also be contributing to increasing access to alcohol amongst their children and consequent changes in drinking behaviours. In contrast, amongst drinkers the percentage of frequent drinkers and those drinking in public increased between survey years, again for both sexes and both ages (Box 2).

Box 2: Percentages of frequent drinkers and drinking in public places

For drinkers, between 2005 (Bellis et al, 2007) and 2007 percentages increased from:

Frequent drinkers:

Males: from 28.1% to 32.1%;
Females: from 21.2% to 25.5%;
Age 15 years: from 21.8% to 26.7%;
Age 16 years: from 26.7% to 30.5%;

Those drinking in public places:

Males: from 49.0% to 53.2%;
Females: from 50.4% to 57.1%;
Age 15 years: from 46.9% to 52.4%;
Age 16 years: from 52.2% to 57.89%

Overall therefore, although fewer children are drinking, a greater proportion of those who do are drinking more frequently, and in public places⁴. In fact, applying the proportion drinking alcohol and the mean number of units they consume⁵ to the North West population, we estimate that 65.9% of 15 and 16 year olds drink at least monthly and that their total annual consumption is 83,943,726 units (based on 189,731 15 and 16 year olds in the North West, including non-drinkers). This is equivalent to 44.2 bottles of wine (177.0 pints of beer) per year for every 15 and 16 year old or 67.2 bottles of wine (268.7 pints of beer) per year for all 15 and 16 year olds that drink at least once a month.

Deprivation was a significant predictor for binge drinking with levels rising amongst drinkers from 31.1% binge drinking at least once a week in the most affluent areas to 39.1% in the most deprived (Table 2). Such effects appear strongly related to differences in: how individuals access alcohol, levels of income available to youths and protective factors including involvement in hobbies, sports and clubs. In fact, when such differences are taken into account deprivation is no longer a predictive factor for any risky drinking behaviours (Table 3). The consequences of such drinking also disproportionately affect those in the poorest areas. Thus, those that had been involved in violence after drinking were more likely to live in more deprived areas with those living in the two most deprived quintiles being around one and a half times more likely than those in the wealthiest quintile to be involved in

³ The North West survey asked "how often do you drink alcohol?" (Everyday/ 3-5 times a week / twice a week / once a week / once - 3 times a month / less than once a month / never) and the Department of Health survey asked "Have you ever had a proper alcoholic drink?" (Yes/No)

⁴ The trend in binge drinking between survey years could not be calculated due to slight differences in how the frequency of binge drinking was calculated (see methodology).

⁵ Calculation of units consumed utilised average consumption levels by age, sex and deprivation quintile applied to the North West population. Estimates used a conservative methodology. Thus, those drinking less than once a month were allocated zero units (n=1745); data were adjusted to assume a maximum consumption of 50 units per week (n=258); those not reporting units per week consumed but reporting frequency of drinking (e.g. twice a week) were allocated two units per day drinking (n=1306). The final estimate is based on 8245 individuals.



alcohol-related violence. Males were also more likely than females to be involved in alcohol-related violence, as were those individuals engaging in more frequent binge drinking. In fact, those binge drinking three or more times a week were over five times more likely than those that did not binge drink to have been violent or in a fight following alcohol.

Observed associations between violence and alcohol consumption are consistent with those in the *Offending, Crime and Justice* survey (Matthews and Richardson, 2005), which reported that among 18-24 year olds, binge drinkers were more likely than regular drinkers to get into a fight during or after drinking, with male binge drinkers more likely than female binge drinkers to engage in such behaviour. Additionally, our results suggest that the frequency and amount of alcohol drunk were positively related to violence. For instance, those drinking more than 40 units a week were over three times as likely to be violent or in a fight than those drinking up to five units a day, while those drinking every day were almost twice as likely to be violent or in a fight as those drinking once a week or less.

Also consistent with 2005 findings, engaging in risky drinking behaviour was less likely among those with a hobby / members of a sports team and more likely among those individuals with a greater income. For instance, the percentage of drinkers that engaged in binge drinking increased from 27.5% among those with less than £10 per week to 48.4% among those with £30 a week or more. Consistent with this, those who bought their own alcohol were more likely than those that did not to be binge drinkers (over three times more likely), frequent drinkers (over two times more likely) and to drink in a public place (over seven times more likely). Stealing alcohol from parents, obtaining alcohol from family and friends (both under 18 and over 18) and asking adults outside shops to buy alcohol were also significantly associated with risky drinking behaviours. For instance, those individuals asking adults outside shops to buy alcohol for them were 2.5 times more likely than those that did not to binge drink. The need to reduce underage sales was recognised in the Alcohol Harm Reduction Strategy for England (2004) and re-emphasised in the updated strategy (2007). Many schemes are already in place such as Challenge 21, where individuals who look under the age of 21 must provide proof of age to buy alcohol. However, the sale of alcohol to those under 18 is still evident with 29.3% of all respondents (including non drinkers) saying they purchased their own alcohol; equivalent to 34.1% of those that drank. Such purchases appear strongly related to the abuse of alcohol by youths and both violent and other health damaging behaviours. Consequently, despite recent improvements, underage sales of alcohol still require tighter control. However,

with those underage obtaining alcohol via friends and family, such schemes will not remove illicit access to alcohol by those underage without their parents' knowledge. Recognising this, the updated strategy suggests a complementary approach to underage sales and includes commitments to examining school-based education on alcohol, determining the consequences of drinking during developmental years and providing better advice to parents on child alcohol consumption. Such measures are still urgently needed but must take into account the potentially protective effects against the most dangerous types of drinking (in both the 2005 and 2007 surveys) at least associated with the sensible provision of alcohol by parents to those aged 15 and 16.

In 2007 we were also able to examine the relationships between alcohol consumption and having had regretted sex. While males were more likely to become violent or to be in a fight following alcohol, females were more likely to have regretted sex after drinking. This is consistent with European research on alcohol use among 15-16 year old students, which found that in the UK, 12% of girls had engaged in sex they had regretted following alcohol, compared with 9% of boys (Hibell et al, 2004). These figures compare to 20.7% and 15.4% respectively in this study (amongst those drinking once a week or more). The frequency of binge drinking and the amount of units drunk per week were also found to be associated with such behaviour. For instance those binge drinking three or more times a week were over five times more likely than non binge drinkers to have had regretted sex following alcohol. However, unlike violence, deprivation was not found to be a significant factor for regretted sex. Importantly, our results also suggest that girls are more likely to be drinking in public places. These findings are consistent with others that have identified girls as being able to access alcohol in public places at younger ages than boys due to earlier development and association with older boyfriends (Harrington, 2000). Such drinking can place girls in situations where they are too drunk to properly consider whether they wish to have sex or to take the appropriate precautions to prevent pregnancy and sexually transmitted infections. Across the North West, work is currently underway to link initiatives for alcohol, sexual health and in some cases other forms of substance use (e.g. Manchester Primary Care Trust⁶) and this should be explored elsewhere.

Finally, smoking behaviours were also significantly linked to various types of risky drinking patterns. Importantly, disproportionately more heavy drinkers were smoking more than five cigarettes a day, with nearly half of those who binge drink three or more times a week smoking more than five cigarettes per day (Table 5). The links between smoking and

⁶ Manchester Primary Care Trust (PCT) offers a multi-agency training programme covering sexual health, drug and alcohol use (including links between them and impact on behaviour) aimed at individuals wanting to gain further knowledge in these areas.



drinking behaviours are well established. For instance, among 11-16 year olds in England, those who had recently smoked were more likely to have recently tried alcohol (Fuller, 2006). Furthermore, both binge drinking (Best et al, 2006) and frequent intoxication (Sutherland and Willner, 1998) have been associated with an increased use of cigarettes among adolescents. However, initiatives aimed at addressing both behaviours are less well established with services focusing on smoking not always recognising or being able to respond to those at increased risk of alcohol consumption.

Conclusions

Comparison between surveys identified a decrease in the proportions of 15 and 16 year olds who are drinking alcohol, but an increase in levels and frequency of consumption among those that are drinking⁷. Such findings are consistent with national trends. However, in addition to what has been measured nationally, the inclusion of postcode data in the 2007 North West sample has allowed for more accurate analyses of relationships with deprivation. Deprivation was significantly related to patterns of alcohol consumption (especially binge drinking) and was linked to alcohol-related violence. Thus, those from the poorest quintile of residence were around 50% more likely to have been involved in such anti-social behaviour even after levels of bingeing, amount consumed per week and frequency of consumption had been taken into account (analysis limited to those drinking at least weekly; Table 4). Importantly, involvement in violence as a child is linked to other negative outcomes including smoking, drug use, alcohol use and violence, and even increases the risk of long-term diseases such as heart disease and cancer (Felitti et al, 1998).

Critically, these data confirm the relationship between youths having dangerous drinking habits and being able to buy their own alcohol, as well as the apparently protective effects associated with involvement in diversionary activities (e.g. sports and hobbies) and appropriate parental provision of alcohol. The latter in particular adds to other studies that have also identified some protective effects against the development of damaging drinking behaviours associated with children drinking moderately in family environments (Foley et al, 2004; Warner and White, 2003). However, with an estimated 44.2 bottles of wine (or 177.0 pints of beer) drunk by each 15 and 16 year old in the North West each year, it is now critical that parents have a better understanding of what

advice to give young people about alcohol consumption, including whether to allow them to drink in the family setting and if so, how much alcohol they can consume and at what cost to their short and long term health. Such measures should be supported by consistent messages delivered through educational settings to provide a programme for change aimed at minimising the potential damage caused by alcohol to young people and to counter the promotional effects of alcohol advertising to which young people are regularly exposed.

Of equal importance are efforts to reduce access to alcohol for young people outside the family environment. Data from the North West of England on test purchases⁸ suggest that fewer off licensed premises are now selling to those under 18 (i.e. 26.2% of test purchases in 2005 resulted in a positive sale compared to 18% in 2006⁹). However, such figures are difficult to interpret. Those premises that sold alcohol to people under 18 in 2005 were most likely to be targeted in 2006, and may be more likely to take more precautions against such sales. Premises that have previously sold to Trading Standards may be more aware of the methods used in undercover operations, in effect reducing levels of underage sales recorded. For instance, those making test purchases are not allowed to lie about their age (i.e. if asked they must state they are under 18). This means that sales to local under-18 year olds can remain an issue even if alcohol was not sold in test purchasing.

While an alcohol free childhood may be the safest, in reality an estimated 159,000 15 and 16 year olds in the North West consume alcohol (i.e. 84% of all those in the North West). Consequently it is vital that harm reduction approaches are explored which curb the continuing trend for youths who use alcohol to consume increasing amounts. In particular this research identified that an estimated 56,900 15 to 16 year olds across the North West (30.0%) binge drink at least weekly. The consequences of this are both immediate (e.g. poor school performance and violence) and long term (e.g. alcohol-related health problems in later life, issues resulting from teenage pregnancy, etc). Long term solutions to such binge drinking cultures may be complex. However, stronger measures to eradicate sales to those underage (and proxy sales by adults) and effective alcohol-related advice to parents and teachers are fundamental measures which are long overdue and essential to begin change.

⁷ However, trend analyses were limited by changes to the questionnaire made between survey years; see methodology.

⁸ Test purchases are undertaken by Trading Standards and involve sending under 18s into premises selling alcohol to test if they will sell to them.

⁹ Figures relate to a snapshot of alcohol test purchasing at a certain period of activity and not to the test purchasing activity of the full 12 months.



Appendix: Methodology

Matching postcode to Lower Super Output Area (LSOA)

Those individuals with full and legitimate postcodes were matched directly to LSOA (n=5,233). The remaining pupils had either partial postcodes or no postcode information. Since partial postcodes (either incode¹⁰ + 2, n=159; incode + 1, n=225; or incode only, n=1,525) spanned more than one LSOA, they were matched to the LSOA that contained the majority of the partial postcodes. If no legitimate postcode (or incode) was available, the postcode of the school (if known) was matched directly to the LSOA (n=2,353). Based on the IMD scores of all LSOAs in the North West, each LSOA (and therefore individual) was allocated to a regional quintile of deprivation. A total of 324 pupils had neither a legitimate postcode nor a known school and could not be allocated to an LSOA or consequently a deprivation quintile. A further 14 pupils had postcodes outside of the North West region and were therefore excluded from geographical analyses. However, such pupils were included in analyses examining associations between behavioural factors (e.g. smoking and drinking behaviours). Importantly, the deprivation quintile allocation differed between the 2005 and 2007 surveys, with the 2005 data utilising the Middle Super Output Area (MSOA; average population per area = 7,200) of the school, rather than LSOA as the necessary postcode information was not requested in the 2005 survey.

Differences between the 2005 and 2007 surveys

1. The 2005 question “How much would you usually drink in one night?” (with those drinking five or more alcoholic drinks in one session classed as binge drinkers) was changed to “How often would you say that you drank five or more alcoholic drinks on one occasion?”. Thus, a change occurred in how frequency of binge drinking was calculated. In 2007 for the purposes of analysis, a binge drinker was anyone who consumed five or more alcoholic drinks on at least one occasion in the last week.

2. The 2005 question “Do you belong to any youth clubs, groups or teams?” was changed to “Do you participate in any out of school activities or hobbies?”

3. The 2007 survey included extra questions about smoking behaviour and access to cigarettes, as well as questions to examine alcohol-related negative outcomes such as regretted sex and violent behaviour. For regretted sex following alcohol, questions were not restricted to sexually active individuals. Thus, those answering that they had never regretted having sex with someone after drinking may have done so because they had never had sex.

Statistics

Chi square analyses examined differences between the 2005 and 2007 samples in terms of age, sex and deprivation quintile for the total sample and for those who consumed alcohol (Table 1), while logistic regression was used to examine changes in whether individuals ever drank between years (Table 2). Chi square was also used to examine initial relationships between demographics/alcohol access and risky drinking behaviours for 2007 (binge drinking, frequent drinking, drinking in public places; Table 2; Box 1). However, to account for confounding factors, logistic regression was used to further examine these relationships and to identify predictors of such risky drinking behaviours (Table 3). Logistic regression was also used to analyse relationships between drinking patterns and drink-related negative outcomes (Table 4). Finally, the relationship between smoking behaviour and drinking patterns was explored using chi squared statistics (Table 5).

¹⁰ Incode refers to the first half of the postcode, thus for the postcode L3 2AY, incode would be L3, incode + 1 L3 2 and incode + 2 L3 2A.



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Centre for Public Health
Faculty of Health and Applied Social Sciences
Liverpool John Moores University
Castle House, North Street, Liverpool L3 2AY, UK
tel: +44 (0)151 231 4510

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