CHAPTER 10. FROM HOME TO PUB

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Summary

Pubs, bars and nightclubs have an important social and economic role in Europe, being major settings for socialising, entertainment and employment. However, drinking environments often see high levels of intoxication and alcohol-related harms, including violence and drink driving. Preventing harm in drinking environments is a key priority in European alcohol policy yet there is a scarcity of research and knowledge on drinking behaviours in European nightlife environments and on the factors in drinking venues that are associated with higher levels of intoxication and harm. The Amphora project aimed to address this gap by implementing a study of drinking behaviours and bar environments in four diverse European nightlife areas: Liverpool in the UK, Ljubljana in Slovenia, Palma (de Mallorca) in Spain and Utrecht in the Netherlands. Using a cross-sectional survey combined with breathalyser tests among young drinkers using the cities' drinking premises and a quantitative observational study in bars, the study has developed valuable knowledge to inform the development of alcohol policy in Europe. This chapter describes how the study was implemented and outlines its key findings and implications for policy makers and practitioners.

Introduction

Preventing alcohol-related harm in drinking environments is a growing priority across Europe. Pubs, bars and nightclubs play a central role in the recreational lives of individuals across Europe, particularly young people. These venues can provide a measure of social protection for drinkers and non-drinkers alike, for example through staff controlling access to alcohol and intervening in aggressive encounters. Despite this, public drinking environments are often associated with high levels of intoxication and problems including public disorder, violence, sexual assault, unintentional injury and drink driving. For example, studies in countries including the UK and Germany have shown that excessive alcohol use is common among young nightlife users, with many already under the influence of alcohol when arriving at public drinking premises after having pre-loaded with cheaper off-licensed alcohol (Bellis et al, 2010; Hughes et al, 2008; Hughes et al, 2010; Wahl & Berner, 2010). The convergence of large numbers of intoxicated individuals in busy bars and streets creates potential for alcohol-related harm, while areas that have greater densities of alcohol outlets typically see increased violence, as well as problems such as unintentional injury and road traffic crashes (Gruenewald et al, 2010; Gruenewald & Johnson, 2010; Livingston, 2011; Livingston, Chikritzhs & Room, 2007).

Research examining alcohol-related harm in drinking environments often shows that violence and other alcohol-related problems tend to cluster in and around specific 'problematic' venues (Newton & Hirschfield, 2009). This suggests that certain characteristics of these venues contribute to alcohol-related problems. A number of studies have set out to examine what these environmental factors are, in order to inform the development of preventive interventions (e.g. Graham et al, 1980; Graham et al, 2006; Homel et al, 2004). A systematic review conducted by the Amphora project brought together their findings, identifying numerous factors that have emerged as important in predicting increased alcohol use and

harm in bars. These include poor cleanliness, crowding, loud music, a focus on dancing and a permissive environment (i.e. tolerance towards anti-social behaviour) (Hughes et al, 2011a).

The European action plan to reduce the harmful use of alcohol 2012-2020 (World Health Organization Regional Office for Europe, 2011) has recognised the importance of the physical and social bar environment in increasing or reducing alcohol-related problems. Amongst options for action, the plan suggests the development of guidelines and standards for the design of drinking premises, server training and the monitoring and enforcement of licensing laws. However, despite a growing interest in this area of alcohol policy, understanding what action is needed where has been complicated by a scarcity of information and knowledge of both drinking behaviours among young European nightlife users and the environmental factors in European bars that contribute to increased harm. Understanding of youth drinking behaviours in Europe is largely limited to information gathered through school surveys of adolescents below the legal age for using bars and nightclubs, or general population surveys of adults that provide little context on nightlife behaviours. Equally, most studies on associations between environmental factors in bars and alcohol-related harm have been conducted in non-European settings (Hughes et al, 2011a). To address this gap in knowledge, the Amphora project conducted a study of drinking behaviours (Hughes et al, 2011b) and bar environments (Hughes et al, 2012) in four European cities: Liverpool (UK); Ljubljana (Slovenia); Palma (Spain); and Utrecht (Netherlands). This chapter outlines the methodology used, presents key findings from the study and discusses their implications for policy and prevention.

What we did

In each city, a team of trained researchers undertook a survey and breathalyser test with young drinkers (aged 16-35 years) using nightlife environments and conducted a series of structured observations in bars. Between September and November 2010, a total of 838 interviews (Liverpool n=222; Ljubljana n=221; Palma n=191; Utrecht n=204) were undertaken on Thursday, Friday and Saturday nights during peak nightlife hours in each city (Hughes et al, 2011b). Participants were surveyed on the streets in busy nightlife areas and asked about their drinking behaviour that night up to the point of survey, and their intended alcohol consumption over the remainder of the night. Alcohol consumption was recorded in terms of numbers of standard or large drinks of different types, and was later converted to grams of alcohol using an online conversion tool.[7] At the end of the survey, each participant was breathalysed and their breath alcohol concentration was recorded on their survey form, later converted to blood alcohol concentration (BAC) for analysis.

Over the same period, researchers conducted 238 hours of covert observation in bars – with 15 youth-focused bars in each city visited up to four times for a one hour period. The observations were conducted by mixed gender pairs and, after leaving the venue, each researcher independently completed a structured assessment tool. The tool was a slightly modified version of a bar assessment schedule developed in Canada and used in previous studies of bar environments (e.g. Graham et al, 2006), with some items removed (e.g. pool table atmosphere) and some added (e.g. the price of certain drinks) to tailor it to modern bar environments in the four cities. The tool recorded measures of the physical bar environment, staff practice, alcohol and food service, in addition to customer behaviours, and included a rating of overall levels of customer intoxication in the venue. Researchers also recorded any incidents of alcohol-related harm witnessed during the observation, including overt intoxication, vomiting, aggression and falls. For each visit, the two independently completed assessment tools were checked by the city research lead and inconsistencies were discussed with researchers during a consensus meeting, providing a single combined assessment for

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7 http://www.drinkaware.co.uk/tips-and-tools/drink-diary/

each visit. Data from both the surveys and the observations were analysed in SPSS by the UK research team.

What we found

Drinking behaviours among European nightlife users

Of the 838 individuals who participated in the drinking behaviour survey, 57.6% were male and the mean age was 23 years. Significantly more females were surveyed in Liverpool while younger samples were obtained in Liverpool and Palma. In all cities, over three quarters of participants reported having had their first alcoholic drink that night at least three hours before taking part in the survey. Around half of those surveyed in Liverpool and Utrecht had been in the nightlife environment for less than three hours when interviewed, whilst most in Ljubljana and Palma had been out for at least three hours. Over half of those interviewed in Liverpool, Ljubljana and Palma expected to stay in the nightlife setting for a total of at least five hours, and around a third for more than seven hours. In Utrecht, almost 60% expected to stay out for less than five hours.

The survey asked participants whether they had preloaded (consumed alcohol at home or a friend's home) before going out that night. Almost half (45.1%) of all participants reported this type of preloading with levels highest in Liverpool (61.4%) and lowest in Palma (25.7%). However, a further 33.9% of participants in Palma reported having preloaded by participating in *botellón* – the consumption of off-licensed alcohol in public places such as streets and parks. Thus, overall, participants from Palma had preloading levels similar to those in Liverpool. Figure 1 shows the gender breakdown of preloading in each city; differences were only significant in Liverpool where significantly more females than males had preloaded.

Figure 1: Percentage of participants having preloaded*, by city and gender
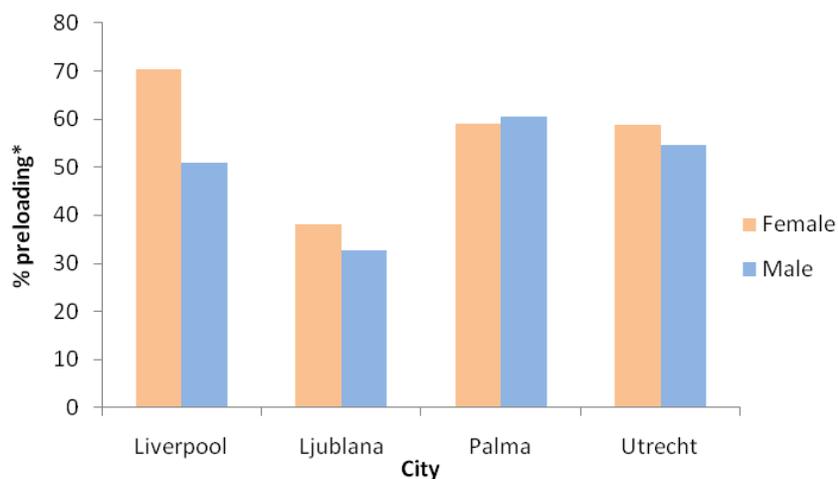
* including participation in *botellón* in Palma

In both males and females, median %BAC at interview was highest among participants from Liverpool, followed by those from Utrecht. Despite this, for females there was no significant difference between cities in the amount of alcohol reported to have been consumed by interview (Table 1). This suggests that females from Liverpool may have underestimated the amount they had consumed that night. However, females from Liverpool did expect to drink more alcohol over the remainder of their night out than those from other cities, meaning the total amount of alcohol they expected to consume (combining that reported and that

expected) was significantly higher than in other cities. Among males, both the quantity of alcohol reported by interview and the amount expected over the remainder of the night out were highest in Liverpool, followed by Utrecht. Over the entire night (pre- and post-interview), males in Liverpool reported expecting to drink more than double the quantity of alcohol expected by those in both Ljubljana and Palma.

In the UK, binge drinking is often defined as consumption of more than six units of alcohol in one session by females and more than eight units by males, with one unit equating to 8 grams of alcohol. Based on this definition, median quantities of alcohol consumed by interview were equivalent to binge drinking in all cities. Combining alcohol already consumed and expected to be consumed post interview, the majority of participants in all cities expected to binge drink that night (Table 1).

Table 1. Recorded blood alcohol concentration (%BAC) at interview and reported alcohol consumption during the night out, by gender and city

|	Liverpool	Ljubljana	Palma	Utrecht	P
Females					
Median %BAC at interview	0.10	0.05	0.06	0.07	<0.001
Median grams of alcohol reported by interview	56.8	50.4	50.4	54.4	0.147
Median grams expected over remainder of night	40.0	17.6	16.8	22.4	<0.001
Median total grams of alcohol	104.8	66.4	72.0	76.8	<0.001
% expecting to binge drink that night*	82.5	67.9	63.8	80.5	<0.05
Males					
Median %BAC at interview	0.13	0.08	0.07	0.09	<0.001
Median grams of alcohol reported by interview	104.0	64.0	70.4	92.8	<0.001
Median grams expected over remainder of night	62.4	18.4	16.8	33.6	<0.001
Median total grams of alcohol	176.8	79.2	87.2	139.2	<0.001
% expecting to binge drink that night*	96.0	61.6	72.3	85.8	<0.001

* Sum of grams consumed by interview and expected additional grams over the remainder of the night greater than 48.0 grams for females and 64.0 grams for males.

Figure 2 shows the proportion of alcohol consumed by interview that was accounted for by different drink types. Spirits accounted for over half of all grams of alcohol consumed by females in Liverpool and both females and males in Palma. Beer accounted for the majority of alcohol consumed by males in Utrecht, and over half of those by males in Liverpool. Almost half of all alcohol consumed by females in Ljubljana was accounted for by wine.

Due to the interviews and breathalyser tests being undertaken at different times of night, self-reported alcohol consumption by interview and %BAC were examined based on the length of time that participants had been drinking for when they were surveyed (i.e. time since their first drink). For those that had been drinking for less than three hours, there were no differences between cities or genders in either self-reported alcohol consumption or median %BAC. Across all cities, self-reported alcohol consumption increased in those who had been drinking longer (Table 2) with this increase being most pronounced among those from Liverpool. For females, %BAC increased with time drinking in the Liverpool sample only, where median %BAC reached

0.13 among those that had been drinking for more than five hours, compared with 0.07 in females from Utrecht and Palma and 0.04 in those from Ljubljana (Table 3). Among males, significant increases in %BAC with time since first drink were seen in all but the Palma sample. Again, the increase was particular pronounced in the Liverpool sample where %BAC in those that had been drinking for over five hours by interview reached a median on 0.17, compared with 0.11 in Utrecht and 0.09 in both Ljubljana and Palma.

Figure 2. Percentage of alcohol consumed by participants prior to interview that was accounted for by different drink types
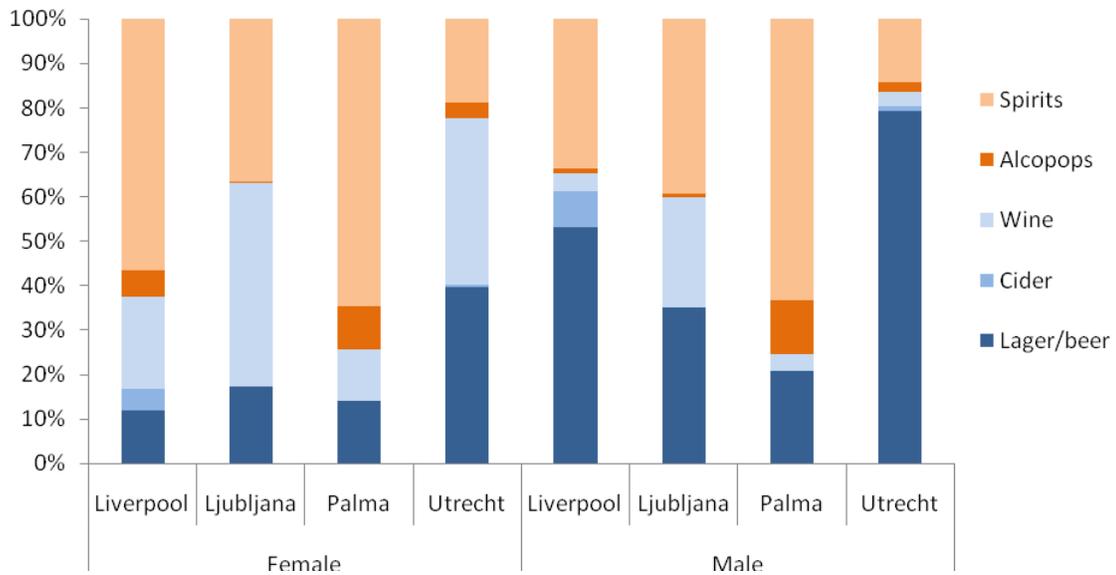
* grams of alcohol consumed by interview for individuals within each category were summed by drink type to show the proportion of grams reported by the sample that was accounted for by different drink types

Logistic regression analysis was undertaken to identify factors independently associated with participants recording a BAC of greater than 0.08% - a commonly used indicator of intoxication (e.g. Shanin et al, 2010). This found high BAC to be associated with being male, aged greater than 19 years, being from Liverpool, having consumed spirits prior to interview, and having been drinking for a longer period of time.

Table 2. Median grams of alcohol reported to have been consumed prior to interview, by time between participants' first alcoholic drink and interview

	Females					Males				
	Liverpool	Ljubljana	Palma	Utrecht	P[a]	Liverpool	Ljubljana	Palma	Utrecht	P[a]
< 3 hours	32	32	36	39	ns	45	35	48	45	ns
3-5 hours	64	58	44	58	ns	88	70	66	96	<0.001
> 5 hours	96	59	80	64	<0.05	146	89	89	112	<0.01
P[b]	<0.001	<0.01	ns	<0.001		<0.001	<0.001	<0.01	<0.001	

[a]P between cities across time periods, [b]P between time periods within cities

Table 3. Median BAC by time between participants' first alcoholic drink and interview

	Females					Males				
	Liverpool	Ljubljana	Palma	Utrecht	P^a	Liverpool	Ljubljana	Palma	Utrecht	P^a
< 3 hours	0.05	0.04	0.06	0.04	ns	0.05	0.05	0.07	0.05	ns
3-5 hours	0.12	0.05	0.06	0.06	<0.001	0.10	0.08	0.07	0.11	<0.01
> 5 hours	0.13	0.04	0.07	0.07	<0.05	0.17	0.09	0.09	0.11	<0.001
P^b	<0.001	ns	ns	ns		<0.001	<0.05	ns	<0.01	

^{a}P between cities across time periods, ^{b}P between time periods within cities

Environmental factors in European drinking environments

In the second part of the study, a total of 238 hours of structured observations were undertaken in youth focused bars in the four cities. In each city, 15 youth focused bars were selected to represent a range of low, medium and high risk premises, and four one-hour observational visits were undertaken in each one.[8] As venues can provide different forms of entertainment and vary their operating procedures, staff and customer bases on different nights and hours of trading, each observational visit was treated as a separate observation rather than data from the four visits being combined. The key variables assessed during the observations are listed in Box 1 (see end of chapter).

Figure 3. Proportion of observational visits recording selected features at entrance to the venue
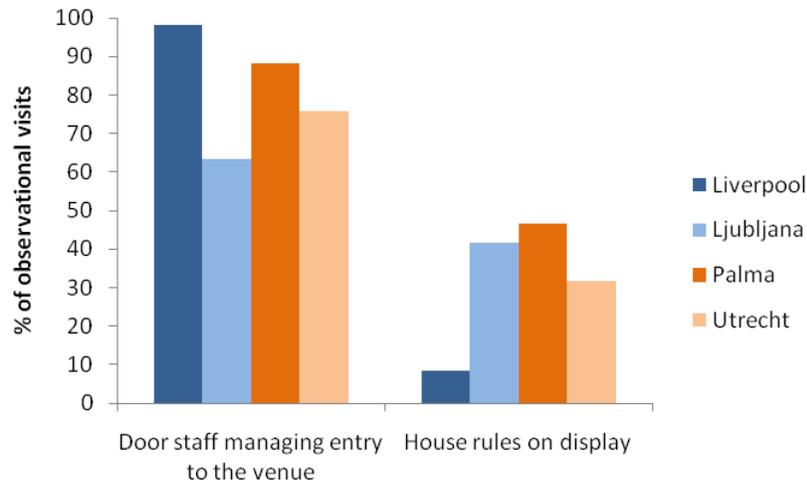
Up to four observations conducted at 15 venues in each premise.
Differences between cities are significant, P<0.001

Although the venues visited in the study were not intended to be representative of all drinking premises in each city, initial findings suggest that the operation of premises and their physical and social environments vary across Europe. For example, the presence of door staff was almost ubiquitous in Liverpool, where staff was managing entrance to venues during all but one observational visit (98.3%). Conversely, in Ljubljana only two thirds of observations (63.3%) recorded the presence of door staff. Use of door staff is a mandatory requirement of late night operating licenses for drinking premises in Liverpool city centre (and throughout England in general), and the one observation during which door staff were not managing

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8 In two venues in Utrecht, it was only possible for researchers to complete three observational visits.

venue entrance could be considered an incident of negligence by door staff who were not at their post. Other factors recorded at entrance to venues included the display of house rules. In Palma, almost half (46.7%) of all observational visits identified house rules being displayed at venue entrance, dropping to just 8.3% in Liverpool.

The physical environment within venues was assessed using a series of rating scales (from 0 to 9) measuring noise levels, crowding, ventilation, temperature, levels of lighting and factors regarding cleanliness. On all scales, higher values represented more 'problematic' levels (see Box 1). Although these data are limited by cultural interpretation of bar environments, with observations being undertaken by different research teams in each city, mean ratings are provided here for information purposes. The chief purpose of scale variables is to assess associations with alcohol-related harm rather than to compare across cities.

Figure 4. Mean ratings on physical environment scales
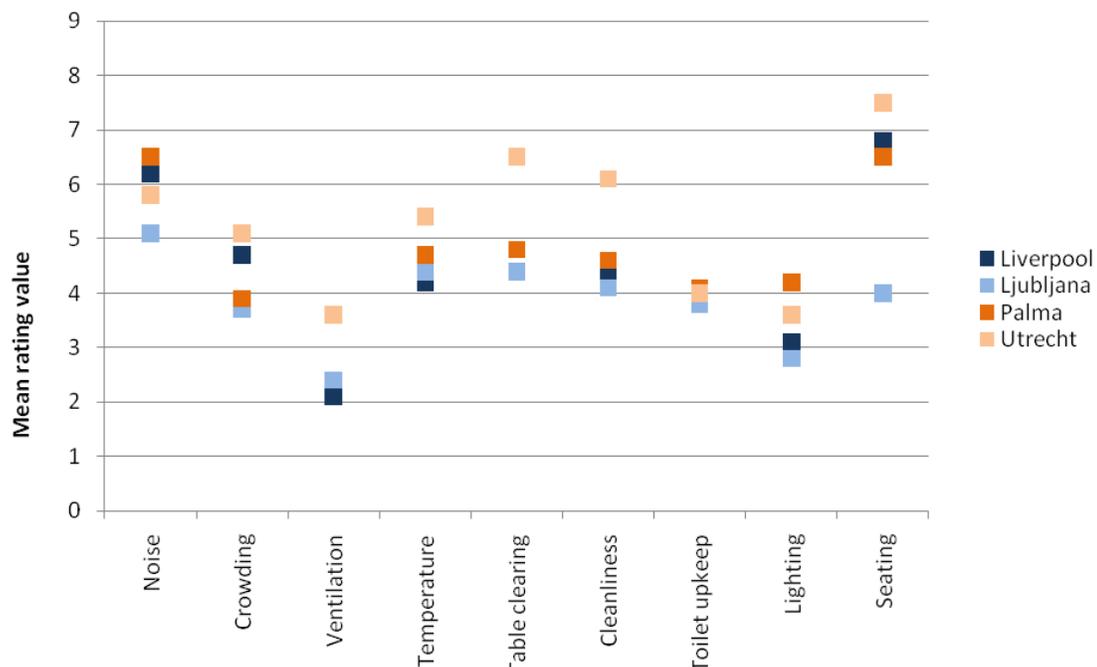
0 mean rating value = "non problematic"; 9 mean rating value = "highly problematic"

A range of factors associated with food and drink sales were recorded during observations. Food was rarely being served in observations in all cities, recorded most often in Ljubljana (16.7% of observations) and least often in Liverpool and Utrecht (<4%). The service of alcohol to tables (rather than just at the bar) was most common in Ljubljana (78.3% of observations) and least common in Liverpool (3.3%). Ljubljana also had the highest proportion of observations where the use of plastic glassware was recorded (73.3%) with the lowest proportion in Utrecht (8.6%). Alcoholic drinks promotions were most commonly observed in Liverpool (46.7% of visits) and least common in Palma (13.3%). Palma also had the highest mean drink prices across the four cities (see Table 4).

Regarding staffing, observations in Palma recorded lower staff to patron ratios than in other cities, as well as lower proportions of younger and male bar staff (Figure 5). Observations in Ljubljana were least likely to record the presence of designated glass collectors. Certain factors regarding staff behaviour were also recorded on scale variables (see Box 1). Using scale variables (again with caution), staff monitoring was rated as poorest in Utrecht and staff

coordination rated poorest in Palma. Permissiveness (e.g. tolerance of abusive behaviour) was rated as highest in Liverpool.

Table 4. Mean prices of drinks recorded during observational visits, in Euros

	Liverpool[a]	Ljubljana	Palma	Utrecht
Bottle of lager	3.81	2.89	4.18	2.28
Standard glass of wine	3.58	2.29	3.69	2.83
Vodka and orange[b]	3.73	4.29	7.13	5.39
Glass of coke	1.69	2.02	3.65	2.09

[a] £ sterling prices converted to Euros at a rate of 1.1531
[b] Researchers were asked to request the price of a 'single' vodka yet in Spain spirits serving sizes are known to be larger (Gual et al, 1999).

Figure 5. Proportion of observations recording selected staffing factors
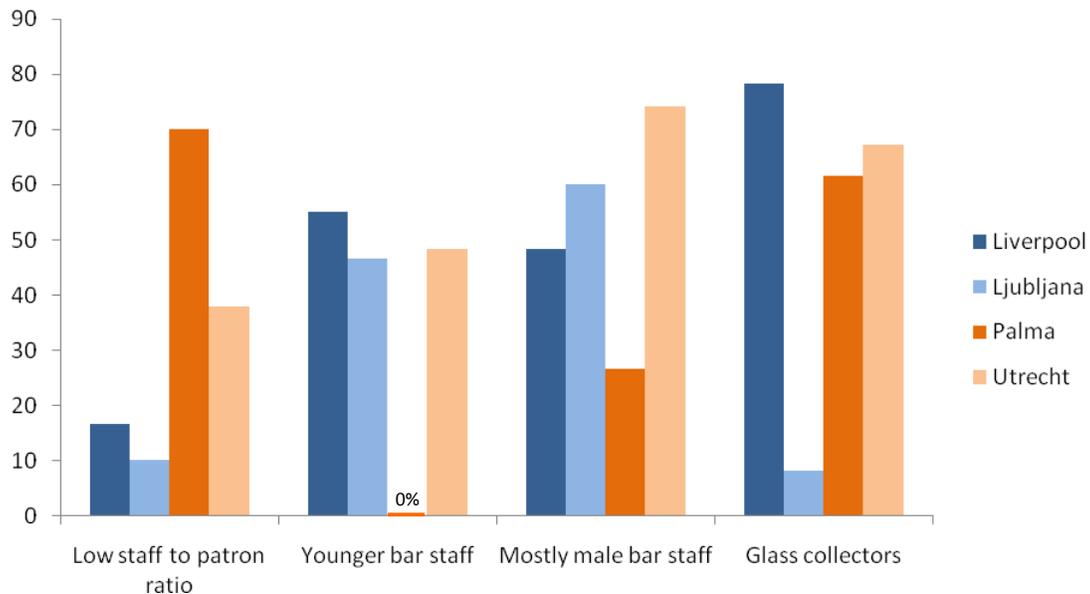
Low staff to patron ratio: more than 30 customers per bar staff
Younger bar staff: >50% appeared to be under age 25
Mostly male bar staff: >50% male
Glass collectors: presence of staff that appeared to be responsible for clearing glasses from tables

A range of variables were recorded regarding customer types and behaviours during observations. Ljubljana observations were most likely to record a male-dominated customer base (>50% of customers male; 81.7%, falling to 60.0% in Liverpool), while observations in Palma were least likely to record a customer base dominated by younger age groups (aged 21 or younger; 8.3%, rising to 32.8% in Utrecht). At least 70% of observations in Liverpool and Utrecht identified that the majority (>50%) of customers were in single sex groups, compared with around a third in Palma and Ljubljana.

There were no significant differences between cities in mean ratings of customer intoxication, which were measured on a scale of 0 (no sign of intoxication) to 9 (everyone is drunk). Mean ratings were 3.5 in Ljubljana, 3.7 in Utrecht, and 4.0 in both Palma and Liverpool. However, there were significant differences in the proportions of visits in which alcohol-related harm was observed (Palma 3.3%, Utrecht 20.7%, Ljubljana 21.7%, Liverpool 45.0%).

Associations between bar characteristics and levels of customer intoxication

To examine associations between bar characteristics and ratings of customer intoxication, a series of hierarchical models were undertaken with venue used as the unit of observation (Hughes et al, 2012). For this analysis, highly correlated ($r > 0.50$) scale variables were combined into composite scales (movement and crowding; ventilation and lighting; clearing and cleanliness; and sexual activity and sexual competition).

All bar characteristic variables were first tested individually for their relationship with customer intoxication ratings (Table 5). In these bivariate analyses, having door staff manning the entrance to the venue, a queue to get into the venue and an entrance fee were all associated with increased customer intoxication ratings. Inside the venue, all factors relating to the physical environment had significant relationships with intoxication, with less seating, louder noise, greater movement/crowding, lower ventilation/lighting, higher temperature, poor clearing/cleanliness, more glass on the venue floor and poorer toilet facilities all associated with increased customer intoxication. The presence of a dance floor was also associated with increased intoxication, as were the promotion of non-alcoholic drinks and the use of plastic glassware. However both food service and the service of alcohol at tables (rather than solely at the bar) were associated with lower intoxication ratings.

Staff factors associated with increased customer intoxication ratings were the presence of glass collectors, poorer staff monitoring, attitudes and boundaries, and greater levels of permissiveness (tolerance of antisocial behaviour). Among customer factors, a younger clientele, greater dancing, and higher levels of sexual activity/competition and rowdiness were all significantly associated with higher customer intoxication ratings.

Two contextual variables were also found to be associated with increased customer intoxication ratings: number of customers in the venue during the observation (>100 at the busiest time) and timing of the observation (later observations based on an equal split of early/late in each city) (Table 5). Other contextual variables examined that had no relationships with intoxication were the city of observation, the presence of police outside the venue at the time of observation, and whether or not the venue had an outdoor drinking area.

Table 5: Bivariate associations between bar characteristics and researcher ratings of customer intoxication

	Variable	P	slope[a]		Variable	P	slope
	Contextual factors			**Alcohol & Food**	Alcoholic drink promotions	ns	
	>100 customers	***	↑		Low drink prices	ns	
	Later visit	***	↑		Soft drink promotions	**	↑
Entry	Door staff	**	↑		Plastic glassware	**	↑
	Queue	*	↑		Table service	**	↓
	Entrance fee	*	↑		Food service	*	↓
	House rules (entry)	ns		**Venue staff**	Fewer bar staff	ns	
Physical environment	Seating	***	↑		Young staff	ns	
	Noise level	***	↑		Male staff	ns	
	Movement/Crowding	***	↑		Glass collectors	*	↑
	Ventilation/Lighting	***	↑		Staff monitoring	***	↑
	Temperature	***	↑		Staff coordination	ns	
	Clearing/Cleanliness	***	↑		Staff attitude	*	↑
	Glass on floor	***	↑		Staff boundaries	*	↑
	Toilets	***	↑		Permissiveness	***	↑
Bar activities	Dancefloor	***	↑	**Customers**	Male clientele	ns	
	Pool tables	ns			Young clientele	**	↑
	TV screens	ns			Single sex groups	ns	
	House rules (inside)	ns			High alcohol drinks	ns	
	Rock/heavy music	ns			Dancing	***	↑
	Rap/hiphop music	ns			Sexual activity/comp.	***	↑
	Pop/dance music	ns			Rowdiness	***	↑

[a] slope direction shows whether the variable was associated with an increase (↑) or decrease (↓) in intoxication rating. ns = not significant; * P< 0.05; ** P< 0.01; *** P< 0.001.

In the next stage of analysis, variables were entered into six multivariate models relating to: 1) entrance to the venue; 2) the physical environment inside the venue; 3) activities and entertainment in the bar; 4) alcohol and food service in the venue; 5) staff characteristics; and 6) customer characteristics (Table 6). Each model also included the two significant contextual variables (number of customers, time of observation).

In these block analyses none of the variables relating to the entrance to the venue had an independent relationship with intoxication ratings. Across the block of factors relating to the physical environment inside venues, only greater movement/crowding and poorer toilet facilities maintained their relationship with higher customer intoxication ratings (Table 6). Among bar activity factors, both the presence of a dancefloor and TV screens were associated with increased intoxication ratings. In the alcohol and food service block, the promotion of non-alcoholic drinks and the use of plastic glassware both retained their association with increased intoxication, and table service was independently associated with lower intoxication ratings. Of staffing factors, only poorer staff monitoring and greater permissiveness had significant independent relationships with increased intoxication ratings. However, all customer factors that were associated with increased intoxication ratings in bivariate analysis maintained this relationship in multivariate block analysis.

In the final stage of analysis, all factors that had independent associations with intoxication ratings were entered into an overall model (Model 1, Table 6), along with the two significant contextual factors. Here, factors that emerged as having significant associations with increased intoxication ratings were: later observation time; poorer toilet facilities; non-alcoholic drink promotions; use of plastic glassware; greater staff permissiveness; and greater customer sexual activity/competition.

As customers are likely to be attracted to a venue due to its social and physical environment, a second model was run that excluded all customer-focused variables (Model 2, Table 6). In this model, the relationships between later observation time, non-alcoholic drink promotions and permissiveness were strengthened, while the association between a dancefloor and increased intoxication ratings also became significant.

Table 6: Multivariate associations between bar characteristics and researcher ratings of customer intoxication

Variable	Block analysis		Model 1		Model 2	
	P	slope	P	slope	P	slope
Contextual factors						
>100 customers	na		ns		ns	
Later visit	na		*	↑	***	↑
Physical environment						
Movement/Crowding	*	↑	ns		ns	
Toilets	*	↑	*	↑	*	↑
Bar activities						
Dancefloor	***	↑	ns		*	↑
TV screens	*	↑	ns		ns	
Alcohol and Food						
Soft drink promotions	**	↑	*	↑	**	↑
Plastic glassware	**	↑	**	↑	**	↑
Table service	**	↓	ns		ns	
Staff factors						
Staff monitoring	**	↑	ns		ns	
Permissiveness	***	↑	*	↑	***	↑
Customer factors						
Young clientele	*	↑	ns			
Dancing	**	↑	ns			
Sexual activity/comp.	*	↑	*	↑		
Rowdiness	***	↑	ns			

[a] slope direction shows whether the variable was associated with an increase (↑) or decrease (↓) in intoxication rating. na = not applicable; these two variables were included in all block analyses; ns = not significant; * P< 0.05; ** P< 0.01; *** P< 0.001.

What does this mean?

The Amphora study is providing a wealth of information on drinking behaviours and nightlife environments in Europe that will facilitate the development of policy and practice to reduce harm in drinking environments, and the implementation of further research into this important issue. Firstly, the study has highlighted some similarities in drinking behaviours across cities. The vast majority of participants in all cities expected to binge drink on the night of survey, and in fact the median grams of alcohol reported at interview had already reached

binge drinking levels in all cities and for both genders. The study also found high levels of pre-loading in all cities, albeit lower in Ljubljana. With the exception of those from Ljubljana, the majority of young nightlife users surveyed reported that they had consumed alcohol at home, a friend's home or, in the case of Palma, in public places prior to visiting public drinking environments. Such preloading behaviour is often motivated by price, with alcohol typically being vastly cheaper in supermarkets and other off-licensed premises than in pubs, bars or nightclubs. However such preloading has important implications for preventing harm in drinking environments as it means that individuals are arriving at pubs, bars and nightclubs already under the influence of alcohol, and in some cases likely intoxicated. Serving alcohol to individuals who are drunk is illegal in most European countries, yet a growing trend in preloading means that bar managers and staff face an increasingly intoxicated customer base. The discrepancies between on- and off licensed premises in alcohol price is something that requires addressing. Increasing alcohol prices can impact on alcohol consumption and related harm, and consequently focus should be placed on increasing prices in off-licensed premises.

Despite the common features of nightlife alcohol consumption observed, this study has provided evidence for variation in nightlife drinking behaviours across Europe. Although the samples were not intended to be representative of young nightlife users in the four cities, British participants of both genders recorded significantly higher blood alcohol concentrations at interview and expected to drink a significantly greater quantity of alcohol during their night out. In fact, analysis of alcohol consumption and %BAC by time spent drinking suggested that participants in other cities had greater control over their alcohol consumption across the course of a night out, whereas those in the British sample continued to consume alcohol and become increasingly intoxicated. This requires further investigation with a more representative sample, but equally has important implications for the transferability of interventions to prevent intoxication and alcohol-related harm across Europe. Thus those developed to manage high levels of intoxication in UK settings may be inappropriate in countries where intoxication is less widespread, and vice versa. A deeper understanding of how and why people drink the way they do in different European settings would further support the development of measures to prevent alcohol-related harm.

The observations undertaken in drinking venues in each of the four cities have also suggested there are wide variations regarding the way venues are managed and staffed across Europe. The European action plan to reduce the harmful use of alcohol (World Health Organization Regional Office for Europe, 2011) proposes that guidelines and standards are developed for the design of drinking premises, server training and the monitoring and enforcement of licensing laws. The Amphora study has found that many of the key environmental factors linked to alcohol-related harm in international bar studies are relevant to European drinking environments. For example, venues that are crowded, loud, unclean and poorly monitored are likely to see higher levels of intoxication, and consequently higher levels of related harm. Such characteristics are likely to be symptomatic of poorly managed bars where drunkenness and anti-social behaviour is left unchecked; with our analysis finding permissiveness to have one of the strongest independent relationships with intoxication. Uniquely, the Amphora study also found strong relationships between increased customer intoxication ratings and both plastic glassware and the promotion of non-alcoholic drinks. Both of these characteristics could be considered harm reduction measures, yet findings here urge caution around recommending them to prevent alcohol related problems. For non-alcoholic drink promotions, these were often focused on energy drinks that are typically consumed in combination with alcohol and have been linked to greater intoxication and alcohol-related harm. Relationships between plastic glassware and intoxication likely represent the use (often enforced by police or licensing authorities) of this measure to prevent serious violent injury in high risk bars; yet suggest that bars' use of plastic does not stop customers getting drunk, and therefore would

not stop alcohol-related harm including violence (for further discussion, see Hughes et al, 2012).

The environmental factors found to be related to intoxication ratings in this study could be used to inform both risk assessments in bars at a local level and the development of guidelines and standards for bar design and management across Europe. Our findings suggest that well managed bars will see less intoxication and thus should experience less alcohol-related problems. The adoption of standards and guidelines could help push bars towards providing entertainment based on the quality of the bar experience rather than the quantity of alcohol sold. In order for standards and guidelines to be effective, however, they should be implemented in combination with strong enforcement activity and other community focused activity.

Take home messages

1. Preloading and binge drinking are common features of nightlife participation in young people across Europe. In all cities most participants intended to binge drink on the survey night and in all except Ljubljana, the majority had preloaded before arriving at public drinking environments.

2. Nightlife drinking behaviours in the British sample appeared to be characterised by continued alcohol consumption and increasing intoxication throughout the course of a night out, compared with more moderated consumption and steady lower levels of intoxication elsewhere; further research is required to examine these patterns and their underlying drivers.

3. The physical, social and staffing environments in bars in the four cities varied. Identifying which of these factors is associated with increased intoxication and harm will support the development of guidelines and standards for managing drinking premises in Europe.

Conflict of Interest Statements

Karen Hughes, Zara Quigg and Mark A. Bellis hold positions at the Centre for Public Health in John Moores University Liverpool, UK. In the last 5 years, the Centre for Public Health has received a grant from Drinkaware to undertake an independent study of drinking behaviours among students and provided them with independent medical advice. Drinkaware is an independent UK-wide charity supported by voluntary contributions from the alcohol and supermarket industries and governed through a memorandum of understanding between the Department of Health, Home Office, Scottish Executive, Welsh Assembly Government, Northern Ireland Office and Portman Group.

Ninette van Hasselt is based at the Trimbos Instituut, The Netherlands. In the last 5 years, Trimbos-institute has received payment from Heineken for independent advice on a brochure on alcohol, which Heineken offers to its staff at events and in venues such as the Holland Heineken House. Trimbos has co-operated with Heineken on the prevention of excessive drinking in the Holland Heineken House, but in this case Heineken was given free advice.

Amador Calafat and Matej Kosir have no conflicts of interest to declare.

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Box 1. Description of observational schedule measurements to be used in the analysis

Scale variables		
Label	**Scale**	**Scale range**
Intoxication*	Intoxication level of people in the venue	0 no sign of intoxication 9 → everyone is drunk
Seating	% of venue floor space containing seating	0 90% or more → 9 <10%
Noise	Noise level in loudest part of venue	0 very quiet/easy to talk → 9 hurts ears/cannot talk
Crowding	Crowding at busiest time (excl.dancefloor)	0 lots of space → 9 cannot move
Ventilation	Ventilation in the venue	0 extremely fresh → 9 extremely stuffy/stale
Temperature	Temperature in the venue	0 very cold → 9 very warm
Clearing	Clearing of tables and other surfaces[a]	0 always → 9 never
Glass on floor	Extent of glass/bottles on venue floor[b]	0 none → 9 everywhere
Cleanliness	Extent that indoor premises are kept clean including the floor	0 always → 9 never
Toilets	Extent that toilets are kept in order and stocked	0 clean/fresh/stocked → 9 vandalised/foul
Lighting	Level of lighting inside the venue	0 bright/can clearly see venue → 9 very dark/can hardly see venue
Staff monitoring	To what extent are staff generally monitoring all areas of the venue?	0 constantly monitored → 9 unmonitored
Staff coordination	To what extent do staff seem to be coordinated as a team?	0 not coordinated at all → 9 constant radio or eye contact
Staff attitude	Are servers cheerful, courteous and friendly in a professional way or distant, unfriendly, stern or even rude/obnoxious?	0 all were CCF → 9 all were DUS
Staff boundaries	Extent that servers maintained professional (P) boundaries from patrons	0 all completely P, clear boundaries → all socialising with customers
Permissiveness	Overall decorum /behavioural expectations (e.g. tolerance of abusive behaviour)	0 no offensive/abusive behaviour → 9 anything goes
Dancing	Proportion of customers dancing	0 <10% → 9 90% or more
Sexual activity	Sexual activity in venue	0 none → 9 explicit sexual contact
Sexual competition	Sexual competition in venue	0 scoping not the focus for anyone → scoping the focus of 76-100%
Rowdiness	Global rating of rowdiness in the venue	0 none/very rare → 9 out of control
Movement	Movement (at busiest time/part of venue)	0 little movement → 9 constant
Categorical variables		
Label		**Yes/No**
Door staff		Staff managing entrance to the venue
Queue		There was a queue to enter the venue
Entrance fee		Entrance fee had to be paid
House rules (entry)		House rules displayed at venue entrance
Dance floor		Venue had a designated dance floor area

Label	Yes/No
Pool tables	Venue had pool tables
TV screens	Television screens[c] visible in the venue
House rules (venue)	House rules displayed inside the venue
Rock/heavy music	Rock or heavy metal music being played
Rap/hip hop music	Rap or hip hop music being played
Pop/dance music	Pop or dance music being played
Drinks promotions	Cheap drinks promotions[d] offered
Low drinks prices	Drink prices below average for that city[e]
Soft drinks	Non-alcoholic drinks promoted[f]
Plastic glassware	Drinks served in plastic glasses[g]
Table service	Drinks served to customers at their tables
Food service	Food available during the observation
Fewer bar staff	30 or more customers per bar server
Young staff	>50% thought to be under age 25
Male staff	>50% male
Glass collectors	Glass collectors working in the venue
Male clientele	>50% clientele were male
Young clientele	>50% clientele estimated to be <age 22
Single sex groups	>50% clientele in single sex groups
High alcohol drinks	Most common drink high alcohol content[h]
Police outside	Police were outside the venue at entry
Outdoor area	Outdoor eating/drinking/smoking area
100+ customers	100+ customers in venue at peak time
Later visit	Observation conducted later in the night[i]

* Main variable of interest. [a]Highest rating from two scales covering tables/other surfaces separately; [b]Highest rating from two scales covering glass/bottles separately; [c]Typically showing music videos or venue marketing/promotions; [d]E.g. buy one get one free, free shots; [e]Based on spirits or lager depending on which drink was most commonly being consumed in the venue; [f]Including energy drinks; [g]Partly or wholly; [h]High alcohol: spirits/wine, low alcohol: lager/cider/alcopops; [i]Later 50% of visits in each city.