

# Alcohol-related emergency department attendances: is preloading a risk factor? Cross-sectional survey

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## Abstract

**Introduction** ‘Preloading’ is a phenomenon where people drink alcohol at a private residence before going out. We aimed to identify whether preloading is a risk factor for alcohol-related emergency department attendance. We also wanted to identify where people became injured or unwell. **Methods** We conducted a cross-sectional, anonymous, survey at peak drinking times in our emergency department. We interviewed adult patients who presented to our emergency department with an alcohol-related presentation over an 8-week period. **Results** We approached 1,079 patients. One hundred sixty-one had suffered an alcohol-related problem while out

drinking; 27% of women and 14% of men had their first drink at home. There was no particular presentation or age group that was associated with preloading. Seventy percent of patients stated that they had drunk most of their alcohol at a public place; 76% of patients suffered their alcohol-related problem at a site different from where they had drunk most of their alcohol or where they had had their first drink.

**Conclusion** Preloading is more common in women than men. Preloading is common in alcohol-related emergency department attendances. The proportions of patients preloading in this study are lower than in other studies conducted in different environments. Preloading is not a risk factor for alcohol-related emergency department attendance. Policies to reduce alcohol-related harm should continue to focus on bars, nightclubs and pubs.

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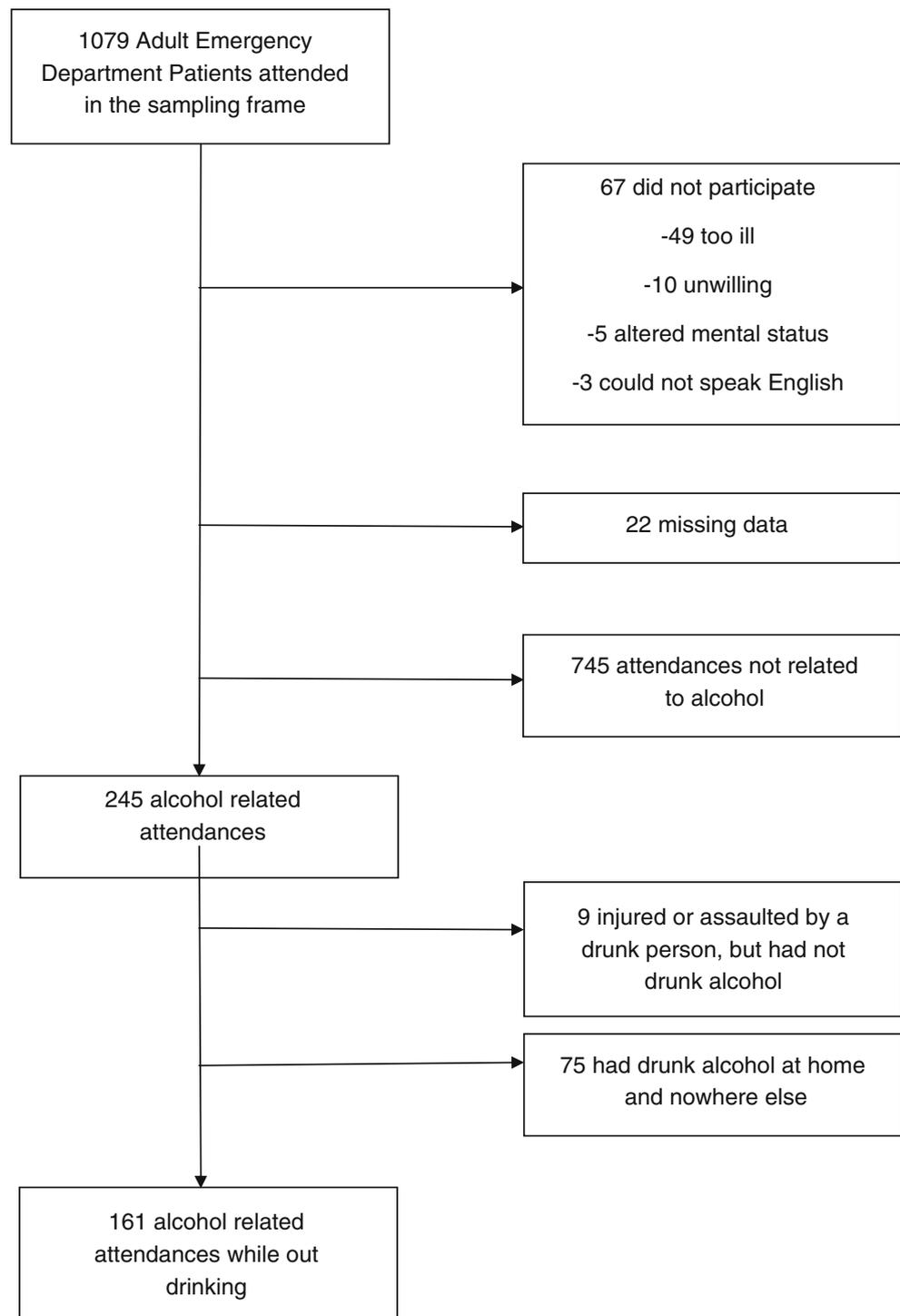
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## Introduction

Acute alcohol intoxication-related injuries and illnesses place an increasing burden on the health economy and emergency departments, in particular [1]. There has been a lot of work to try and to reduce alcohol-related violence by improving local intelligence by information sharing, stricter licensing and interagency working [2, 3]. The majority of this effort is directed at pubs, nightclubs and bars. Alcohol sold at off-licensed premises, such as supermarkets, is considerably cheaper, and there are concerns that strict controls at licensed premises will merely encourage drinking at home [4]. Heavy binge drinking increases vulnerability to injury [5].

**Fig. 1** Adult patients (1,079) who presented to the emergency department in the sampling frame



‘Pre-loading’ is the phenomenon by which people drink alcohol at a private residence before going out for a night out. Pre-loading has been associated with higher alcohol consumption and doubles the rate of an adverse problem (such as being involved in a fight) [6]. In a Liverpool study conducted among young people drinking in a city centre, 26.5% of female alcohol consumption and 15.4% of male alcohol consumption were at a private residence, before

going out. Over half the sample in this study had drunk alcohol at a private residence before going out [6].

We wanted to see whether the proportion of people pre-loading was higher in patients attending our emergency department than recorded in the Liverpool study [6]. If we demonstrated that the proportion of people pre-loading was higher in alcohol-related emergency department patients than the Liverpool study, this would provide supporting

**Table 1** Main reasons for presentation

Reason for presentation	Number (%)
Drunk and incapable	15 (9)
Drunk and alleged assault	44 (27)
Drunk and accident	64 (40)
Drunk and self-harm	13 (8)
Other (usually a medical illness that occurred while the patient was intoxicated)	25 (16)
Total	161

evidence that pre-loading is a significant risk factor for alcohol-related emergency department attendance. We also wanted to identify whether people developed their alcohol-related problem at the same place where they drank most of their alcohol. This information helps target alcohol control measures in the places where most alcohol-related injuries occur.

## Methods

This study was part of a larger study identifying alcohol-related violence hot spots in the Cambridge area, based on methods developed in Cardiff [2]. We conducted an anonymous interview-based cross-sectional survey in our emergency department. Our emergency department treats around 90,000 patient episodes each year and serves a predominantly white, affluent, mixed urban and rural population. We screened all the self-referred patients, including those who arrived by ambulance, who attended our emergency department between 22:00 and 02:00 and 10:00 and 14:00 on Saturday and Sunday, and 22:00 to 02:00 on Friday night over an 8-week period. The evening and night time sampling frames were selected because we expected, on the basis of our own experience, that this would be peak time for alcohol-related attendances. We included the daytime shifts because we have found that there were a lot of patients who attended with a painful injury sustained while intoxicated the night before. We did

not approach patients who had been referred to the hospital by a General Practitioner. We excluded patients who were under 16 years old, too ill to consent, unwilling to be interviewed alone and unable to communicate in English. Every eligible patient was asked two screening questions: ‘Are you here because of an illness or injury related to drinking alcohol?’ and ‘Have you drunk alcohol in the last 6 h?’ Any positive endorsement of either of these questions led to the subject completing a detailed description of where they had been drinking before their attendance. We asked where they had drunk first, where they had drunk most of their alcohol and how many places they had drunk in. Patients who were too intoxicated to consent at the time of arrival were approached when they were sober.

There was no pilot data to guide our sample size. We performed the chi-square or Fischer’s exact test for categorical data in STATA version 7. We obtained ethical approval from the Cambridge Local Research and Ethics Committee (reference no. 08/H0308/132).

## Results

A total of 1,079 adult patients who presented to the emergency department in the sampling frame were approached. Sixty-seven patients (6%) did not participate, 49 of these were too ill, 10 were unwilling, 5 had an altered mental status that made obtaining informed consent impossible, and 3 were unable to speak English. Twenty-two cases were excluded from the final analysis because data collection was incomplete. Two hundred forty-five

**Table 2** Location of the first alcoholic drink

Location	Men %	Women %
Own home	12 (13)	12 (18)
Other person’s home	1 (1)	6 (9)
Pub/bar	66 (69)	37 (56)
Nightclub	0 (0)	2 (3)
Restaurant	4 (4)	4 (6)
Park	5 (5)	1 (2)
Street	1 (1)	3 (5)
Other	6 (6)	1 (2)
Total	95	66

**Table 3** Location of first drink, by age

Age	Private residence (%)	Pub, bar or nightclub (%)	Total
16–25	23 (26)	66 (74)	89
26–35	10 (29)	24 (71)	34
36–45	5 (22)	18 (78)	23
46–55	2 (22)	7 (78)	9
56–65	1 (50)	1 (50)	2
66+	0 (0)	4 (100)	4
Total	41 (25)	120 (75)	161

**Table 4** Reason for presentation and location of first drink

	First drink at a private residence (%)	First drink at a public place (%)	Total (%)
Drunk and incapable	5 (33)	10 (67)	15
Drunk and alleged assault	9 (20)	35 (80)	44
Drunk and accident	20 (31)	44 (69)	64
Drunk and self-harm	5 (38)	8 (62)	13
Other (usually a medical illness that occurred while the patient was intoxicated)	2 (8)	23(92)	25
Total	41(25)	120 (75)	161

patients (25%) were attending the emergency department as a result of an alcohol-related problem or had drunk alcohol in the 6 h preceding their attendance. Nine percent (40/466) of the daytime attendances were due to an alcohol-related problem or had drunk alcohol in the prior 6 h, compared to 40% (205/524) of the nighttime attendances. Nine cases were excluded from further analysis as they had not drunk alcohol prior to their attendance, but had been injured or assaulted by a drunk person (Fig. 1).

One hundred sixty-one patients (15% of the total sample) had drunk alcohol away from a private residence. Forty-one of these had drunk alcohol ('preloaded') at a private residence before they went out. The sample was 98% white British, consistent with local census data. The mean age of patients was 32 (range 16–84), and 58% were male. Table 1 shows the self-described main reasons for presentation.

Table 2 shows the location of the first alcoholic drink.

Women (27%) were more likely to have their first drink at a private residence than men (14%) were, though this did not quite achieve statistical significance (chi-square test 1, DF=3.5,  $p=0.056$ ). There was no age group that was more likely to have their first alcoholic drink at a private residence (chi-square test 5, DF=2.5,  $p=0.78$ ). See Table 3.

Having a first drink at home did not appear to be associated with any particular reason for presentation, see Table 4. Fisher's exact test  $p=0.09$

**Table 5** Location of most alcohol intake

Location	Men (%)	Women (%)	Total (%)
Own home	2 (2)	5 (8)	7 (4)
Other person's home	3 (3)	5 (8)	8 (5)
Pub/bar	70 (74)	42 (64)	112 (70)
Nightclub	4 (4)	3 (5)	7 (4)
Restaurant	4 (4)	5 (8)	9 (5)
Park	4 (4)	0 (0)	4 (2)
Street	1 (1)	2 (3)	3 (2)
Other	7 (7)	4 (6)	11 (7)
Total	95	66	161

Table 5 shows where people reported they had drunk most of their alcohol. Most people drank most of their alcohol in a pub or bar. There was no significant difference between men and women in the location where they drink the most alcohol. Chi-square test (DF 7)=9.29,  $p=0.23$

Fifty-five (34%) people were injured or became ill at the place where they had done most of their drinking, and 38 (24%) were injured or became ill at the place where they had drunk first.

## Discussion

### Main findings

This is the first study to specifically look at preloading in patients with alcohol-related attendances. We found that pre-loading was common. We found that women are more likely to drink at home before going out than men. We found that there are no particular age groups or clinical presentations associated with pre-loading. The proportion of people having their first drink at home was considerably less than those people who were out in the city centre in the Liverpool study. This implies that drinking at home before going out is unlikely to be a strong risk factor for alcohol-related emergency department attendance. We found that the majority of illnesses and injuries occur at sites different from where people have their first drink and where they drink most alcohol. The proportion of alcohol-related attendances was higher in our study than in previous work [3]. This difference can be explained by our sampling at peak times rather than throughout the week and differing definitions.

### Limitations

There are a number of limitations to this work. A survey is a relatively weak study design. We conducted the study in a single centre, and comparing our findings from an affluent mixed urban and rural population to a relatively deprived

urban population should be done with caution. We also found that the difference in drinking behaviours between men and women was the same in the two populations. We did not ask about how much people had had to drink, as in our experience, acutely intoxicated patients do not usually provide this information reliably. We used a pragmatic case definition of self-reported alcohol-related attendance. There is often a disparity between the perception of a self-poured measure and a purchased measure, and it is possible that this would have led our patients to underestimate the relative contribution of pre-loading [7]. We were unable to approach some patients because they were too unwell; this number was small and unlikely to have biased our results. We chose our sampling times based on when we anticipated a high proportion of alcohol-related attendances; this was based on our own experience. Subsequent analysis of local police data indicates most alcohol-related incidents occur at these times, supporting the choice of these times.

We do not believe that sampling at different times would have led to different conclusions about the relative importance of preloading, but we accept this may have led to differing proportions of alcohol-related attendances.

#### Interpretation

Efforts to reduce acute alcohol-related harm should continue to try to influence drinking behaviours in licensed premises, as this is where most alcohol is consumed. Targeting interventions at pre-loading is unlikely to be effective in reducing alcohol-related emergency department attendances. We speculate that the reasons for binge drinking are cultural, rather than solely economic. As most alcohol-related harm occurs at sites separate from where people have drunk most of their alcohol, licensed premises should be made aware that they have a responsibility to these people that extends beyond the end of the visit. There are some important unanswered questions arising from this study. We do not know why women are more likely to preload, and this may be an area that requires further study.

#### Conclusions

Preloading is not a risk factor for emergency department attendance with an alcohol-related emergency department attendance. Policy should target interventions at sites where most alcohol is drunk.

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